

Belgacom's Reference Ull Offer

Coordinated by Belgacom

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This coordinated version is the result, coordination of the BRUO 2006 offer and its subsequent addenda as approved by the BIPT. Belgacom reminds that several appeal proceedings were introduced by Belgacom before the Court of Appeal against some of the BIPT decisions related to BRUO. This **coordinated** version of BRUO is published by Belgacom without any adverse recognition and without prejudice to Belgacom interests. It shall under no circumstances be considered as a waiver by Belgacom of its rights and interests in the concerned appeal proceedings.

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This document starts to produce effects as of 21st of June, 2010 and will be valid until a subsequent Reference Offer is validly published.

As from 21st of June, 2010, interested Beneficiaries are in a position to use the Open Calendar facilities.

However, the rights and obligations related to Certified Technician will only be applicable as from 11th of October, 2010.

For Telecommunications Operators

Through its arrests of 12 March 2005 (RG 2004/AR/174) and 15 June 2006 (RG 2004/AR/2657), the Court of Appeal of Brussels ruled that article 108bis, §1, of the Act of 21 March 21 1991 and article 6sexies, § 3, of the Royal Decree of 22 June 1998 irregularly depart from Regulation n° 2887/2000 of the European Parliament and of the Council of 18 December 2000 on Unbundled Access to the Local Loop, notably because they impose a yearly reference offer valid for the calendar year that follows the year of its publication.

Any reference made into any BRUO document that can be interpreted as a limitation in time must be considered as non existent."

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Belgacom's Reference Offer for ULL

1 Introduction

1.1 Scope of the Reference Offer for ULL

1. The present Reference Offer for ULL deals with the ULL Services that Belgacom offers to a Telecommunications Operator¹, hereafter called "Beneficiary".
2. The ULL Services included in this Reference Offer for ULL encompass the following services, as defined and described below:
 - Raw Copper Services
 - Shared Pair Services
 - Colocation Services
3. For the provision of Colocation Services reference is made to the Colocation Agreement in annex to this offer. Subscriptions to this agreement is a pre-requisite to install equipment in a Belgacom building. The conclusion of a Colocation Agreement constitutes a prerequisite for the provision of Colocation Services to any Beneficiary who wishes to install its equipment in a Belgacom building. For the sake of clarity, Colocation Services are to be used in the regulatory framework of the Belgacom reference services allowing the right to obtain Colocation (BRIO, BRUO, BROBA).

1.2 General Principles and Limits of the Reference Offer for ULL

4. The prices and conditions contained in the present Reference Offer for ULL are applicable for the period from January 1 to December 31, 2006. Any modification or extension that may be made by Belgacom or by BIPT to the present Reference Offer will be included in this Reference Offer for ULL, through the publication of specific addenda that will be approved preliminary by BIPT.
5. The provision of ULL services is subject to the conclusion of a Raw Copper or a Shared Pair agreement between Beneficiary and Belgacom according to the General Terms and Conditions
6. Belgacom will keep the full ownership of the equipment and network elements that belong to it and that have been installed by Belgacom or on behalf of Belgacom and that are used to provide ULL Services to the Beneficiary.
7. Without prejudice to what is stated in this Reference Offer, the Beneficiary can only obtain ULL Services with a view in accordance with the conditions set forth in the articles 12 and 22 of the General Terms and Conditions of the present reference offer.

¹ "Telecommunications Operator" under the present Reference Offer is to be understood as entitled to provide telecommunications services under national legislation, and which is eligible for unbundled access to a local loop.

8. Belgacom is not responsible for the content of the communications conveyed using ULL Services.

1.3 Definitions

9. The capitalized terms in the present Reference Offer for ULL have the meaning as defined below:

Active (Sub-)Loop	A (Sub-)Loop that is actively used by Belgacom to provide Voice Telephony Service to a specific User before the unbundling of the (sub-)loop is asked.
Active Equipment	Equipment which has to be electrically feeded (pair gain system, concentrators,...)
ADSL	Asymmetric Digital Subscriber Line
BIPT	Belgian Institute for postal services and telecommunications
Block	The 100 pair or 48 pair connecting block dedicated to one Beneficiary on which Belgacom will connect the ULL Services as ordered by the Beneficiary
Cable Tray	Cable Tray is used to lead Tie Cabling from the Beneficiary's equipment to the Belgacom Main Distribution Frame
<u>Certified Technician</u>	<u>Any technician employed either by a Beneficiary or by one of Beneficiary's subcontractors, trained and certified by Belgacom in order to perform, in place of a Belgacom technician, the installation of the BRUO Raw Copper lines.</u>
Colocation Agreement	An agreement concluded between Belgacom and a Beneficiary which covers, in particular, the technical, operational, billing, planning and financial conditions for the Colocation Services provided by Belgacom to the Beneficiary
Colocation Area	Part of a Colocation Room allocated to a single Beneficiary.
Colocation Room	Dedicated room in a Belgacom building, designated by Belgacom, where Beneficiaries can install their equipment.
Co-mingling	Physical Colocation Service whereby the Beneficiary installs their authorized equipment next to or near equipment of Belgacom in a Belgacom building. The Beneficiary has an accompanied access based on a contract concluded between Beneficiary and a Security Firm agreed by Belgacom. Pursuant the original advice regarding co-mingling, Belgacom reserves the right for its free choice regarding the location of the co-mingling area within the Belgacom building.
Co-mingling Area	Part of a Co-mingling Zone allocated to a single Beneficiary
Co-mingling Zone	The spaces selected by Belgacom within the Belgacom technical building where Co-mingling can be offered
Colocation Services	Colocation Services as described in the Colocation Agreement in annex to the present Reference Offer

Connection Cable	The cable from the dedicated Beneficiary Blocks to the Belgacom Splitter rack
Connectors	Physical points of connection on which the Extended Tie Cables are terminated in case of Distant Colocation
Cross Connection Cabinet	Cabinet used in conjunction with Distant Colocation Services at which the Beneficiary Cable is connected to a Belgacom Extended Tie Cable
Demarcation Point (DP)	The point marking the boundary between the Belgacom's and the Beneficiaries domains of responsibility
Distant Colocation	Colocation Service in a Cross Connection Cabinet in the immediate vicinity of a Belgacom building
Extended Tie Cable	The cable from the dedicated Beneficiary Blocks to a Cross Connection Cabinet located in the immediate vicinity of the Belgacom building
gShDSL	Symmetric High bit rate Digital Subscriber Line
HDSL	High bit rate Digital Subscriber Line
Introduction Cable	Cable between the Introduction Splice on the Distribution Network and the Network Termination Point at the User premises
KVD	KabelVerDeler (streetcabinet)
LDC Building Colocation	Colocation Service whereby the Beneficiary installs authorized equipment in Belgacom LDC building. This form of Colocation is realized pursuant Annex I 4, Case 1.
LDC Container Colocation	Colocation Service whereby the Beneficiary installs authorized equipment in Belgacom LDC Container. This form of Colocation is realized pursuant Annex I 4, Case 2.
LDC Cabinet Colocation	Colocation Service in a Cabinet in the immediate vicinity of a Belgacom LDC building or container; pursuant Annex I 4, Case 3
LDC Distant Colocation	Colocation Service in a Cross Connection Cabinet in the immediate vicinity of a Belgacom LDC building or container; pursuant Annex I 4, Case 4
Local Loop	A pair of fully metallic continuous unequipped copper wires on the section between Belgacom's Main Distribution Frame at the Belgacom Local Exchange and the User site connected on a Network Termination Point, in some cases realized by means of small network adaptations as defined in § 2.1.1.4 of the present Reference Offer. The Loop can be a Non-active Loop or an Active Loop.
Local Sub-loop (Sub-loop)	A part of a Local Loop connecting the Network Termination Point at the User's premises to a Concentration Point (like LDC, KVD, ...) or equivalent facility in the Network
LDC	Local Distribution Center

Migration	Specific type of Request for an active Raw Copper (Sub-) Loop as described in §3.1.1
Non-active (Sub-)Loop	A (Sub-)Loop that is not actively used by Belgacom to provide Voice Telephony Service to a specific User before the unbundling of the (sub-)loop is asked
Party	Depending on the context, Belgacom and/or the Beneficiary entering into an ULL or Colocation Agreement
Physical Colocation	Colocation Service whereby the Beneficiary installs authorized equipment in Belgacom building
Reference Offer (for ULL)	The present offer for ULL Services
Request	The Beneficiary's demand concerning the delivery of a Raw Copper (Sub-)Loop or Shared Pair Service as described in this Reference Offer
SDSL	Symmetric Digital Subscriber Line (an acronym for g.Shdsl)
Services of Electronic Communications	Services as defined in the law on electronic communications of 13/06/2005, art. 2, 5° ("service de communications électroniques" / "elektronische communicatiedienst")
Splitter	Passive element that separates the low frequency part (used for voice) of the loop from the high frequency part of the loop
Tie Cable	The cable from the dedicated Beneficiary Blocks to the Physical Colocated equipments of the Beneficiary for Raw Copper Services or from the Splitter rack to the Colocation / Co-mingling Area for Shared Pair Services
Type	Qualification of the loop, determined by spectrum management rules and rules of usage
ULL Services	ULL Services described in the present Reference Offer for ULL
Unequipped	Without any type of Active Equipment or specific passive elements like load coils, repeaters or other equipment causing non-continuity in the Raw Copper (Sub-)Loop
Virtual Colocation	Colocation Service whereby Belgacom installs Beneficiary's authorized equipment in a Belgacom building. In this case, the Beneficiary has no access to the Belgacom building. Belgacom will ensure the maintenance and the Beneficiary will manage remotely it's equipment.
Working Day	Each day from: 8h00 - 16h30 except Saturday, Sunday, national legal holidays in Belgium and 26 December of each calendar year

XDSL	General term used to cover the various DSL applications (ADSL, HDSL, SDSL, gShDSL, VDSL, ADSL 2, ADSL2+, enhanced SDSL, ...)

1.4 Terminology, Structure and Concepts of the Belgacom copper Local Access Networks

10. A good understanding of the structure, terminology and concepts that Belgacom currently uses in its copper Local Networks may help the Beneficiary to develop its services based on ULL. A concise overview of the structure and elements used in the Belgacom Network is therefore given hereafter. Network information listings are published on the Belgacom secured website.
11. Belgium is divided in 594 Local Networks. As a rule the number of and boundaries of a Local Network are rigid and only exceptionally changed, e.g. to take into account changes in the physical structure of the environment; to correct anomalies; etc.
12. Each Local Network is served by a Local Exchange Building (LEX), which is the interconnection point of that Local Network to the Belgacom Backbone Network. Each LEX will include the Main Distribution Frame (MDF) of that Local Network, local loop line access equipment and transmission equipment for the connection to the Backbone Network.
13. To facilitate and optimise the management and development of a Local Network, following Concentration Points are used in the Belgacom Local Networks:
 - Local Distribution Centre (LDC): an active Concentration Point installed typically in a small (prefab) building, containing a distribution frame, local loop line equipment and transmission equipment for relay with the LEX, two types of LDC's can be distinguished: LDC's that do have copper pairs available from the LDC to the LEX and LDC's that do not have this.
 - Cross Connectable Street Cabinet (KVD – 'Kabelverdeler' or 'Borne'): A Concentration Point, containing a cross connect distribution frame. At the level of some KVD's active equipment, e.g. pair gain systems or line access equipment, may be installed.
14. The number of and area served by an LDC or KVD is flexible to allow an optimised development of the Local Network.
15. Above Concentration Points will divide the Local Network into following network levels:
 - Local junction: The copper cables between the LDC and LEX. These cables may be used:
 - To connect Users in or out of the serving area of an LDC to the LEX. These Users will be cross connected on the Distribution Frame of the LDC directly towards the LEX, i.e. without using (active) line equipment installed in the LDC.
(Remark: The number of Users, that can be directly connected to the LEX, will depend on the capacity of the local junction cable). In some cases, there is no facility to connect such users. Those LDC's are explicitly indicated by Belgacom.
 - As bearer of a transmission system to connect the LDC line equipment with the LEX.
 - Feeder Network: The copper 'feeder' cables between the LEX or LDC and the KVD.
 - Distribution network: The copper 'distribution' cables in the street, between the KVD or LDC and the Introduction Cable at User premises. The KVD or LDC is thus the connection point between the Feeder Network and the Distribution Network.

16. As there is no Concentration Point in the Belgacom network 'after' the KVD, the buildings of the Users are connected via an Introduction Cable², which is directly spliced on the distribution cables. This splice is referred to as Introduction Splice or Distribution Point.
17. The access line will be terminated at the User premises in the Network Termination Point (NTP). Inside a multi-tenant building it may use the so-called 'vertical cabling', i.e. the common cable network, which makes the distribution to the different apartments to reach the NTP in the relevant apartment.
18. Depending of the location of the User premises, his access line may be composed out of one or more of the above levels.
19. Occasionally active or passive equipment may be installed on some loops in the Local Networks, mainly:
 - Load coils
 - Pair gain systems
 - Repeaters

1.5 Practical information

20. Basic information and data regarding the Belgacom local network, relevant to ULL Services, are included in Annex J.
21. Further requests for information concerning the present Reference Offer for ULL can be made in writing by interested parties at the following Belgacom contact point. In particular, in the event of doubt as to the interpretation of the provisions of this Reference Offer, Belgacom should be contacted. In the event of doubt, contacting Belgacom is without prejudice to any clarification of the reference offer given by the BIPT.
22. In case of disagreement about the interpretation, one of the parties can request the institute for a decision on the specific case. This decision will be taken within a reasonable term and will take into account the legal framework and the valid advice. The possibility for the parties to present the institute a problem in interpretation, will not influence the legal means that remain at the parties' disposal in case of a conflict.

Belgacom
Wholesale & Carrier Services Business Unit
Boulevard du Roi Albert II, 27
1030 Brussels

tel.: 02-202 71 04
fax.: 02-202 84 83

23. The transmission by Belgacom of some type of information (e.g. the addresses of Belgacom buildings) is subject to the prior signing of a Non Disclosure Agreement (included in Annex J) by the requesting party. Furthermore, after prior approval by BIPT, a payment may be due for obtaining certain documents.
24. It is also a right for everyone who has signed a Non Disclosure Agreement to obtain information via a Belgacom website through a secured access. Information on how to access the mentioned website can be obtained at the Belgacom contact point mentioned above.

² In some (big) buildings the Distribution or Feeder Cable is directly introduced in the building, without Introduction Splice.

2 Technical Implementation of ULL Services

2.1 Raw Copper

2.1.1 Access to a Raw Copper Loop

2.1.1.1 Access to the existing Raw Copper Loops at LEX level

25. Beneficiaries have the right to gain access to an end-to-end Raw Copper Loop at Belgacom Local Exchange buildings (see list of Belgacom Local Exchange buildings in Annex J), on the condition that the requested copper pair is unequipped. A pair is equipped when load coils or Active Equipment (coupling, repeaters, correctors, etc.) are present in the relevant circuit/s. Belgacom will make an equipped pair unequipped when possible. In case that the equipped pair cannot be made unequipped, this will be proved to the Beneficiary. For the sake of clarity, pairs can not be made unequipped in case this equipment is dedicated to multiple users or in case this removal does impact in any possible way other services or Users. It is further required that the Raw Copper Loop exists and can be used without the need of severe network modification works, which have to be proved to the Beneficiary. In this respect, the small network adaptations performed by Belgacom are described in §2.1.1.4 as defined below.
26. The Beneficiary will have access to a Raw Copper Loop at the Belgacom Main Distribution Frame (MDF) on which the Raw Copper Loop is terminated. The access will be realised (see fig.1) by using dedicated Horizontal Blocks per Beneficiary (hereafter called "Blocks") on the MDF concerned. The Beneficiary's access to the Raw Copper Loop will be established by connecting Tie Cables, installed on Cable Trays, from the Beneficiary's dedicated Blocks at the MDF to the Beneficiary's Colocated equipment in case of Physical or Virtual Colocation, or by connecting Extended Tie Cabling to a Cross Connection Cabinet in the immediate vicinity of the Belgacom building, in case of Distant Colocation.
27. The installation and maintenance of the (Extended) Tie Cables and Blocks will be handled by Belgacom.
28. The Demarcation Point will be
 - in case of Physical or Virtual Colocation: the point on the Tie Cable just before it is connected to the colocated equipment of the Beneficiary.
 - in case of Distant Colocation: the Connectors in a Cross Connection Cabinet in the immediate vicinity of the Belgacom Local building.
29. The access to the Raw Copper Loop at the User site will be at the Belgacom Network Termination Point (NTP) as described in §2.1.3 below.
30. Except with respect to the Belgacom interventions for small network adaptations and subject to what is stated below, the installation of a Network Termination Point, where relevant, and the establishment of cross connections in the local access network between the Distribution Cable and the Feeder Cable are part of the provisioning and installation of a Raw Copper Loop under the present Reference Offer. If decided by the Beneficiary, part of the installation can be executed by a certified technician chosen by the Beneficiary.

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2.1.1.2 Access to Sub-loops at LDC level

31. Raw Copper Sub-loop at LDC level means a pair of fully metallic continuous unequipped copper wires on the section between Belgacom's Distribution Frame at the Belgacom Local Distribution Center (LDC) and the User's address connected on a Network Termination Point

if it is existing. The Raw Copper Sub-loop can be delivered on a Non-active Sub-loop or an Active Sub-loop.

32. Beneficiary has the right to gain access to an end-to-end Raw Copper Sub-loop in the Belgacom access network, on condition that the requested copper pair is unequipped. A pair is equipped when load coils or Active Equipment (coupling, repeaters, correctors, etc.) are present in the relevant circuit/s. Belgacom will make an equipped pair unequipped when possible. In case that the equipped pair cannot be made unequipped, this will be proved to the Beneficiary. It is further required that the Raw Copper Sub-loop exists and can be used without the need of severe network modification works, which have to be proved to the Beneficiary. In this respect, the small network adaptations performed by Belgacom are described in §2.1.1.4 as defined below.
33. The access to the Raw Copper Sub-loop at the Belgacom network side will be realized at the LDC on the Belgacom Distribution Frame by using dedicated Blocks per Beneficiary.
34. The Demarcation Point will be
- in case of LDC Building or Container Colocation: the point on the Tie Cable just before it is connected to the Beneficiary's equipment colocated equipment of the Beneficiary.
 - in case of LDC Cabinet Colocation: the Connectors in a Cross Connection Cabinet in the immediate vicinity of the Belgacom Local building.
 - in case of LDC Distant Colocation: the place where the Belgacom and Beneficiary cabling is joined together
35. Except with respect to the Belgacom interventions for small network adaptations and subject to what is stated below, the installation of a Network Termination Point, where relevant, and the establishment of cross connections in the local access network between the Distribution Cable and the Feeder Cable are part of the provisioning and installation of a Raw Copper Sub-loop under the present Reference Offer.
36. The Beneficiary has the right of access to the Sub-loop at LDC level. However he may ask for unbundling of the loop starting from the LEX, even if the user is (if it is an active loop) in Service from the LDC, except where no direct connection to the LEX from the LDC is possible, which has to be proved to the Beneficiary.

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2.1.1.3 Access to Sub-loops at Street Cabinet level

37. Access to Raw Copper Sub-loop at Street Cabinet Level means a pair of fully metallic continuous unequipped copper wires exists on the section between Connectors in the Belgacom Street Cabinet and the User's address connected on a Network Termination Point if it is existing. The raw copper Sub-loop can be delivered on a non-active Sub-loop or an active Sub-loop.
38. Beneficiary has the right to gain access to an end-to-end Raw Copper Sub-loop in the Belgacom access network, on condition that the requested copper pair is unequipped. A pair is equipped when load coils or Active Equipment (coupling, repeaters, correctors, etc.) are present in the relevant circuit/s. Belgacom will make an equipped pair unequipped when possible. It is further required that the Raw Copper Sub-loop exists and can be used without the need of severe network modification works, which have to be proved to the Beneficiary. In this respect, the small network adaptations performed by Belgacom are described in §2.1.1.4 as defined below.
39. The access to the Raw Copper Sub-loop at the Belgacom network side will be realized in the Street Cabinet by using dedicated Blocks per Beneficiary, if it is technically possible (the impossibility has to be proven to the Beneficiary) and provided that Belgacom and the Beneficiary have agreed on the specific terms and conditions of this Sub-loop access. Belgacom provides the BIPT a copy of the said agreement 5 working days after the finalization of the agreement with the Beneficiary. Without prejudice to the feasibility or non-feasibility, an

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access to a Raw Copper Sub-loop at the Street Cabinet level will always be subject to a dedicated study performed on a case by case basis.

40. The Demarcation Point will be the point where the Belgacom Cable (coming from the dedicated Beneficiary Blocks) and the Beneficiary's Cable are joined together.
41. Except with respect to the Belgacom interventions for small network adaptations and subject to what is stated below, the installation of a Network Termination Point, where relevant is part of the provisioning and installation of a Raw Copper Sub-loop at Street Cabinet Level under the present Reference Offer.
42. Specific pricing for access to the Sub-Loop at the Street Cabinet level will be determined on a case-by-case basis after preliminary approval of BIPT.

2.1.1.4 Small network adaptations

43. In some cases, the pair of fully metallic continuous unequipped copper wires exists from the Belgacom Main Distribution Frame at the Belgacom LEX, LDC or KVD up to the Distribution Cable in the street in front of the User premises.
44. In case no Introduction Cable is available for the provisioning of a Raw Copper Loop, the following solutions will be applicable:
 - Realization of a new introduction in the building of the Beneficiaries User
 - Renewal of the introduction in the building of the Beneficiaries User
 - Splicing additional pairs in the existing introduction splice of the building of the Beneficiaries User
 - Moving existing introduction from an existing Distribution Cable to another existing Distribution Cable.
45. These solutions will only be available upon specific request of the Beneficiary and providing that the Belgacom standard conditions for access are fulfilled. This requires that a free duct or an open trench is available on the private domain. If a free duct or an open trench is not available on the private domain, Belgacom can be asked to also perform this part of the work on condition that the Beneficiary agrees to pay the non-discriminatory commercial price for that part of the work performed by Belgacom. This price will be determined on a case by case basis.

46. The certified technicians will never perform Small Network Adaptations.

47. Belgacom will only perform the Small Network Adaptations if the splicing is done in front of the premises of that specific User. Belgacom will provide an Introduction Cable with a standard length of 20 meters to provide connection between the Distribution cable and the Network Termination Point. In case an introduction with a length of more than 20 meters has to be provided, Belgacom will charge the Beneficiary the relevant price for the extra work. On the private domain, duct and trench must be provided by the Beneficiary.

48. In case no more free pairs are available in the Distribution Cable or the Feeder Cable, the request for Raw Copper Loops will be rejected. The construction or trenching of new distribution cabling, new street cabinets or new feeder cabling is outside the scope of the present offer.

2.1.2 Types of Raw Copper Loops

49. The following types of Raw Copper Loops are offered under the present Reference Offer for ULL (for technical details concerning the nature of the signals to be used on each type of Raw Copper Loops, see the Technical Specifications Document that can be found in Annex C):

- **Raw Copper Loops of Type 1:** Basic Raw Copper Loop only to be used for the transmission of signals (including and starting from direct current) within the voice frequency band, being PSTN or Raw Copper Loop only to be used for the transmission of signals for which the binary rate is smaller or equal to 64 kbit/s or for the transmission of signals using ISDN basic access line code.
- **Raw Copper Loops of Type 2:** Raw Copper Loop to be used According to the rules of the technical specifications document (annex c). The Beneficiary can also use the Raw Copper Loop like Type 1, obviously.

50. In ordering, Beneficiary indicates the type of loop per qualification as described above. Belgacom will handle requests for Type 1 loops as PSTN and Type 2 loops as ADSL over PSTN with respect to matters of repair and the quality of service related to the repair requests. Belgacom will not bear any liability relating to the absence of qualification of the loop when the loop qualification (e.g. Type 1 PSTN, Type 1 ISDN, Type 2 ADSL, Type 2 SDSL) was not included with the repair request. If this qualification is different from the default documented qualification as above, Beneficiary is invited to specify the service residing on the loop if this is necessary to facilitate the repair process. Repair and maintenance occur with the preservation of the technical characteristics of the line, unless impossible. In the later case Belgacom will inform the Beneficiary of the reasons of this impossibility.
51. The use of a totally unbundled (Sub-)Loop is free, provided that the Beneficiary complies with the "Spectrum Management" rules. The "Spectrum Management" rules regarding Unbundled Loops are described in Annex C to the present Reference Offer. Rules for "Spectrum Management" can be proposed by the Task Force Spectrum Management or by BIPT and can be added to the Annex C of the present Reference Offer by decision of BIPT.
52. Depending on the type of equipment that is directly connected to the unbundled Local (Sub-)Loop, different rules for the bringing into service and for the service level can be applicable after preliminary approval of BIPT.
53. Other types of loops (loop type x, with x = 3,4,...) could be defined in the future by proposal of the Task Force Spectrum Management or BIPT, and added to the annex c of the present Reference Offer, by decision of the BIPT. No party (either Belgacom or a Beneficiary) is allowed to use other type of loops or another technology until this type or technology is added to the Annex C, unless exception allowed by BIPT.

2.1.3 Network Termination Point related to Raw Copper Loops or (Sub-)Loops

54. If documentation shows that no Network Termination Point is present on the Raw Copper Loop or (Sub-)Loop, such Network Termination Point will be installed will be installed by Belgacom, or – if decided by the Beneficiary – by a certified technician chosen by the Beneficiary. This intervention is referred to as Telecom Installation for Raw Copper. The process to define whether this type of intervention is required is described in the appendix A of this document: "NTP Process for Provide New Raw Copper orders". This is automatically the case for small network adaptations (see § 2.1.1.4. above), and the installation cost of the NTP is therefore included in the SNA fee. New internal cabling must always, except when specified otherwise, be provided by Belgacom, or under his responsibility, if existing internal cabling is insufficient in capacity of free pairs or of poor quality.
55. The attention is drawn to the fact that Belgacom reserves the right to propose to the BIPT on a non-discriminatory basis various scenarios to provide an adequate answer to the situation in which a cable (sometimes referred to as internal cabling) is placed between the Network Termination Point and the Introduction Cable. Such an answer is to be developed on a case-by-case basis and would need to take into account, in particular and where relevant, the presence of an introduction box, the way of introducing the loop in the building of the User, the specific status of the cabling, the nature of the building and/or the work to be accomplished to offer the service.

- | 56. The current way of working will be evaluated after the necessary experience has been obtained by all parties in the installation of raw copper loops and circuits. Belgacom will re-evaluate the offer and reserves the right to propose the necessary modifications on this item to BIPT for approval.

2.2 Shared Pair

2.2.1 Access to the Shared Pair Service

- | 57. Beneficiaries have the right to gain access to the Shared Pair Service at a Belgacom Local Exchange Building or at Belgacom Local Distribution Center.
- | 58. The Shared Pair Service requires that the User has a subscription for a single line PSTN or ISDN BA Belgacom service. Any modification or a cancellation of the single line PSTN or ISDN BA Belgacom service requested by the User, will affect the access to or the price of the Shared Pair Service by the Beneficiary. The specific procedures that are applicable in those circumstances are described in the Planning and Operations Document (Annex E).
- | 59. A Shared Pair Service can therefore only be offered on a single, non-loaded and active pair. No load coils or other active equipment can be present in the circuit.
- | 60. In case load coils or other active equipment are present in the circuit, Belgacom will provide a process for proceeding with a new pair choice if technically feasible, where infeasible has to be justified to the Beneficiary. For these services by Belgacom, the Beneficiary will be charged the related fee that will be included in "Annex H": Pricing.
- | 61. The Beneficiary will have access to the Shared Pair Service at the level of the Main Distribution Frame of the Local Exchange, or at the level of the Distribution Frame of the Local Distribution Center, where Belgacom will install and maintain the necessary splitters to split the high frequency that is delivered to the Beneficiary and the low frequency that is used by Belgacom.
- | 62. The access to the high bandwidth at the Belgacom Network side will be realized on the Belgacom Main Distribution Frame (MDF) or Distribution Frame by using dedicated Blocks per Beneficiary. From there, a pair of physical wires will be connected to the Splitter rack (Connection Cables). From the Splitter rack, connections will be made to the Colocation / Co-mingling Area of the Beneficiary or to the Cross Connection Cabinet in the immediate vicinity of the Belgacom building by use of Tie Cables or Extended Tie Cables. In addition, another pair of physical wires will be connected from the Splitter rack to the Blocks dedicated to the Beneficiary to connect the low frequency bandwidth to the Belgacom Blocks (see fig.3).
- | 63. The Demarcation Point will be
- in case of Physical or Virtual Colocation: the point on the Tie Cable just before it is connected to the collocated equipment of the Beneficiary.
 - in case of Distant Colocation: the Connectors in a Cross Connection Cabinet in the immediate vicinity of the Belgacom Local building.

2.2.2 Termination of the voice subscription with Shared Pair

- | 64. In case of a Shared Pair Service where both Belgacom and the Beneficiary provide services to an User, it can occur that the User cancels his voice subscription for that Shared Pair Loop. In that case, independent of the reason for termination of the voice subscription, Belgacom will ensure that the service on the high bandwidth remains into service.
- | 65. Belgacom will inform the Beneficiary that the Shared pair with Belgacom voice service has been converted to Raw Copper +, and vice versa. This change does not affect the Beneficiary,

except a change of rental fee. For the change to Raw Copper +, or to shared pair with voice, no conversion fee is applicable. The Beneficiary has, at any time, the possibility to ask for a conversion from its Raw Copper + to a Raw Copper, and this will free up a dedicated splitter. In this case a conversion fee is applicable.

- | 66. A change to Raw Copper is only possible if positions are free on dedicated horizontal Beneficiary blocks for Raw Copper.
- | 67. If the Beneficiary decides to convert the Raw Copper + Splitter into Raw Copper, Beneficiary is notified of the fact that an interruption of its service during a limited timeframe (defined in hours) will take place in order to do the re-jumpering.
- | 68. For the sake of clarity, this process can only take place if the necessary infrastructure is in place according to the Beneficiary request of pre-provisioning to do the re-jumpering.

2.2.3 Types of Shared Pair Service

- | 69. The following types of Shared Pair Services are offered under the present Reference Offer for ULL (for technical details concerning the nature of the signals to be used for each type of Shared Pair Service, see the relevant Technical Specifications document in Annex C):

SPP (Shared Pair Service over PSTN)	The high frequency part on the loop concerned is to be used by the Beneficiary to connect DSL equipment providing DSL service capable of co-existing on the same pair as voice-band services (DSL over PSTN).
SPI (Shared Pair Service over ISDN)	The high frequency part on the loop concerned is to be used by the Beneficiary to connect DSL equipment providing DSL service capable of co-existing on the same pair as ISDN Basic Access services (DSL over ISDN).

- | 70. The use of a Shared Pair is free, provided that the Beneficiary complies with the "Spectrum Management" rules described in the Annex C. Depending on the type of equipment that is directly connected to the unbundled Local (Sub-)Loop, different rules for the bringing into service and for the service level can be applicable.
- | 71. Beneficiary has to indicate on the order form the type of Shared Pair Service per qualification as described above.

2.2.4 Network Termination Point

- | 72. The access to the high bandwidth at the User site will be at the Belgacom Network Termination Point (NTP).
- | 73. For single line PSTN Service, the Beneficiary will install the equipment on the Belgacom Network Termination Point at the User site.
- | 74. For single line ISDN service, an intervention on the User site will be required in case the User site does not have an AETHRA NT1-2ab as Belgacom Network Termination Point. This intervention is justified for safety reasons. At the time of installation, this intervention will relate to the fact that, in these cases, a Splitter will be installed between the Belgacom Network and the Network Termination Point at the User site.

2.3 Spectrum Management and equipment aspects

- | 75. The rules mentioned in Annex C will apply. These rules may be modified or completed on basis of the proposals of the Task Group Spectrum Management or by decision of BIPT.

2.4 Beneficiary delivered Tie Cabling, Demarcation point and access to the MDF

- | 76. Notwithstanding what is mentioned above, the demarcation point in case of Beneficiary delivered Tie cabling will be the Beneficiary dedicated Blocks on the MDF in case of Raw Copper and the Splitter rack in case of Shared pair.
- | 77. In case of tie cabling delivered by the Beneficiary, the area where the Demarcation Point is situated (MDF area in case of Raw Copper or the area where the Splitter Rack is situated in case of Shared Pair) at the Belgacom Local Exchange or Local Distribution Center is in principle accessible to the Beneficiary for maintenance and test purposes. Beneficiary will have to justify the necessity of the planned maintenance and/or tests.
- | 78. Beneficiary will have to substantially indicate the purpose of this access (to be mentioned with the application for guided access).
- | 79. The access will be always with a security escort, at the expenses of the Beneficiary, and pursuant the conditions for guided access as described in the framework of co-mingling (physical colocation with escort access).

3 Ordering of Raw Copper Services

- 80.** Belgacom shall deliver access to Raw Copper (Sub-)Loops at the MDF according to the Beneficiary's orders transmitted to Belgacom in accordance with the rules set out in this Reference Offer.
- 81.** The Beneficiary will order the Tie Cables and Blocks prior to the request of Raw Copper (Sub-)Loops at a particular Belgacom Local Exchange building or LDC. If at a certain moment, no more free wires are available in the Tie Cables ordered by the Beneficiary or no more free space is available on the Blocks, the Raw Copper (Sub-)Loop Requests issued by the Beneficiary with respect to the Belgacom Local Exchange building concerned, will be rejected, since the provisioning of these Raw Copper (Sub-)Loops cannot be implemented.

3.1 Ordering of Raw Copper (Sub-)Loops

3.1.1 Type 1 and Type 2 Raw Copper orders and related orders

The Beneficiary can obtain the following Standard Raw Copper Services:

<i>Service in respect of Raw Copper</i>	<i>Description</i>	<i>Fee</i>
1. <i>Inquiry</i>	<i>Examination of whether a Raw Copper (Sub-)Loop can be provided end to end</i>	<i>Inquiry fee</i>
2. <i>Request for a Raw Copper (Sub-)Loop</i>	<i>Physical cross connection of the Raw Copper (Sub-)Loop to the Beneficiary's Tie Cable at the Main Distribution Frame of the Belgacom Local Exchange, as well as - if necessary - related work at the User's site</i>	<i>Activation fee</i>
3. <i>Cancellation of a Request for a Raw Copper (Sub-)Loop</i>	<i>Orders that have been placed by the Beneficiary but that are cancelled prior to implementation</i>	<i>Cancellation fee</i>
4. <i>Installation of an NTP if necessary</i>	<i>Belgacom installs a Network Termination Point at the User's premises side</i>	<i>Telecom installation fee, invoiced on top of the activation fee</i>
5. <i>Deactivation of a Raw Copper (Sub-)Loop</i>	<i>Belgacom disconnects the related copper wires from the Beneficiary's dedicated Blocks</i>	<i>Deactivation fee</i>
6. <i>Change date</i>	<i>The Beneficiary requests a change in due date for the provisioning of a Raw Copper loop</i>	<i>Change date fee</i>
7. <i>Transfer³</i>	<i>Transfer of a Raw Copper (Sub-)Loop from Beneficiary 1 to Beneficiary 2</i>	<i>Physical migration fee, billed to Beneficiary 2</i>

Further comments:

(1) Inquiry

³ See chapter 9: Migrations

| **82.** The purpose of an inquiry is to investigate the availability of an end-to-end Raw Copper (Sub-) Loop at a particular User site. For Type 2 loops, Belgacom will additionally perform a pair selection test to verify that the service can coexist with the surrounding pairs. An inquiry gives only the status of a Raw Copper (Sub-)Loop in relation to a specific User at one specific moment in time. Belgacom guarantees the accuracy of the information provided at the moment of the inquiry, without prejudice to any subsequent change in the technical situation.

(2) Request for a Raw Copper (Sub-)Loop:

| **83.** There are three possible situations, depending on the impact of the provision of Raw Copper (Sub-)Loops to the Beneficiary on the contractual relation between the User and Belgacom:

- The Raw Copper (Sub-)Loop Request concerns a (Non)-active (Sub-)Loop and therefore does not affect the existing relation between Belgacom and the User. This is only possible if there is a (Non)-active (Sub-)Loop available at the User's premises.
- The Raw Copper (Sub-)Loop Request concerns an Active (Sub-)Loop and therefore affects the existing relation between Belgacom and the User. This Request is also called a *Migration*.
- The Raw Copper (Sub-)loop Request implies a small network adaptation (see 2.1.1.4).

Inquiry

| **84.** In case the Beneficiary places a firm order for a Type 1 Raw Copper (Sub-)Loop as defined above, Belgacom will carry out an inquiry to determine whether a (Non)-active (Sub) Loop exists between the User and the Belgacom Local Exchange (as indicated by the Beneficiary). For the firm order of a Type 2 Raw Copper (Sub-)Loop as defined above, Belgacom will perform additionally a pair selection test to verify whether the service, as indicated by the Beneficiary, can coexist with the surrounding pairs.

Rejection for technical reasons

| **85.** In case the order cannot be implemented because of technical reasons, which has to be detailed and proved in written form to the Beneficiary, the Beneficiary's Request will be rejected. In this case, the Beneficiary will be billed for the work done by Belgacom on validation of that order. If the firm order can be implemented, Belgacom will proceed with the implementation of that order according to the applicable process, which can be obtained at the Belgacom contact point mentioned above. Belgacom will publish a list of the said technical reasons and will keep this list up to date.

NTP

| **86.** Belgacom will install an NTP, as termination point on the Raw Copper (Sub-)Loop, if such an NTP is not existing (see 2.1.3).

In case of Migration

| **87.** In the case of a Migration, the User has the right to cancel an existing service that is currently made available to the User by Belgacom according to his contractual relationship with Belgacom to permit the activation by the Beneficiary of a new raw copper service (conversion of shared pair to raw copper is defined in Sec 2.2.2 above).. The services that can be terminated are the following: a single line PSTN service, a single line ISDN service or any other service (including a leased line or half links). In case the Raw Copper (Sub-)Loop between the User and Belgacom exists less than one year, the User may be billed by Belgacom an extra charge for the Migration of that specific loop. Reference is made to the migrations Annex K of this offer.

In case of Number Portability

| **88.** In case of a request for Migration from simple PSTN or ISDN to Raw Copper, the Beneficiary has also the possibility to request Belgacom to provide the porting of the User numbers in case the User formerly had a single line PSTN or ISDN service with Belgacom. In this case, there is an interaction with the Number Portability (NP) process, for which the Beneficiary will need to comply with the relevant procedures. The Beneficiary needs to introduce first an order for NP and later one for Raw Copper. In ordering Raw Copper, the Beneficiary Requested Date that is always provided by Beneficiary, need to match the requested execution date for Number Portability. Beneficiary will respect the rules for a Migration of Raw Copper and the procedures for number portability. In case there is a number portability request, the Beneficiary will indicate the numbers currently used by the User, which have to be ported to the Beneficiary on the Raw Copper (Sub-)Loop concerned.

| **89.** In case NP is involved in the Migration from simple PSTN or ISDN to Raw Copper, the Beneficiary will indicate that on the request form. If the User has a single line PSTN service with Belgacom, the Beneficiary is required to use the existing NTP that will not be removed by Belgacom. If the User has a single line ISDN service with Belgacom, the existing NTP will be removed by Belgacom and replaced with a TF2001 or other device. These rules are not applicable in case the NTP is a cross-connectable distribution box where multiple pairs are connectable for that User.

In case of Small Network Adaptations

| **90.** With every request for a Raw Copper loop, Beneficiary has the possibility to indicate whether executions of small network adaptations are allowed if required. If small network adaptations are needed to provide the requested service and Beneficiary included its approval in the request, small network adaptations will be executed automatically. If the Beneficiary's approval is not included, the request will be put on hold, with information given to Beneficiary about the effective need, and with a delay of ten working days given to the Beneficiary to confirm its order, and notify by that its acceptance of the needed Small Network Adaptations.

| **91.** Belgacom will charge the Beneficiary the relevant fees for this specific Network Adaptations, according to the different elements set out in "Annex H: Price List" after having given to the Beneficiary the proof of the effective need and execution (with number of pairs introduced) of the Small Network Adaptations. This has to be done in written form. If no proof is given, the relevant fees are not due by the Beneficiary. Only the number of pairs related to the request are due, on a proportional base.

(3) Cancellation of a Request for a Raw Copper (Sub-)Loop

| **92.** The Beneficiary has the right to cancel an order that the Beneficiary has submitted to Belgacom for the implementation of a Raw Copper (Sub-)Loop. However, Belgacom will bill the Beneficiary for the work done in the process.

(4) Installation of an NTP if necessary

| **93.** The circumstances under which an NTP is to be installed by Belgacom are described in point 2.1.3.

(5) Deactivation of a Raw Copper (Sub-)Loop

| **94.** The Beneficiary can request the Deactivation of the Raw Copper (Sub-)Loop at a particular User site.

(6) Changed Use of a Raw Copper (Sub-)Loop

| 95. When the Beneficiary intends to use the Raw Copper (Sub-)Loop for other purposes than intended at the time of the first order, the Beneficiary will communicate the change of types to Belgacom (from Type 1 to Type 2 or vice versa). Belgacom then can take the necessary measurements for the changed use of that Raw Copper (Sub-)Loop. In addition, Belgacom reserves the right to reject the request of changed use for technical reasons in case the Raw Copper (Sub-)Loop cannot be provisioned in accordance with the request for changed use of the Beneficiary.

(7) Change Date

| 96. The Beneficiary will indicate on the order form the date at which the Beneficiary wishes Belgacom to provide the Raw Copper (Sub-)Loop (referred to as "Requested Installation Date" or "RID"). The Beneficiary has the right to change that date. In the latter case, the Beneficiary will be billed a Change Date fee.

(8) Transfer

| 97. When there is a transfer from Raw Copper Loops from Beneficiary 1 to Beneficiary 2, It is presumed that two Beneficiaries, according to agreement with the User, handle the removal of the User's services and co-ordinate the hand over of the Raw Copper.

| 98. It is acknowledged that Belgacom will transfer the Raw Copper Loop from Beneficiary 1 to Beneficiary 2 upon request of Beneficiary 2 solely. Belgacom will terminate the contract for that specific Raw Copper Loop by informing Beneficiary 1 of the request from Beneficiary 2, without revealing the identity of Beneficiary 2.

| 99. Belgacom handles the request of the Beneficiary 2, taking over the Raw Copper. Belgacom does not in any case handle complaints between Beneficiary 1 and Beneficiary 2.

| 100. The above services (listed under (1) to (8)) are settled according to the prices indicated in Annex H. For the installation fee, different price setting can apply to different types of Raw Copper (Sub-)Loops and different types of installations based on the work performed by Belgacom after approval by BIPT.

3.1.2 Rejection of Requests for Raw Copper

| 101. Belgacom will reject a Request for Raw Copper Loop, in particular:

- if no (Non)-active Loops are available (in case of a Request for a (Non)-active Loop); without prejudice of the right of the Beneficiary to request in that case a small network adaptation by Belgacom, according to the conditions as set out in Section 2.1.1.4.
- if no Migration is possible due to technical constraints which must be detailed and proved to the Beneficiary in the implementation of the existing User connection;
- if no loop, compatible with the applicable pair selection rules as defined in annex C: Technical Specifications document, is available;
- if no positions and/or pairs are available on the Type 1 or Type 2 Beneficiary Blocks, Tie Cables and/or Connectors or Extended Tie Cables, depending on the type of colocation.

When a reject is given, all known reasons of this reject are given to the Beneficiary (also valid for XML).

| 102. In case a Migration⁴ cannot be executed, the Beneficiary Request will be rejected. However, in that case the Beneficiary has the possibility to send to Belgacom a Non-active Loop Request. In the event that the latter Request can also not be executed, this Request will also be rejected.

⁴ See chapter 9: Migrations

3.2 Ordering of equipment for pre-provisioning

3.2.1 Blocks, Tie Cabling and Cable Tray

3.2.1.1 Blocks, Tie Cabling and Cable Tray delivered by Belgacom

- | 103. The equipment that can be ordered by the Beneficiary is described in the relevant service descriptions in Annex B, which contain the standard and non-standard ordering increments.
- | 104. The prices for the Blocks and the Tie Cables are mentioned in Annex H.
- | 105. The Beneficiary will be responsible for all planning and dimensioning of the Blocks and Tie Cables and for the assignment of the positions on the Blocks.
- | 106. The Beneficiary can order its dedicated Blocks through a firm order that is to be placed in accordance with the rules set out below. A firm order contains the requested number of Blocks, per type of Blocks and this for each Local Exchange. For every Block ordered, the associated number and type of Tie Cables and Cable Tray usage is automatically included. The Beneficiary indicates in its firm order the date at which it wants the Blocks and associated Tie Cabling to be available. This date will be at least 15 days later than the date of the notification of the firm order concerned in case the Beneficiary submitted a forecast, subject to the condition that cable trays are present and sufficient place is available on the MDF. If the Beneficiary concerned did not submit a forecast, the delivery date will be 25 days later than the date of the notification of the firm order. In all other cases which must be proved to the Beneficiary, special construction works will be needed and the Beneficiary will need to take into account an delivery time of maximum 40 working days. Belgacom will confirm the receipt of every firm order immediately and inform the Beneficiary immediately when the installation of the Blocks and Tie Cabling is completed.
- | 107. In the cases of Distant Colocation, the Tie cables will be ordered as Extended Tie cables. The Beneficiary will order additionally Connectors according the terms and conditions of the relevant services descriptions in Annex B.

3.2.1.2 Tie Cabling delivered by Beneficiary

- | 108. For each firm order, the Beneficiary can indicate to provide Belgacom with Tie Cabling himself. The terms and conditions, including the pricing in case the Beneficiary delivers the Tie Cabling can be found in the Annexes B and H. In each individual site, all Tie Cabling of a Beneficiary has to be under the same provisioning regime.

3.2.2 Billing and Accounting in ordering Blocks, associated Cables, Cable Trays

- | 109. For Blocks, associated Cables and Cable Trays, the Beneficiary will be requested to pay an upfront fee with the ordering of the equipment and the remaining part of the related cost after the delivery of this equipment. Belgacom will include the detailed conditions in the Pricing Annex for BRUO. In the meantime, all orders submitted will be handled in line with the present conditions determined in Pricing and Billing and Accounting Annexes.

4 Conditions with respect to Raw Copper Services

110. The Beneficiary is only allowed to use the indicated type of Raw Copper (Sub-Loop) for the purpose described in §2.1.2.

Deleted: 2.1.2

111. All equipment used by the Beneficiary will comply with the R&TTE Directive.

112. For the sake of clarity, it is noted that Belgacom will not undertake customer care handling of Users of the Beneficiary. If Belgacom receives requests from Users of the Beneficiary due to the inadequate handling of such requests by the Beneficiary, Belgacom will not deal with them.

5 The ordering of Shared Pair Services

113. Belgacom shall deliver access to the high bandwidth according to Beneficiary's orders transmitted to Belgacom in accordance with the rules set out in this Reference Offer.

114. The Beneficiary will order the Tie Cables, the Connection Cables and the Blocks prior to the request of Shared Pair Service at a particular Belgacom Local Exchange Building. If at a certain moment, no more free positions on blocks or in the cabling are available, the Shared Pair Service ordered by the Beneficiary with respect to the Belgacom LEX, LDC or KVD (currently not applicable - feasibility subject to case by case study) concerned, will be rejected, since the provisioning of the Shared Pair Service cannot be implemented.

5.1 Ordering of Shared Pair Services

5.1.1 Standard Shared Pair Services and related orders

The Beneficiary can obtain the following standard Shared Pair Services:

<i>Service</i>	<i>Contents</i>	<i>Fee</i>
1. <i>Inquiry</i>	<i>Examination whether Shared Pair Service can be provided</i>	<i>Inquiry Fee</i>
2. <i>Request for Shared Pair Service</i>	<i>Physical connection of Tie Cables and Connection Cables to Colocation / Co-mingling Area and Splitter Rack</i>	<i>Activation fee</i>
3. <i>Cancellation of Requests</i>	<i>Orders that have been placed by the Beneficiary but that are cancelled prior to implementation</i>	<i>Cancellation fee</i>
4. <i>Deactivation of Shared Pair Service</i>	<i>Belgacom disconnects the Shared Pair Service from the Beneficiary dedicated Blocks</i>	<i>Deactivation fee</i>
5. <i>Change Date</i>	<i>The Beneficiary requests a change in due date for the provisioning of the Shared Pair Service</i>	<i>Change date fee</i>
6. <i>NTP Intervention</i>	<i>If Belgacom needs to intervene at User site for the installation of a full-rate splitter</i>	<i>Telecom Installation fee, invoiced on top of the Activation fee</i>
7. <i>Transfer</i>	<i>Transfer of a Shared Pair Service from Beneficiary 1 or Belgacom to Beneficiary 2</i>	<i>Physical migration fee, billed to Beneficiary 2</i>

Further comments:

(1) Inquiry

- | **115.** The purpose of an Inquiry is to investigate the availability of the Shared Pair Service at a particular User site. This inquiry consists of verifying whether an existing end to end single line PSTN or ISDN Belgacom service is available and of carrying out a pair selection test to verify that the Shared Pair Service, as indicated by the Beneficiary, can coexist with the surrounding pairs. An inquiry gives only the status of the User line at one specific moment in time. Belgacom guarantees the accuracy of the information provided at the moment of the inquiry, without prejudice to any subsequent change in the technical situation.

(2) Request for Shared Pair Service

- | **116.** The Beneficiary will indicate on his order form the date the Beneficiary wishes Belgacom to provision the Shared Pair Service.

Inquiry

- | **117.** When the Beneficiary places a firm order for the Shared Pair Service, Belgacom will also carry out a check whether the current existing single line ISDN or PSTN service is capable of supporting the high bandwidth signal requested by the Beneficiary. Belgacom will perform additionally a pair selection test to verify that the service, as ordered by the Beneficiary, can coexist with the surrounding pairs.

Rejection for Technical Reasons

- | **118.** In case the order cannot be implemented because of reasons, which has to be detailed and proved in written form to the Beneficiary, the Beneficiary's Request will be rejected. If the Request for Shared Pair Service can be implemented, Belgacom will proceed with the implementation of that firm order. Belgacom will publish a list of the said technical reasons and will keep this up to date.

Regarding the new pair selection

- | **119.** In case the order can not be implemented on the ISDN BA or PSTN service due to the presence of load coils or other active equipment on the existing single pairs, Belgacom will inform the Beneficiary of this fact according to the process described in "Annex E: Planning and Operations manual"
- | **120.** When the Beneficiary does not cancel his Request at that time (due date-1, 12PM), the Request for the Shared Pair Service will, if technically possible, be implemented over another pair, and the Beneficiary will be billed for the implementation of the Shared Pair Service according to the different elements as set out in "Annex H: Price List". If the implementation over another pair is technically not possible, the Beneficiary will receive a reject for the Request for the Shared Pair Service, according to the process described in "Annex E: Planning and Operations manual".
- | **121.** Belgacom will inform the Beneficiary in good faith, as soon as possible, of possible modifications of the current ordering procedures by means of an Appendix to "Annex E: Planning and Operations Manual".

(3) Cancellation of orders

- | **122.** The Beneficiary has the right to cancel an order that it has submitted to Belgacom for the implementation of a Shared Pair Service. However, Belgacom will bill the Beneficiary for the work done in the process.

(4) Deactivation of Shared Pair Service

| 123. The Beneficiary can request the Deactivation of the Shared Pair Service at a particular User site.

(5) Change Date

| 124. The Beneficiary has the right to change the date it indicated at the time of transmitting the Request for the Shared Pair Service. In such a case, the Beneficiary will be billed a change date fee.

(6) NTP Intervention

| 125. The circumstances under which an NTP intervention will take place are described above (point 2.1.3).

| 126. The above services (listed under (1) to (7)) are settled according to the prices indicated in Annex H. For the installation fee, different price setting can apply to different types of installations based on the work performed by Belgacom.

5.1.2 Reject of Requests for Shared Pair Services

| 127. In case the request for implementation of Shared Pair Service can not be executed, Beneficiary request will be rejected.

| 128. Belgacom will reject the requests if:

| 129. No single line PSTN or ISDN BA Belgacom Service is provided to the User concerned;

| 130. The line is incompatible with the Belgacom pair selection rules.

| 131. Belgacom will also reject requests if no positions and/or pairs are available on the Beneficiary Blocks, (Extended) Tie Cables and Connection Cables

| 132. Belgacom also will reject the requests if a new pair selection choice is reasonably and/or technically not possible over the existing infrastructure which must be detailed and proved in written form to the Beneficiary.

| 133. Belgacom further reserves the right to reject requests for implementation of a Shared Pair Service for a Beneficiary based on wrong format data. The rejection list can be found in “Annex E: Planning and Operations manual”. When a reject is given, all reasons of this reject are given to the Beneficiary (also valid for XML).

5.2 Ordering Blocks, associated Cables, Cable Trays and Splitters

5.2.1 Blocks, associated Cables, Cable Trays and Splitter

5.2.1.1 Blocks, associated Cables, Cable Trays and Splitters delivered by Belgacom

- | 134. The increments of Blocks, Cables and Splitters are to be ordered by the Beneficiary and will be installed by Belgacom according the terms and conditions of the relevant services descriptions in Annex B.
- | 135. The Beneficiary will be responsible for all planning and dimensioning of the Blocks, Tie Cables, Connection Cables and Splitters, and for the assignment of the positions on the Blocks. The Beneficiary can order the indicated equipment through a firm order. A firm order contains the requested number of Blocks and Splitters for each Local Exchange. For every Block ordered, the associated number and type of Tie Cables, Connection Cables and Cable Tray usage is automatically included. The Beneficiary indicates in its firm order the date at which it wants the Blocks, associated Cables and Splitters to be available. This date will be at least 15 days later than the date of the notification of the firm order concerned in case the Beneficiary submitted a forecast, subject to the condition that cable trays are present and sufficient place is available on the MDF. If the Beneficiary concerned did not submit a forecast, the delivery date will be 25 days. In all other cases which must be proved to the Beneficiary, special construction works will be needed and the Beneficiary will need to take into account a delivery time of maximum 40 working days. Belgacom will confirm the receipt of every firm order and inform the Beneficiary when the installation of the Blocks, the associated Cables and Splitters is completed.
- | 136. In respect of the Splitters, it is to be noted that the Splitters have to be defined per number of 24 Splitters as being Splitters for PSTN lines or Splitters for ISDN lines.

5.2.1.2 Tie Cabling delivered by Beneficiary

- | 137. For each firm order, the Beneficiary can indicate to provide Belgacom with Tie Cabling himself. The terms and conditions, including the pricing in case the Beneficiary delivers the Tie Cabling can be found in the Annexes B and H. In a particular site, all Tie cabling of a Beneficiary has to be under the same provisioning regime.

5.2.2 Billing and Accounting in ordering Blocks, associated Cables, Cable Trays and Splitter

- | 138. For Blocks, associated Cables, Cable Trays and Splitters, the Beneficiary will be requested to pay an upfront fee with the ordering of the equipment and the remaining part of the related cost after the delivery of this equipment. After discussion with and approval by BIPT, Belgacom will include the detailed conditions in the Billing and Accounting Annex for BRUO. In the meantime, all orders submitted will be handled in line with the present conditions determined in Billing and Accounting.

6 Conditions with respect to Shared Pair Services

- | 139. The Beneficiary is only allowed to use the indicated type of Shared Pair service for the purpose described in §2.2.3.
- | 140. All equipment used by the Beneficiary will comply with the R&TTE Directive.
- | 141. For the sake of clarity, it is noted that Belgacom will not undertake customer care handling of Users of the Beneficiary. If Belgacom receives requests from Users of the Beneficiary due to the inadequate handling of such requests by the Beneficiary, Belgacom will not deal with them. If these Users are using the PSTN / ISDN Belgacom Service, under a contractual relationship with Belgacom, requests about that service will be handled by Belgacom.

7 Usage of a unique reference for migrations of without PSTN or ISDN Belgacom services

- | 142. In scope of migration requests that a Beneficiary sends to take over a BRUO/BROBA service “without PSTN or ISDN Belgacom services” from another Beneficiary, there will be an issue in the identification of the copper pair on addresses with for example more than one pair in service.
- | 143. For a migration request from a BROBA/BRUO without PSTN or ISDN Belgacom service, the Beneficiary may include the circuit ID of the service communicated to the prior Beneficiary as identification of the service to be migrated.
- | 144. The circuit ID that has been communicated by Belgacom at the provisioning of a new BRUO/BROBA service is a unique reference that will identify both the service and the copper pair.
- | 145. The service provider, be it Belgacom or the Beneficiary will communicate for all without Belgacom PSTN/ISDN services the circuit ID provided by Belgacom to the User. This should be done by including this reference on the bills and contracts that is sent to the End User for the service based on BRUO/BROBA. By that, in case of migration, the circuit ID can be exchanged between a Beneficiary and the End User, just like is done today with the dial number. As a consequence the Circuit ID can be included systematically in the migration orders and this will avoid further problems in this case.
- | 146. As soon as Belgacom deploys without voice xDSL services, Belgacom will indicate what reference on the End User bill can be used by the Beneficiaries to include in the migration order for BRUO/BROBA services on that pair.
- | 147. The identification to use for migrations from retail xDSL without voice services (covered in Annex K) will be communicated by Belgacom.

8 Operation of ULL Services

- | 148. The Beneficiary is given access to Belgacom OSS for the ordering of ULL Services / Installation and repair. Information concerning the way to access Belgacom OSS is included in Annex F. In case of failure of the XML application, a back-up procedure will be applicable according to the terms and conditions as described in Appendix G of the Annex E.
- | 149. In this respect the Beneficiary will be charged for the access to the OSS and the information retrievals itself according to the principles as set out in Annex H.
- | 150. The rules to be followed when planning and ordering ULL Services are described in Annex E. The quality targets pursued by Belgacom in the provisioning of ULL Services and the

conditions needed to achieve these quality targets are described in a Service Level Agreement (SLA) to be concluded between Belgacom and the Beneficiary. Reference is made to Annexes G (SLA's).

9 Colocation Services

- | 151. Belgacom offers the following types of Colocation Services at Belgacom Local Exchange buildings: Physical Colocation, Distant Colocation, Co-mingling and Virtual Colocation. Depending on the specific situation, Belgacom offers either one or all types of Colocation Services.
- | 152. Virtual Colocation is only offered on a project bases in case neither Physical Colocation, neither Distant Colocation, is possible. Both process and implementation will be done on a case by case basis. Virtual Colocation implies that the equipment to be colocated is purchased by the Beneficiary from the same vendor as the one from which Belgacom purchases a similar type of equipment for a similar use within Belgacom. The equipment to be colocated will be installed by Belgacom or by staff working under Belgacom's responsibility. The Beneficiary will also make available to Belgacom the spare parts, test equipment and the documentation needed to allow Belgacom staff to perform the requested maintenance activities.
- | 153. As far as Physical colocation (with separate room or co-mingling) is concerned, the Beneficiary may receive access to the Belgacom premises in two different ways: by badge access (Physical co-location with separate room) or by escorted access (physical co-location under the form of co-mingling). The choice is his.
- | 154. Belgacom offers the following types of Colocation Services at Belgacom Local Distribution Centers: LDC Building Colocation, LDC Container Colocation, LDC Cabinet Colocation and LDC Distant Colocation. Depending on the specific situation, which has to be proved to the Beneficiary, Belgacom offers either one or all types of Colocation Services. The relevant types of colocation are described in the relevant Colocation Agreements included in Annex I 4.

10 Migration

- | 155. Reference is made to Annex B3

11 Pricing and Billing of Belgacom ULL Services

- | 156. The pricing of ULL services covered by the present Reference Offer for ULL can be found in Annex H. Information concerning Billing and Accounting for ULL Services is included in Annex D.

12 Evolution of the ULL offer

- | 157. As most of the European beneficiaries, Belgacom is in the process of adapting and upgrading its telecommunication infrastructure. In particular, Belgacom will implement where necessary

the modifications resulting from the evolution of international standards (ITU-T and ETSI). This may have an impact on the ULL Services offered. Belgacom will inform 12 months in advance the Beneficiaries about the changes in its infrastructure that have an effect on the ULL Services Belgacom offers. Before any change, the approval of the BIPT will have to be obtained, and amendments, if any, to Annex C “Technical Specifications, relating to Spectrum Management” have to be published with a prior approval from the BIPT. Belgacom may start the said delay of 12 months only after obtaining this approval and after publishing on its website the said changes in its infrastructure.

158. At the same time Belgacom is in the process of reducing the number of exchanges switching equipment which are operated in its Network. Consequently, certain Belgacom Local Exchange Buildings in which ULL Services are offered may cease to be operational in the future.

159. Belgacom has the right to close a Local Exchange Building and stop the provision of LLU services at that locality. The closing process will respect following rules:

158.1. Belgacom will notify BIPT and the Beneficiaries of the closure of the Local Exchange Building. The Local Exchange Building will in any case be open for a period of minimum 5 years after the announcement of the closure to BIPT and Beneficiaries.

158.2. When no ULL Services are provided in the building, the Local Exchange Building will in any case be open for a period of minimum 1 year after the announcement of the closure to BIPT. During this transition period of 1 year, no new demand for colocation will be accepted by Belgacom.

158.3. If Belgacom wants to close the Local Exchange Building before the end of the 5 years period foreseen in point 158.1., an alternative agreement in good faith discussion will be concluded with the concerned Beneficiaries.

Annexes to the Reference offer

| 160. The following annexes have been attached to the present Reference Offer:

Annex A NIHIL (Has been replaced by General Terms and Conditions)

Annex B Service Descriptions

Annex B1.1: Service Descriptions 2010 – Belgacom access to the Raw Copper loop – Existing single pair & Small Network Adaptations

Annex B1.2: Service Descriptions 2030 – Belgacom access to the Raw Copper loop – Connection to the colocation area – Physical colocation

Annex B1.3: Service Descriptions 2035 – Belgacom access to the Raw Copper loop – Connection to the colocation area – Distant colocation

Annex B1.4: Service Descriptions 2040 – Belgacom access to the Raw Copper Services – Delivering of Tie Cable by Beneficiary

Annex B1.5: Service Descriptions 2015 - Belgacom access to the Raw Copper Services - At Local Distribution Centers

Annex B1.6: Service Descriptions 2045 - Connection to the collocation - Local Distribution Center (LDC)

Annex B1.7: Service Descriptions 2050 - Connection to the collocation - Street Cabinet (KVD)

Annex B1.8: Service Descriptions 2011 – Belgacom access to the Raw Copper Loop Multiple Pairs and Multiple Single Pair Orders

Annex B2.1: Service Descriptions 3010 – Belgacom access to the Shared Pair Service

Annex B2.2: Service Descriptions 3030 – Belgacom access to the Shared Pair Service Connection to the colocation area – Physical colocation

Annex B2.3: Service Descriptions 3035 – Belgacom access to the Shared Pair Service - Connection to the colocation area – Distant colocation

Annex B2.4: Service Descriptions 3040 - Belgacom access to the Shared Pair Service – Delivering of Tie Cable by Beneficiary

Annex B2.5: Service Descriptions 3015 - Belgacom access to the Shared Pair Service – At the Local Distribution Centers

Annex B2.6: Service Descriptions 3045 - Connection to the colocation - Local Distribution Center (LDC)

Annex C Technical Specifications

Annex D Billing and Accounting Document

Annex D1: Billing and Accounting document Raw Copper

Annex D2: Billing and Accounting document Shared Pair

Annex D3: Prepayment Terms and Conditions

Annex E Planning & Operations

Annex E1: Planning and Operations Raw Copper

Annex E2: Planning and Operations Shared Pair

Annex F Operational Software Systems (OSS)

Annex G Service Level Agreement (SLA)

Annex G1 Service Level Agreement Raw Copper and Shared Pair

Annex G2 Improved Service Level Agreement Repair

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Annex G3 Improved Service Level Agreement Provisioning

Deleted: Raw Copper and Shared Pair

Annex H Price Lists

Annex H: Price List

Annex I Colocation Agreement

Annex I1 Physical Colocation

Annex I2 Distant Colocation

Annex I3 Co-mingling

Annex I4 LDC Colocation

Annex I5 Powering and HVAC for all types of colocation

Annex J: Initial Information to the Beneficiaries

Annex K: Migrations for BRUO and BROBA

Appendix A: NTP process for provide new Raw Copper orders

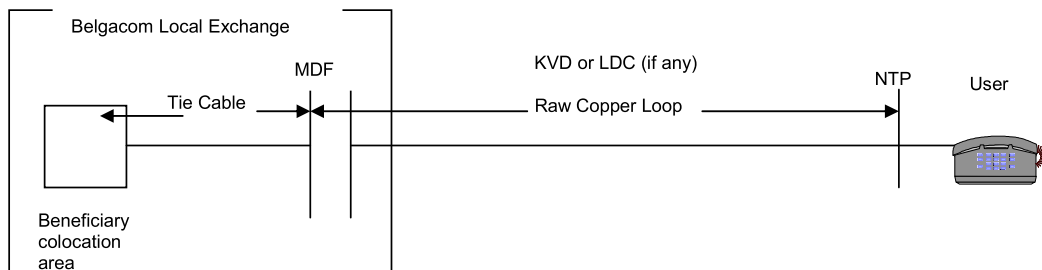


Fig. 1 Access to a Raw Copper (Sub-)Loop

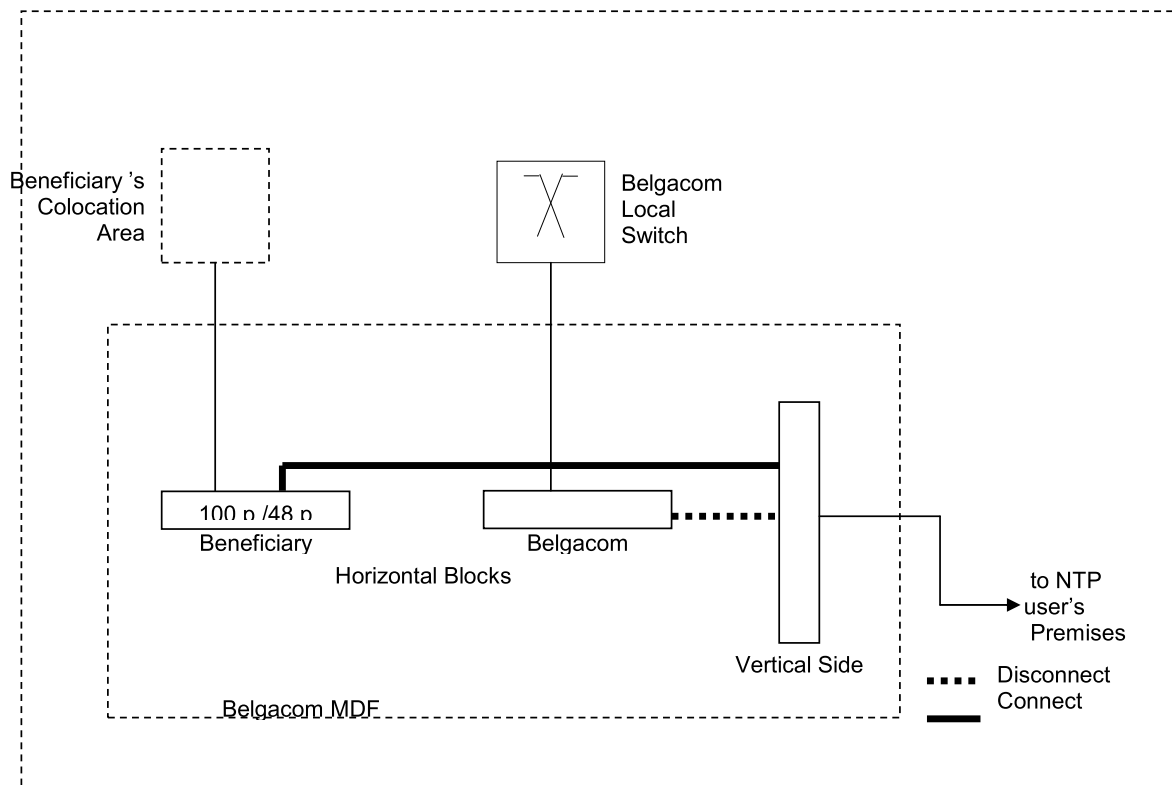


Fig. 2 Example of access to the physical colocation at Belgacom MDF

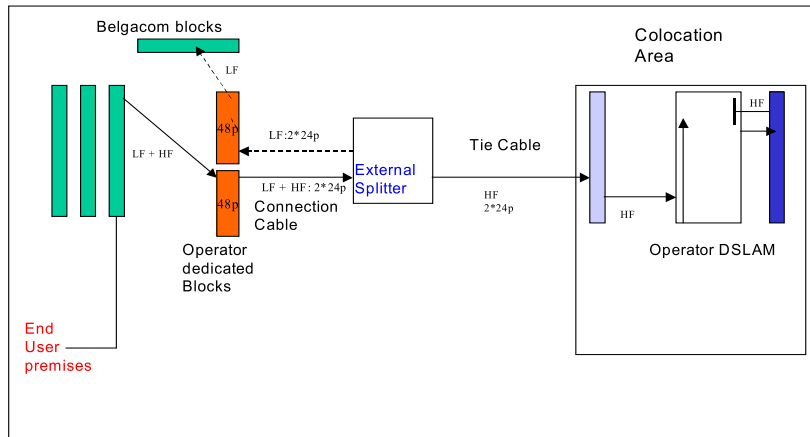
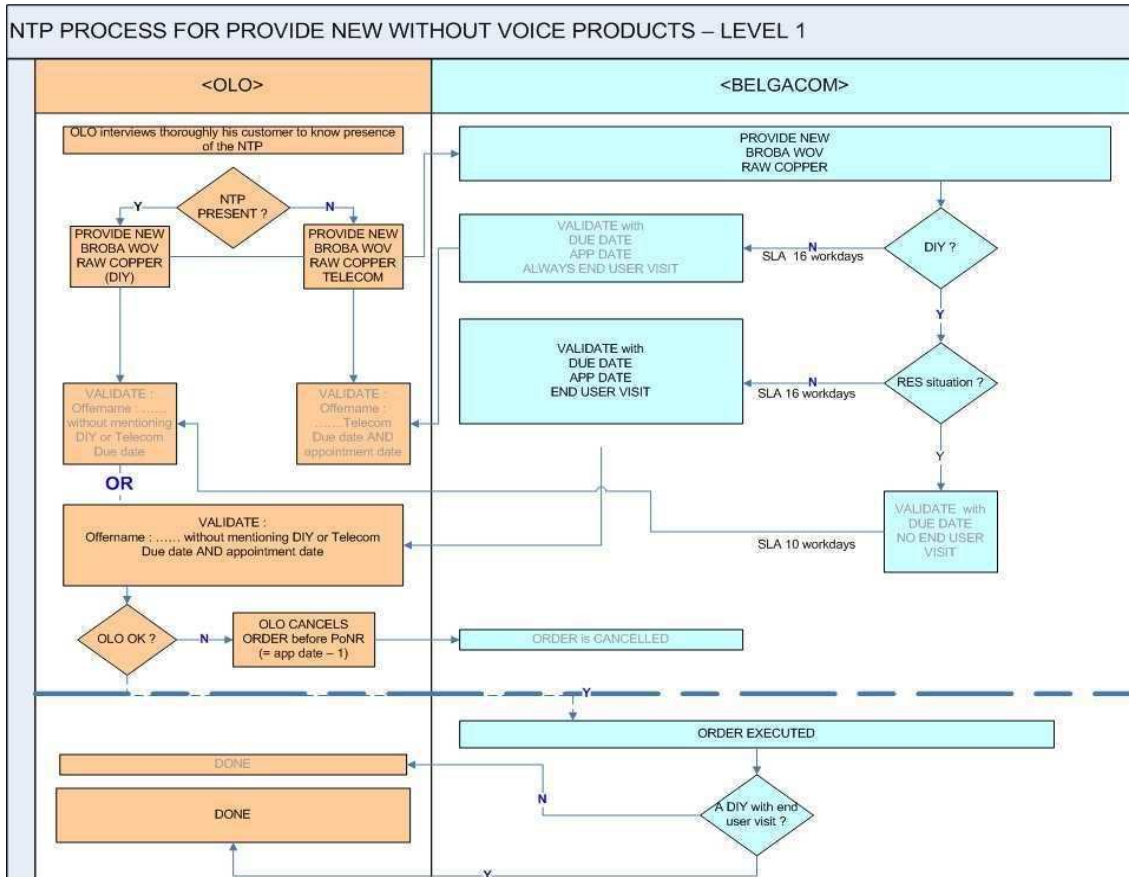


Fig. 3 Example of access to the Shared Pair Service (Splitters provided by Belgacom)

Appendix A: NTP process for Provide New Raw Copper orders



Belgacom's Reference ULL Offer

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coordinated by Belgacom¶

For Telecommunications Operators

General Terms And Conditions

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General information

This document constitutes an integral part of the Belgacom Offer for ULL Services approved by the Belgian Institute for Post and Telecom (here-after the BIPT). It includes the general terms and conditions applicable to the provision of ULL services that encompasses Raw Copper Services, Shared Pair Services and Colocation Services. These ULL services are provided in conformity with the relevant laws and decrees in effect.

A distinction should be made between the following:

The Main Body

The Belgacom Reference ULL Offer that describes in broad terms the conditions of the ULL services offered by Belgacom as it has been approved by the BIPT for the relevant period.

The Order Form

The order form lists the information requested by Belgacom to enable it to provide the Raw Copper or Shared Pair Services. It is signed by the Beneficiary or by his authorized agent. An order request sent by the Beneficiary via electronic format according to the rules described in the Planning & Operations Manual will be considered as a valid order form signed by the Beneficiary.

The General Terms and Conditions

The General Terms and Conditions comprehensively list the rights and obligations of Belgacom and the Beneficiary with regard to the provision of the ULL services.

The Service Descriptions

The Service Descriptions may depart from the general terms and conditions after approval by BIPT. These apply to the optional services offered by Belgacom.

The Technical Conditions

The technical conditions define the technical specifications and the quality standards..

The Planning & Operations Manual

The Planning & Operations Manual describes the conditions of delivery of the Raw Copper and/or Shared Pair Services.

The Operational Software Systems (OSS)

Description of the Tools to be used for operational purposes

The Belgacom price list

The price lists indicate the rates for the Belgacom Raw Copper, Shared Pair and Colocation Services.

* * *

The Order Form, General Terms and Conditions, Main Body, relevant Service Descriptions, the relevant sections of the Planning and Operations Manual, Price List, Technical Requirements and, if any, the specific terms and conditions agreed upon by the Parties constitute the complete contract concluded by the Beneficiary and Belgacom relating to each single Raw Copper or Shared Pair loop.

* * *

Anyone may examine the General Terms and Conditions relating to the ULL Services, and the up-dated price lists as they are applicable at the time of consultation. These may be obtained either from Belgacom's Internet site or from Belgacom's Customer service department. The other Annexes are available on the Secured website of Belgacom and may be consulted further to the signature of a non-disclosure Agreement.

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Glossary

The capitalized terms in the present General Terms and Conditions for ULL Services have the meaning as defined below:

Raw Copper Contract: An agreement concluded between Belgacom and a Beneficiary in accordance with the present General Terms and Conditions, technical, operational, billing, planning and financial conditions for the Raw Copper (Sub-)Loop as described in the Reference Offer and relevant Service Descriptions of Belgacom. The Raw Copper Contract is concluded as mentioned in the first chapter of the present General Terms and Conditions and the Annex "Planning and Operations".

BRUO Reference Offer (for ULL): The Belgacom Reference Offer for ULL Services as it is approved by the BIPT.

Request: The Beneficiary's demand concerning the delivery of a Raw Copper (Sub-)Loop or Shared Pair Service as described in this Reference Offer

Shared Pair Contract: The agreement concluded between Belgacom and an Beneficiary in accordance with the General Terms and Conditions, the technical, operational, billing, planning and financial conditions for the Shared Pair (Sub-)Loop as described in the Belgacom Reference Offer and the relevant Service Descriptions. The Shared Pair Contract is concluded as mentioned in the first Chapter of the present General Terms and Conditions.

Contract: As the case may be, a contract for a Raw Copper (Sub-)Loop or Shared Pair (Sub-)Loop.

ULL Services: All the Services described in the Belgacom Reference Offer for ULL that are ordered by the Beneficiary

Colocation Agreement An agreement concluded between Belgacom and a

Beneficiary which covers, in particular, the technical, operational, billing, planning and financial conditions for the Colocation Services provided by Belgacom to the Beneficiary

Certified Technician

Any technician employed either by a Beneficiary or by one of Beneficiary's subcontractors, trained and certified by Belgacom in order to perform, in place of a Belgacom technician, the installation of the Local Loop lines.

Party: Either Belgacom or Beneficiary

Parties: Collectively, Belgacom and Beneficiary

Contract procedure

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Request by the Beneficiary

1. The Beneficiary must submit his request for a Service to the Customer Service department of Belgacom by completing and signing the appropriate order form. When submitting an order request in electronic format, the Beneficiary will comply with the rules described in the Planning & Operations Manual. The terms and conditions for delivering the Services are described here-after.
2. The Beneficiary shall consult the Belgacom Reference Offer for ULL services as approved by the BIPT. These can be obtained from Belgacom's Internet site or by requesting them from Belgacom's Customer Service department. This does not exclude that Belgacom shall answer questions raised by the Beneficiary.
3. Belgacom may not refuse to comply with the Beneficiary's request, except on one of the following grounds:
 - a) the Beneficiary or his authorized agent refuses to provide Belgacom with official documents to identify himself;
 - b) in an emergency situation (i.e., exceptional cases of *force majeure*), for

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the purpose of ensuring the safe operation of the network, after all necessary measures taken by Belgacom to ensure access to the service are without effect;

c) following the Beneficiary's failure to observe obligations arising from the present General Terms and Conditions for the use of the service, subject to the prior consent of the BIPT.

d) for the purpose of maintaining network integrity or the interoperability of the services or for any other technical reasons that must be specified that make the delivery of unbundled access impossible.

e) the Beneficiary has refused to provide proof of the existence of the unconditional financial guarantee as specified in the provision Financial Guarantees here-under.

4. In the event of a refusal on one of the grounds listed in article 3 above, Belgacom shall notify within 3 working days the Beneficiary of its decision and the grounds for the decision by ordinary mail. A copy will be sent to the BIPT in the same delay.

5. The Beneficiary may lodge an appeal against this decision by following the procedure provided under the Dispute Resolution Procedure and in accordance with these General Terms and Conditions.

Conclusion, entry into force and duration of the contract

6. The provision of the ULL Services is subject to the conclusion of a Contract between the Beneficiary and Belgacom according to the present General Terms and Conditions and the negotiations between the Parties. The Contract is concluded when Belgacom has accepted in writing or via electronic way ("Validate" XML) the Order Form submitted by the Beneficiary.

7. Unless otherwise stipulated, the contract takes effect on the day after the date on which the Raw Copper or Shared Pair Service (as described here-after) is made available to the Beneficiary. Belgacom shall confirm this date to the Beneficiary in writing, or via electronic way ("Done" XML).

8. The Service is made available to the Beneficiary for an indefinite term.

Services covered by these General Terms and Conditions

Raw Copper Service

9. Belgacom shall grant to Beneficiary, without prejudice to the rights granted by the regulatory framework to Beneficiary, the right to use unequipped pair of copper wires without active network components, which in the Belgacom access network connects a NTP (network termination point) at an User site to the main distribution frame at the Belgacom local exchange or for a sub-Loop a NTP at an User site to a Distribution Frame at the Local Distribution Center (LDC) or the Street Cabinet (KVD) (hereafter referred as Raw Copper Service) according to Beneficiary's orders to be transmitted to Belgacom. The specific terms and conditions for delivering the raw copper loops are defined in Annex E1, "Planning and Operations manual for the provisioning of raw copper loops".

10. Beneficiary shall have access to purchase Raw Copper / Shared pair Services on base of User's request for telecommunications service or any right of user based on property right, rental / lease contract or contract for co-location at third party premises (contract between a third party and a Beneficiary, not to be confused with the Colocation Services as defined in the present reference offer). As a consequence, the cancellation of such service or contract shall imply that Beneficiary will ask for the deactivation of the relevant Service.

11. The Raw Copper Services shall be implemented in accordance with the Service Description provided in Annexes B1. For the sake of clarity the Parties acknowledge that the Bringing Into Service date is without prejudice to the bringing into service of the User by the Beneficiary. The Bringing into Service Date is agreed upon between Parties. However, when Beneficiary chooses to have the line installed by one of his Certified Technicians, the Beneficiary alone decides upon the Bringing into Service Date and informs Belgacom of this date.

12. The Services shall be implemented in accordance with the technical conditions set out in Annex C. If the

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Beneficiary chooses to install a specific Raw Copper Loop with a Certified Technician, Belgacom will provide to the Beneficiary the exhaustive list of tasks to be performed in relation to the physical installation of this specific loop, which tasks will all be executed by the Certified Technician chosen by the Beneficiary.

13. Within the limits of what is permitted under the applicable regulatory framework, both Parties shall exchange appropriate operational information as provided in Annexes (including, in particular, maintenance contact numbers, network information, information required to comply with law enforcement and other security agencies of the government and such other information as the Parties shall mutually agree).

Shared Pair Service

14. Belgacom shall grant to Beneficiary, without prejudice to the rights granted by the regulatory framework to Beneficiary, access to an User by means of a part of the frequency of a loop, whereby the entire frequency of the loop concerned is shared by Belgacom and the Beneficiary as follows:

- Belgacom provides PSTN or ISDN services to the User (for which an Ordinary Subscription Fee is paid by the User concerned) on the voice frequency part (also referred to in the present document as the low bandwidth) of that Raw Copper Loop;
- Beneficiary provides services to the same User on the non-voice frequency part (also referred to in the present document as the high bandwidth) of that same Raw Copper Loop.

15. In case the User cancels its PSTN-ISDN subscription, Beneficiary is entitled to continue the provision of its services under the conditions defined in the then applicable BRUO and in the relevant Annexes.

16. The access to the high bandwidth at the Belgacom network side will be realized (I) on the Belgacom Main Distribution Frame (MDF) by using dedicated Blocks per Beneficiary or for the Sub-Loop (ii) on the Belgacom Distribution Frame. From there, a pair of physical wires will be connected to the splitter rack (Connection Cables) and brought back from the Splitter rack to Beneficiary dedicated blocks for the low frequency. From the Splitter rack, connections will

be made to the collocation area of the Beneficiary by use of Tie Cables.

17. The general terms and conditions for delivering the Shared Pair Services are defined in Annex E2, "Planning and Operations manual for the provisioning of Shared Pair Service in the Local Loops of Belgacom".
18. Beneficiary shall have access to purchase Raw Copper / Shared pair Services on base of User's request for telecommunications service or any right of user based on property right, rental / lease contract or contract for co-location at third party premises (contract between a third party and a Beneficiary, not to be confused with the Colocation Services as defined in the present reference offer). As a consequence, the cancellation of such service or contract shall imply that Beneficiary will ask for the deactivation of the relevant Service.

19. The Shared Pair Services shall be implemented in accordance with the Service Description provided in Annexes B. For the sake of clarity the Parties acknowledge that the Bringing Into Service (BIS) date is without prejudice to the bringing into service of the User by the Beneficiary.

20. The Services shall be implemented in accordance with the technical conditions set out in Annex C.

21. Within the limits of what is permitted under the applicable regulatory framework, both Parties shall exchange appropriate operational information as provided in Annexes (including, in particular, maintenance contact numbers, network information, information required to comply with law enforcement and other security agencies of the government and such other information as the Parties shall mutually agree).

Obligations of the Parties

Obligations of Beneficiary

22. Beneficiary shall, independently of Belgacom, manage all aspects of the relationship with its own Users unless otherwise explicitly agreed upon between the Parties. Beneficiary shall therefore be fully responsible for all User inquiries, including but not limited to inquiries concerning product

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information, service, fault reports, technical issues and settlement.

23. Beneficiary shall take all necessary measures to ensure that the use of the local loop of Belgacom by the User of a Beneficiary will not cause any disturbance, interruptions or the like to the traffic in the public telecommunications network.

24. Beneficiary shall be liable to Belgacom for ensuring that the equipment connected to Belgacom's local loop by Beneficiary's Users comply with the requirement of the R&TTE Directive.

25. Except for the PSTN-ISDN aspects in case of Shared Pair Service, Beneficiary shall be liable to Belgacom for ensuring that Beneficiary's Users do not in any way dispose of, sell, rent out, pledge, Belgacom's equipment and installations and Beneficiary shall ensure that Beneficiary's Users do not in any way interfere with the installations. Beneficiary further guarantees that his Users will at all times maintain the marking of equipment or installations indicating that they belong to Belgacom.

26. Beneficiary shall furthermore, independently of Belgacom, undertake all other customer service towards its own Users.

27. Except for the PSTN-ISDN Users aspects in case of Shared Pair Services for which Belgacom remains fully responsible, Beneficiary shall be liable for contact with the police in matters of, e.g., telephone harassment or criminal investigations involving Beneficiary's Users. Beneficiary shall involve Belgacom as technical contractor in police matters involving the network of Belgacom. Beneficiary shall appoint a person to be responsible for police contact with whom Belgacom can cooperate on such matters.

28. The Beneficiary shall be responsible for:

- Communicating to Belgacom via the "Open Calendar" interface, as described in the Planning & Operations Manual, if the installation of the Local Loop must be performed by a Belgacom technician or by a Certified Technician;
- In case of installation performed by a Certified Technician, dispatching to the Certified Technician chosen by the Beneficiary all the operational informations

needed to perform the installation of the Local Loop;

- In case installation by Certified Technician is chosen by the Beneficiary, being responsible for the installation of the Service;
- Not modifying Belgacom infrastructure and equipment at End User premises, except in case of installation by Certified Technician and to the extent necessary to perform the installation tasks as explicitly foreseen in the tasks list communicated by Belgacom to the Beneficiary.

Obligations of Belgacom

29. Belgacom shall provide to Beneficiary Raw Copper and/or Shared Pair Services according to Beneficiary's order to be transmitted from time to time to Belgacom under the terms and conditions set forth in the present General Terms and Conditions and/or its Annexes.

30. Belgacom shall use all reasonable endeavours to correct any trouble affecting the quality of the service of Belgacom. In this respect in case of urgency and acting in good faith, Belgacom shall be entitled to:

- disconnect a Raw Copper and/or a Shared Pair connection immediately and without prior consultation with Beneficiary, provided that Belgacom can identify (without prejudice to Annex C) that the traffic on the Raw Copper and/or Shared Pair has caused a breakdown of networks or services, or if there is imminent risk of such breakdown. Belgacom will inform the BIPT, and Beneficiary, about the disconnection, at the latest 24 hours after the disconnection.
- contact the Users directly with a view to maintaining or ensuring Belgacom's ownership of equipment and installations.

Only Belgacom may carry out service works on equipment belonging to Belgacom. In case of application of this provision, Belgacom will immediately inform Beneficiary about the operation before its execution.

31. Belgacom will not undertake customer handling of the Users of Beneficiary.

Deleted: Belgacom shall act in accordance with the general standard of integrity that it has internally developed and enforced.

Deleted: In any case, Belgacom will not make any publicity or remarks to the detriment of the Beneficiary or its image. Belgacom will in all circumstances stay neutral, in accordance with the technical nature of its intervention. Where Belgacom makes use of standard documents vis-à-vis users, it will submit these for prior approval by BIPT.

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32. In case of installation performed by a Certified Technician, Belgacom will provide to the Beneficiary all operational informations needed to perform the installation of the Local Loop.

Certified Technician

33. Belgacom allows the Beneficiary to perform the installation of the Local Loop itself, via Certified Technicians, i.e. its own employees or employees of its subcontractor who are trained and certified by Belgacom. When the Beneficiary chooses to work with Certified Technician, the installation works will not be performed under instruction of Belgacom, but on behalf of Beneficiary itself, and at its own expenses.

34. Employees of Beneficiary and employees of Beneficiary's subcontractor may qualify as Certified Technician, if they fulfill the conditions described in the Specific Terms and Conditions relating to Certified Technician. In order to be certified, they will successfully follow training by Belgacom and sign the necessary confidentiality agreements.

35. Employees of Beneficiary's subcontractor will only be certified, if Beneficiary's subcontractor accepts the right of Belgacom to bring a direct claim against him for any damage caused by his employees to Belgacom, its employees, or third parties when installing the Local Loop. The Beneficiary's subcontractor must also provide to Belgacom a "liability insurance" certificate of EUR 2.500.000 per claim and per year to cover his liability for any damages caused by his employees, acting as Certified Technician (see also art. 72).

36. Except for this right of direct claim of Belgacom against Beneficiary's subcontractor and a confidentiality agreement, no contractual relationship exists between Belgacom and Beneficiary's subcontractor.

37. The Beneficiary shall allow Belgacom access to its Certified Technicians (both its own employees as well as its subcontractor's employees) for technical discussions. Such direct contact shall, in no cases, be considered as creating a direct contractual link between Belgacom and these Certified Technicians, nor shall it create any responsibility of Belgacom for the acts of the Certified Technicians.

38. When the Beneficiary chooses to work with Certified Technician, he agrees to be responsible for all tasks related to the physical installation of the Local Loop (which are foreseen in the list of tasks provided by Belgacom to the Beneficiary for each particular loop), and releases Belgacom of any responsibility in this respect. Also, Belgacom cannot be held responsible for incidents during delivery of the ULL Service after installation of the loop, nor for any non compliance of the Local Loop with Technical Specifications, to the extent that these incidents/non compliance are caused by a wrongful installation by Certified Technician.

39. The Beneficiary guarantees that the Certified Technician will respect the rights and obligations applicable on the Beneficiary under the Belgacom Reference Offer for ULL Services (e.g. confidentiality obligation, liability).

40. The Beneficiary may only appeal upon Certified Technician for installation of the Local Loop, not for repair or maintenance. The exact scope of activities which may be performed by Certified Technicians is described in the Specific Terms and Conditions relating to Certified Technician.

41. The Certified Technician may lose its certification in any of the following events:

- he no longer fulfills the conditions for certification as described in the Specific Terms and Conditions relating to Certified Technician;
- he repeatedly or seriously breaches the obligations applicable upon the Beneficiary under the Belgacom Reference Offer for ULL Services;
- his work does not meet the quality standards, and repeatedly needs correction by Belgacom technician.

42. In case the installation of the Local Loop is not correctly performed by Beneficiary's Certified Technician, Belgacom will perform the necessary repair actions, at the expense of Beneficiary, without prejudice to Belgacom's right to claim compensation for any other damages.

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Financial Conditions

Billing and Payments

43. In consideration for Raw Copper Services provided by Belgacom under these Terms and Conditions, Beneficiary shall pay the charges and fees provided in Annex H1.

44. In consideration for Shared Pair Services provided by Belgacom under these Terms and Conditions, Beneficiary shall pay the charges and fees provided in Annex H2.

Financial Guarantees

General Principle - Pre-payment

45. Notwithstanding anything to the contrary in the present General Terms and Conditions, in order to guarantee the payment by Beneficiary of the prices due for the ULL Services provided by Belgacom that are invoiced on a monthly basis, Beneficiary will provide Belgacom with a monthly (i) pre-payment based on the average of the monthly amount due by Beneficiary. The amount of the pre-payment shall be based on the average of the invoices for ULL Services, ordered in accordance with the present General Terms and Conditions, issued by Belgacom during three (3) months. The amount of the pre-payment shall be reviewed every three (3) months. The terms and conditions of this pre-payment are described in Annex D.

46. Without prejudice to any other legal or contractual remedies and notwithstanding anything to the contrary in the present General Terms and Conditions, in the event Beneficiary fails to pay in due time any undisputed amount due under the pre-payment conditions as defined in the present section and in Annex D3, Belgacom shall be entitled to execute the following alternatives until full payment is made:

- suspension of any SLA obligations that are not foreseen in the Basic SLA;
- refusal in writing of any new Services, including Migration Services.

Sufficient Creditworthiness

47. This monthly prepayment will not be required in the following circumstances:

48. The Beneficiary has sufficient creditworthiness as evidenced by either of the following alternatives:

- the Beneficiary has obtained a “Ba2” rating or above for its debt (Moody’s);
- the Beneficiary has obtained a rating similar to Moody’s “Ba2” rating, provided that (i) such rating is generally accepted by the market as giving similar reliability as Moody’s, (ii) such rating is reviewed and updated on a regular basis.

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Other Financial Guarantees

49. In the event that, in the course of the contract, Beneficiary would lose the above described creditworthiness (either through the loss of “Ba2” credit rating or similar, or upon the occurrence of any default or delay of payment), Beneficiary will have to provide Belgacom with a pre-payment or with another financial guarantee as defined in the present chapter within ten (10) working days of Belgacom’s request thereto.

50. The Beneficiary obtains an irrevocable and unconditional parent corporation guarantee for the debts incurred by Beneficiary in the application of the Contract, provided that such parent company is issued by a company that has sufficient creditworthiness as defined above. In the event that, in the course of the Contract, the Parent Company would lose the above described creditworthiness (either through the loss of “Ba2” credit rating or similar or upon the occurrence of any default or delay of payment), the Beneficiary will provide Belgacom with a pre-payment or with another financial guarantee as described in the present chapter within ten (10) working days of the request of Belgacom;

51. The Beneficiary has constituted a Deposit on an escrow account with a reputable bank or financial institution established in the EU. The amount of that deposit will be equal to an estimate of three (3) months of net amount due by Beneficiary for the Services ordered in accordance with the present Terms and Conditions, provided. The amount of the deposit will be equal to an estimate of three (3) months of Belgacom’s invoices for the Services. Based on the actual evolution of the amounts due for the Services; the Beneficiary and Belgacom will have the

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right to require an adaptation of the amount of the deposit every three (3) months. Upon the request for adaptation of the amount or deposit, necessary steps will be taken to ensure adaptation within three (3) working days. In case of default by Beneficiary to pay sums due under the contract, the sums deposited on the escrow account will accrue to Belgacom. The interests accrued on the escrow account will be payable to Beneficiary. In the event the sums deposited are accrued to Belgacom, or if the amount of the deposit is not adapted despite Belgacom's request thereto, Beneficiary will provide Belgacom with a pre-payment or with another financial guarantee as defined in the present chapter within ten (10) working days of the request of Belgacom.

52. Beneficiary has provided Belgacom with an irrevocable and unconditional bank guarantee on first demand issued by a reputable bank or financial institution established in the EU. That bank guarantee will be issued for a minimum period of three (3) years and for an amount equal to an estimate of three (3) months of net amount due by Beneficiary for the Services ordered in accordance with the present General Terms & Conditions. The amount of the bank guarantee will be equal to an estimate of three (3) months of ULL invoices. Based on the actual evolution of the amounts due for the Services, Beneficiary and Belgacom will have the right to require an adaptation of the amount of the bank guarantee every three (3) months. Upon the request for adaptation of the amount of bank guarantee, necessary steps will be taken to ensure adaptation within three (3) working days. Upon the expiration of the bank guarantee or after Belgacom, has called upon the bank guarantee, or if the amount of the bank guarantee is not adapted despite Belgacom's request thereto, Beneficiary shall provide Belgacom with a pre-payment or with another financial guarantee as defined in the present chapter, within ten (10) working days of the request thereto from Belgacom.

Principles

Retail Pricing & Billing

53. Unless otherwise provided in the present General Terms and Conditions or in its Annexes and without prejudice to the applicable regulatory framework, Beneficiary shall be responsible for the

setting of the tariffs that Beneficiary will apply to the Users to whom Beneficiary will sell telecom service using the Raw Copper and/or Shared Pair Services and for the billing and invoicing of such Users.

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54. Except as provided otherwise in the present General Terms and Conditions or its Annexes, no deductions or reductions shall be made from the payment of any charges or fees due for the Services for any bad or unpaid debts or any unrecoverable claims (including, in particular, claims arising from fraud cases) that Beneficiary may have against Users or any other third parties in relation with these Services.

Branding

55. The Parties agree not to offer any service under any brand, including any trademark, trade name or company name, of the other Party unless the use of the brand(s) of the other Party is explicitly provided under the present General Terms and Conditions. Such use of the brand will then be strictly limited to the service at stake.

56. Beneficiary shall offer telecom services to Users under its own brand without any use of, or reference to Belgacom's brands.

57. Notwithstanding the foregoing, Parties acknowledge that, as provided in Annexes B1 and/or 2, the installation of equipment on the site of the relevant Users who have subscribed to an offering of Beneficiary, may, when relevant under the terms and conditions of Annex E 1 and/or 2, be realized by Belgacom personnel. Both Parties agree that Belgacom shall have no obligation to unbrand or rebrand its service technicians or trucks. Belgacom will act in accordance with its general standard of integrity that it has internally developed and enforced. In any case, Belgacom will not make any publicity or remarks to the detriment of the Beneficiary or its image. Belgacom must in all circumstances stay neutral, in accordance with the technical nature of its intervention. Where Belgacom makes use of standard documents vis-à-vis users, it will submit these for prior approval by BIPT.

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58. When Beneficiary chooses to have installation of the Local Loop performed by Certified Technician, Beneficiary will see to it that the Certified Technician acts with integrity and makes no publicity or remarks to the detriment of Belgacom or its image.

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User Terms and Conditions

59. Beneficiary shall cause the terms and conditions governing Beneficiary's contractual relationships with Users to be compliant with the rules and principles set out in this contract and the appendices. Notwithstanding the above, nothing in the present Reference Offer can be construed as creating or evidencing a contractual relationship of any kind between Belgacom and Beneficiary's Users, nor a right for Belgacom to supervise the contractual terms of the relation between Beneficiary and its Users.

60. Without prejudice to what is set out under Article 69, Beneficiary shall bear all the consequences of the breach of the above obligation.

Coordination between the Parties

Single Points of Contact

61. Beneficiary and Belgacom will both appoint an individual as their respective single point of contact ("SPOC") who will act, within its organization, as the other Party's contact person.

62. The SPOC of either Party will have full authority to act and decide on behalf of the respective Party on all technical and operational matters regarding the day-to-day management of the performance of their contracts. All the decisions taken by any working group constituted by the Parties during the performance of this agreement will need to be expressly and formally validated by the SPOC of either Party to be binding on such Party. This validation (or refusal of validation) has to be given at the latest within three working days. The absence of response in this delay will be considered as a tacit validation. Except as otherwise expressly provided by the relevant Party, each Party's SPOC will have no authority to modify the conditions described in the present General Terms and Conditions, or to act outside the day-to-day management of the performance of the Services.

63. Each Party will be authorized to replace its SPOC by notice sent to the other Party. Such notice will have immediate effect.

Working Group

64. The Parties will be free to set up any other working group in charge of

discussing and agree on any technical or operational issue as the Parties may deem fit in the performance of the Services.

Liability

General rules

65. Taking into account the nature of the respective activities of the parties, the risks and potential profits associated with these activities and the consideration obtained by each Party from the present Terms and Conditions, Parties expressly agree that their respective liability shall be limited as follows.

66. If either Party is held liable to the other Party (including such other Party's employee(s) and contractor(s)) under the present General Terms and Conditions, that liability shall be limited to the following:

- if such liability results from any personal injury or death incurred as a direct result of the non-performance of the relevant Party's obligations under these Terms and Conditions, then such liability shall be only subject to the limitation provided in article ~~67~~;
- if such liability results from any conduct attributable to the relevant Party, which is, under Belgian law, characterized as being gross negligence (faute lourde – zware fout) or intentional negligence (dol – bedrog), then such liability shall be subject to no limitation, except as provided by law;
- if such liability results from any material damage, other than those referred to above, arising out of or in any way connected with the performance by the relevant Party of the Services or the breach of such Party's obligations under these Terms and Conditions, then the total amount which can be recovered from such Party for all acts or omissions shall, in no event, exceed an aggregate amount equal to EUR 1,250,000 (one million two hundred fifty thousand euro), subject to the limitation provided in article ~~67~~;

67. Neither Party shall be liable for indirect damages (pure and consequential), including without limitation loss of profit, loss of revenue, loss of data, loss of use, loss of savings, loss of goodwill, interruption of business or claim by third parties.

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68. In the event of a complaint by a Beneficiary's User, the liability of Belgacom may only be questioned by the Beneficiary if Belgacom, or a person Belgacom is responsible for, is at fault or has committed a gross negligence (faute lourde - zware fout).

69. In addition, and notwithstanding the above, Beneficiary will indemnify Belgacom against any claim or loss related to the illegal use, or the use for illegal purpose of Raw Copper and/or Shared Pair Services by Beneficiary or Beneficiary's Users. As far as the Shared Pair Service is concerned, Belgacom remains fully responsible for the PSTN-ISDN Users aspects.

Certified Technician

70. In addition, and notwithstanding the above, the Beneficiary will be held liable to Belgacom, its employees or third parties for damages caused by one of its Certified Technicians (Beneficiary's own employees, as well as Beneficiary's subcontractor employees), when performing the installation of the Local Loop. The Beneficiary shall indemnify and hold Belgacom harmless from any and all damage, costs or third party claims incurred as a result of any act or omission of Beneficiary's Certified Technician, including claims against Belgacom based upon art. 544 Civil Code ("burenhinder / troubles de voisinage").

71. If a Beneficiary chooses to install some or all of his Local Loop lines by one or several Certified Technician(s), he will have to provide to Belgacom, prior to his first request to have installation done by Certified Technician, a "liability insurance" certificate of EUR 5,000,000 per claim and per year to cover his liability for any damages caused by his employees or his subcontractors to Belgacom, its employees or third parties when provisioning the lines.

The insurance policy has to be contracted with a first class insurance company in an E.U. country and must be maintained during the total duration of the agreement between parties. The policy must contain the following provision : the suspension, cancellation or the end of the insurance policy will be opposable to Belgacom, 15 calendar days after the reception of a registered letter from the insurance company informing Belgacom of the end of the

policy. At the expiry of the insurance certificate, the Beneficiary will be diligent in providing Belgacom an updated certificate, confirming the prolongation of the insurance policy.

72. The Beneficiary will also procure that its subcontractors, who wish to qualify certain of its employees as Certified Technician, accept the right of Belgacom to bring a direct claim against Beneficiary's subcontractor as to hold Belgacom harmless from any and all damage, costs or third party claims incurred as a result of any act or omission of the Certified Technicians employed by Beneficiary's subcontractor, including claims against Belgacom based upon art. 544 Civil Code ("burenhinder / troubles de voisinage"). In the event that damage is caused by Beneficiary's subcontractor, Belgacom can choose to bring a claim towards the Beneficiary, or to Beneficiary's subcontractor, or to both.

The Beneficiary's subcontractor will provide to Belgacom a "liability insurance" certificate of EUR 2,500,000 per claim and per year to cover its liability for any damages caused by its employees, acting as Certified Technician, to Belgacom, its employees or third parties when provisioning the lines. The insurance policy has to be contracted with a first class insurance company in an E.U. country and must be maintained for the total duration of certification of any of Beneficiary's subcontractor employees. The policy must contain the following provision : the suspension, cancellation or the end of the insurance policy will be opposable to Belgacom, 15 calendar days after the reception of a registered letter from the insurance company informing Belgacom of the end of the policy. At the expiry of the insurance certificate, the Beneficiary's subcontractor will be diligent in providing Belgacom an updated certificate, confirming the prolongation of the insurance policy.

Force Majeure

73. Neither Party will be liable for any delay or failure to fulfil its obligations under these General Terms and Conditions arising from any event beyond its reasonable control (all such events being hereafter referred to as "Force Majeure").

74. The Party claiming Force Majeure shall as soon as possible send to the other Party a Notice of the Force Majeure. Such Notice shall contain adequate evidence of the occurrence and extent

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of the Force Majeure, as well as an estimate of the expected duration of the Force Majeure. As soon as practicable after receipt of such Notice, the Parties shall consult with each other in order to find an equitable solution to the problems and difficulties caused by the Force Majeure.

75. The Party claiming Force Majeure shall use all reasonable endeavours to minimise the consequences of such Force Majeure, and to ensure, in as far as reasonably possible, the continuity of the services provided under these Terms and Conditions, and shall perform those of its obligations not affected by a Force Majeure. To the extent that a Party is prevented as a result of Force Majeure from providing one or several of the services or facilities to be provided under these Terms and Conditions, the other Party shall be released to the equivalent extent from its obligations to make payment for such services or facilities or complying with its obligations in relation thereto.

76. Upon cessation of the effects of the Force Majeure, the Party initially affected by such Force Majeure shall promptly notify the other Party of such cessation.

Accidents at work and Safety Rules

77. Each Party hereby undertakes to provide insurance cover against accidents at work for its own employees in conformity with the applicable legal requirements. Beneficiary also procures that its subcontractors provide insurance cover against accidents at work for their employees in conformity with the legal requirements. Each Party hereby renounces any possible claim against the other Party, and undertakes to procure that its insurer shall not pursue against the other Party, or against any third party for whose acts or omissions the other Party may be responsible, any claim relating to accidents at work. Beneficiary undertakes to procure that its subcontractors and subcontractor's insurer renounce any possible claim against Belgacom relating to accidents at work.

78. Each Party shall comply with safety practices and procedures reasonably applicable when entering the premises and installations of the other Party in order to carry out work (see, for Belgacom, safety rules and procedures in Specific Terms and Conditions relating to Certified Technician). Each

Party undertakes to ensure that its personnel or its subcontractor personnel, while upon the premises and installations of the other Party, will respect any internal rules and codes of conduct therein applicable, provided that such rules and/or codes shall have been made available to them in advance. Without prejudice to the provisions of the chapter relating to Liability General rules or the chapter relating to Liability Certified Technician, depending on the situation, each Party shall indemnify and hold harmless the other Party for any and all damage, costs or expenses incurred as a result of any act or omission of a Party's personnel or a Party's subcontractor personnel while upon the premises and installations of the other Party.

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Operational Matters

Operational Matters and Network Management

79. The Raw Copper and/or Shared Pair Services provided under these Terms and Conditions shall be implemented and provided by the Parties in accordance with the technical specifications set forth in Annex C "Technical Specifications" and the operational rules and procedures contained in Annex E 1 and/or 2 "Planning and Operations".

80. Both Parties shall cooperate to install and maintain reliable services. Both Parties shall exchange appropriate information as provided in Annex E 1 and/or 2 (including, in particular, maintenance contact numbers, network information, information required to comply with law enforcement and other security agencies of the government and such other information as the Parties shall mutually agree) to achieve this desired reliability.

81. Each Party shall apply sound network management principles by invoking network management controls to ease the operation of their respective systems and to alleviate or to prevent congestion. Each Party shall ensure that the network management controls are applied in such a way as to ensure that there is no discrimination in favour of that Party's own traffic.

Essential Requirements

82. The Parties shall ensure that the Essential Requirements, as defined and applicable under the regulatory framework, are adequately and sufficiently protected, in as far as the

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establishment, maintenance and operation of the services offered under the present General Terms and Conditions are concerned.

83. It is acknowledged that the present General Terms and Conditions and its Annexes (in particular, Annexes B “Service Descriptions” and Annex E 1 and/or 2 “Planning and Operations”) contain a number of specific principles and rules that have been developed to ensure the protection of the Essential Requirements. Furthermore, the Parties shall consult with each other in order to ensure that the Essential Requirements are protected in an adequate and sufficient manner.

84. It is a condition for the provision by Belgacom of Raw Copper and/or Shared Pair Service under this Document that Beneficiary’s request under the provisions of Annex C is not detrimental to the operation of the telecommunications networks and telecommunications services in question or to their integrity or interoperability, and that the protection of service and internal data, network equipment, software and stored data, including personal data, confidential information and privacy can be sustained.

85. The conditions for and restrictions on use applying at any time appear from Annex C to the present General Terms and Conditions, “Technical specifications Document”.

86. Belgacom shall further be entitled to cause interruptions, disturbances or modifications of Belgacom’s public network and services to the detriment of the supply of the services under these Terms and Conditions in connection with measures that are deemed necessary for technical, maintenance and operating reasons taking into account the balance of the interests of both Parties or that are ordered by the regulatory authorities. Belgacom shall give in good faith Beneficiary the longest possible notice of interruptions, disturbances and modifications by any means it deems appropriate (e.g. via electronic communication) and state the reason for them. In these cases, Belgacom shall, in writing, immediately inform the User of Belgacom’s intentions.

Amendments and Revisions

General Principles

87. Except as otherwise provided in these General Terms and Conditions or its Annexes, any agreement departing from the present Terms and Conditions or its Annexes shall only be valid if duly agreed upon in writing by the respective representatives of the Parties after BIPT has been informed by both parties in writing.

Revisions in Technical Terms and Conditions

88. If required by operational, technical, legal or regulatory constraints, Belgacom will be allowed, with prior authorization of BIPT about all the details of the changes, to modify the terms and conditions applicable to Services provided under these Terms and Conditions, by sending a change Notice to Beneficiary via letter or via electronic communication describing the said constraints. ~~Belgacom will, together, with such a Notice send to Beneficiary as well as to the BIPT a new coordinated version labeled “BIPT approved” of these Terms and Conditions and/or its Annexes as the case may be.~~

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Termination and Suspension

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89. Beneficiary has the right to terminate one or more Raw Copper and/or Shared Pair contract as provided in the Annexes B, i.e. in the relevant Service Descriptions annexed to these General Terms and Conditions.

90. A Raw Copper and/or Shared Pair contract shall automatically be terminated without prior notice to Beneficiary 1 upon the activation by Belgacom of another ULL service on the same loop based on the valid migration request of another Beneficiary 2 (see Annex K Migrations). Belgacom will further inform Beneficiary 1 of the request of Beneficiary 2 without revealing the identity of the latter.

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91. In the event Beneficiary uses or allows the use of Services provided under

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these Terms and Conditions in an illegal manner or for illegal purposes, or if Beneficiary by its action or omission causes, or could reasonably be expected to cause a damage to the working or the security of the telecommunication network of Belgacom, and Beneficiary fails to take appropriate measures in order to remedy to the situation within a period of thirty (30) days from the receipt of a Notice sent by Belgacom, Belgacom will have the right to suspend the provision of some Raw Copper and/or Shared Pair contracts or of the whole Raw Copper or Shared Pair Services. Notwithstanding the foregoing, Belgacom will have the right to suspend Raw Copper and/or Shared Pair Services prior to sending the above mentioned Notice in urgent cases where such suspension will be reasonably required under the circumstances. In that case, Belgacom will inform the BIPT and the parties involved about the suspension of the Services at the latest 24 hours after the suspension.

92. If Beneficiary uses or allows the use of Services provided under these Terms and Conditions for a purpose different from the purpose declared pursuant to Annexes B 1 and/or 2 "Service Description" and Beneficiary fails to take appropriate measures in order to remedy to the situation pursuant the terms and conditions provided by the Service Description, Belgacom will have the right to suspend all or some of the services in the conditions of article 94.

93. Belgacom will have the right to suspend Raw Copper and/or Shared Pair Services in the event that it is requested to do so by an order of a court or a competent authority. Belgacom will inform Beneficiary as soon as possible of the cause of such suspension.

94. Without prejudice to article 46, in the event that Beneficiary fails to pay outstanding invoice for any amount due under the Belgacom Reference Offer for ULL Services for a period of 15 calendar days as from the Due Date of the relevant invoice (invoice, pre-invoice or final invoice), Belgacom shall, after having duly informed the BIPT, inform the Beneficiary, at least 7 calendar days before the end of the above mentioned delay of 15 days, that if the default of payment is not cured:

- All the Raw Copper and Shared Pair Services will be suspended without further notice after the expiration of the above mentioned delay of 15 days as of the Due Date;

- All the Raw Copper and Shared Pair Services will be terminated without further notice after the expiration of a delay of 30 days as of the Due Date.

95. Article 94 does not apply to amounts duly disputed by the Beneficiary in writing, before the Due Date, including a clear summary of the grounds for the Dispute and the position of the Beneficiary as to this dispute.

96. In the event that Beneficiary fails to provide, renew, adapt or reconstitute the financial guarantee as provided in the chapter on Financial Guarantee here above, Belgacom shall be entitled, after having duly informed the BIPT,

- to suspend all the Raw Copper and Shared Pair Services without further notice if the default is not cured within a period of 15 days following written Notice;
- to terminate all the Raw Copper and Shared Pair Services without further notice if the default is not cured within a period of 30 days following the same Notice.

97. The provisions of this chapter on Suspension of the Services are without prejudice to any other right or claim for compensation to which the non-defaulting Party may be entitled to in the event of suspension of the services.

98. In the event that either Party is declared bankrupt or enters into liquidation, then the other Party may terminate all the Raw Copper and Shared Pair Services, without any further legal or other procedures, by sending Notice of termination with immediate effect to the other Party.

99. The provisions in this chapter on Termination of the Services are without prejudice to any other right or claim for compensation to which the non-defaulting Party may be entitled to in the event of termination of the Services.

100. In the case of termination of the Services for any reason, Belgacom shall be entitled to payment for all Services performed prior to such termination in accordance with the conditions that were applicable between the parties at the time of termination.

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<#>In the event that Beneficiary fails to pay outstanding invoice for any amount due under these Terms and Conditions for a period of 30 calendar days as from the Due Date of the relevant invoice, or fails to provide, renew, adapt or reconstitute the financial guarantee as provided in the chapter on Financial Guarantee here-above, Belgacom shall be entitled, after having duly informed the BIPT, to suspend the Services with immediate effect subject to a prior Notice sent at least 7 calendar days before the end of the above mentioned delay of 30 days . This provision does not apply to disputed amounts.¶

Termination for Cause¶

<#>In the event that either Party defaults in the payment of sums due for the Services offered under these Terms and Conditions or is in default to provide a financial guarantee as provided in the relevant chapter here-above and such default is not substantially cured within thirty (30) days after written notice is given specifying the default, then the non-defaulting Party may by giving notice to the other Party and after having duly informed the BIPT, terminate all the Raw Copper and Shared Pair Services with immediate effect. This provision does not apply to disputed amounts.¶

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101. The provisions of the present General Terms and Conditions which by their nature are determined to survive the termination of the Services (including, in particular but without limitation, the provisions on Confidentiality and Applicable Law and Jurisdiction), shall remain in full force and effect after the termination.

102. In the event of termination of the Services, Beneficiary will be responsible to inform the relevant User of the consequences of the termination of these Services.

Confidentiality

Confidential Information

103. For the purpose of this Chapter, the term "Confidential Information" shall mean:

- information communicated by one Party (or from any of its Associated Companies) (the "Disclosing Party") to the other Party (or to its employees and advisors) (the "Receiving Party"), or obtained by the Receiving Party in connection with the performance of the Services, provided that such information is, at the time of its disclosure, reasonably designated "confidential" or with an equivalent term. If such information was disclosed orally, it shall constitute Confidential Information provided that the Disclosing Party informs the other Party at the time of such disclosure, that such information is confidential and that (i) a written notice containing a summary of the information disclosed orally and mentioning that such information is confidential, is issued by the Disclosing Party to the other within five Working Days from the date of disclosure, or (ii) such disclosure is recorded in minutes of a meeting that are designated, labelled or marked "confidential" or designated, labelled or marked with an equivalent term;

- Shall in any event be considered as Confidential Information, any information or data obtained regarding customers of the other Party, regarding customers of other licensed operators, or any other information or data which the Beneficiary or his subcontractor obtain via access to the tools which Belgacom puts at the disposal of the Certified Technician.

104. For purposes of these General Terms and Conditions, "Confidential Information" does not include:

- a. information that is properly and lawfully in the public domain otherwise than by breach of these Terms and Conditions or any other obligation of confidence;
- b. information that was disclosed by a third party to the Receiving Party without restriction on disclosure or use, unless the Receiving Party knew or should reasonably have known that this information was acquired unlawfully or by a breach of contract or fiduciary relationship.

105. Except as specified in writing, by the Disclosing Party at the time of disclosure, Confidential Information shall continue to be deemed as such until the end of a period of three (3) years after its initial communication under the present General Terms and Conditions.

Non-Disclosure

106. The Receiving Party shall refrain from disclosing the Confidential Information to any third party and shall use the Confidential Information only for the performance of the Services offered in accordance with the present General Terms and Conditions. In addition, the Receiving Party shall take any reasonable measures to ensure the confidentiality of this information. In any event, the Receiving Party shall use efforts at least commensurate with those that such Party uses for protecting the confidentiality of its own Confidential Information.

107. Notwithstanding the foregoing and without prejudice to the provisions regarding the Disclosure to Personnel, Advisors or Suppliers here-under, either Party shall be allowed to disclose the Confidential Information to third parties provided it has obtained the prior written consent of the other Party. Such written consent will be given case-by-case upon a discretionary basis. Such written consent shall only be valid and enforceable for the specific information listed therein. The written consent to disclose Confidential Information shall identify the third party or parties to which the information can be disclosed and shall set forth the terms and conditions to which such disclosure is subject.

108. The Disclosing Party shall remain free to disclose to any third party

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Confidential Information disclosed to the Receiving Party.

Disclosure to Personnel, Advisors or Suppliers

109. A Receiving Party shall disclose the Confidential Information received from the other only to its directors, employees, suppliers, agents, advisors, resellers or contractors who have a need to know such information. Such Party shall ensure that such directors, employees, suppliers, agents, advisors, ~~contractors~~ or ~~subcontractors~~ are bound by the obligations of confidentiality in respect of the Confidential Information that are set forth in these General Terms and Conditions. For this purpose, the Beneficiary shall conclude a similar Non Disclosure Agreement with the above authorized parties not on his payroll that contains at least the same provisions as the NDA the ~~Beneficiary~~ concluded with Belgacom.

110. Notwithstanding anything to the contrary in the foregoing provisions, the Receiving Party shall not disclose or use the Confidential Information, with the aim of providing commercial advantage to business divisions of the Receiving Party, or business divisions of the Receiving Party's Associated Companies, which are engaged in activities competing with the other Party.

111. ~~The Beneficiary guarantees that the Certified Technicians, whom he uses for the installation of the Local Loop lines, comply with the confidentiality obligations described herein, and he will see to it that his Certified Technicians do not divulge or use Confidential Information belonging to Belgacom or to other licensed operators, when performing installation services on behalf of the Beneficiary. The Certified Technicians will also conclude a confidentiality agreement with Belgacom directly before starting their training by Belgacom in order to obtain certification.~~

112. Each Party shall be liable under the limitations provided in the Chapter relating to Liability here-above, for any unauthorized disclosure or use of the Confidential Information by its directors, employees, suppliers, agents, advisors, ~~contractors~~ or ~~subcontractors~~. The Party responsible for an unauthorized disclosure or use of the Confidential Information shall, in any event, take any reasonable measures (including but not limited to court

proceedings) to mitigate the damage resulting there-from.

Disclosure Required by Law

113. If the disclosure of Confidential Information to third parties is required by reason of legal, accounting or regulatory requirements beyond the control of the Receiving Party, the Receiving Party may disclose such information to the extent necessary to comply with such requirements. Without prejudice to the application of the foregoing, the Parties shall endeavour to ensure the confidential treatment of the Confidential Information by the third parties receiving such information as a result of such requirement.

114. Without limitation to the generality of the foregoing, either Party will have the right to disclose Confidential Information to the BIPT, whenever required by law, or deemed reasonably necessary in the context of any proceedings or discussions held in front or with the BIPT. If any such disclosure of Confidential Information is made, the Party communicating the information will ensure that the attention of the BIPT is properly drawn to the fact that the information is confidential and that the information needs to be kept confidential.

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Dispute Resolution and Applicable Resolution

Dispute resolution procedure

115. The SPOC shall, on an ongoing basis, attempt to solve any dispute, controversy or claim between the Parties concerning the interpretation, application and implementation of the present General Terms and Conditions and its Annexes (a "Dispute") through discussions held in good faith.

116. In the event that the Parties have been unable to solve any Dispute, then upon Notice of either Party, each of the Parties will appoint a designated senior business executive (other than their respective SPOC) whose task it will be to meet for the purpose of endeavouring to resolve the Dispute. Each Party shall ensure that their respective designated executive has sufficient authority or decision-making power concerning the matter at stake. The designated executives will meet as often as the Parties reasonably deem necessary in order to gather and furnish to the other all information with respect to the matter in issue which the Parties

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<#>Either Party may disclose Confidential Information that they received from the other Party, to their suppliers or contractors provided and to the extent that such suppliers or contractors effectively require to have access to such information in order to supply the relevant goods and services. The Parties shall do whatever is necessary in order to impose on the suppliers or contractors which have obtained access to Confidential Information obligations to keep this information confidential, which are at least equivalent to the obligations imposed under the present General Terms and Conditions.¶

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believe to be appropriate in connection with its resolution. Such executives will discuss the Dispute and will negotiate in good faith in an effort to resolve the Dispute without the necessity of any formal proceeding relating thereto.

or to submit the Dispute to the Competition Council.

Miscellaneous

No Assignment

117. In the event the Parties fail to reach such a solution and/or settlement within fifteen (15) Working Days as from the receipt of the above Notice, they shall escalate the matter to a higher level within their respective organizations. Discussions at that level will be conducted as described in article ~~116~~. The Parties may, at any given escalation level, agree to extend the time limits described in this article and in article ~~116~~, when they consider it necessary in order to facilitate that an agreement be concluded on the subject-matter of the dispute.

122. Neither of the Parties is entitled to assign the contracts concluded under the present General Terms and Conditions, in part or in its entirety, to any third party or to any other entity unless with the prior written approval of the other Party.

123. No approval will be required for an assignment of the Contracts in the event a Party assigns all the Raw Copper/Shared Pair Contracts concluded under the present General Terms and Conditions in their entirety to a successor, to which a transfer has taken place of, at least, the Assigning Party's activities covered by the present General Terms and Conditions. In such a case, the assigning Party shall immediately give Notice to the other Party of any such assignment permitted to be made under the present General Terms and Conditions without requesting the other Party's consent.

124. Without prejudice to the foregoing, no assignment shall be valid under the present Terms and Conditions unless the assignee agrees in writing to be bound by the provisions of the present General Terms and Conditions and its Annexes.

118. Except in the cases of urgency, as determined in good faith by the Party calling the Dispute, no formal proceedings for the resolution of a Dispute may be started until the earlier to occur of (a) a good faith conclusion by the designated executives that amicable resolution through continued negotiation of the matter in issue does not appear likely or (b) the Parties have failed to reach an agreement on the Dispute within 15 Working Days of the escalation of the Dispute as described in article ~~117~~.

119. Without prejudice to the above and without prejudice to the rights of each Party in case of Dispute, each Party shall be entitled to call on the BIPT for a decision for disputes regarding the interpretation of the present General Terms and Conditions and/or its Annexes. In consideration of the legal framework, the then relevant BRUO and the then relevant decision of the BIPT on the BRUO, BIPT will take decision within a reasonable term that shall not exceed one (1) month.

Applicable Law and Jurisdiction

120. This Document shall be governed by Belgian law.

121. Without prejudice to article ~~118~~, any dispute concerning the validity, the interpretation, or the performance of the Raw Copper and Shared Pair Services, or of subsequent contracts derived here-from shall be finally submitted to the Courts of Brussels, Belgium. The above is without prejudice to the right of each of the Parties to submit the Dispute to the BIPT with a view to reach conciliation

Fraud

125. The Parties accept to cooperate to the best of their respective abilities in order to prevent and eliminate any kind of fraud which involves Services provided under these General Terms and Conditions. If any of the Parties suspects such kind of fraud, the Parties shall co-operate in order to identify the origin of the fraud and to use any appropriate means in order to eliminate and prevent such fraud as soon as possible. For the purposes of the application of the present provision, fraud shall mean any manipulation of a communications network, including by Beneficiary connected to the network of one of the Parties, in order to obtain one or more telecommunication services without paying the proper charge for it, or to support other criminal activities (including, in particular, wiretapping, eavesdropping and gathering secret numbers).

126. It is explicitly acknowledged by the Parties that any cooperation in the

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context of the present provision will need to be in due compliance with the entire regulatory framework.

Independent Parties - Approvals

127. Each Party shall be responsible for obtaining and keeping in effect all approvals from, and rights granted by, competent authorities, other operators, and any other persons that may be required in connection with the performance of its obligations under the present General Terms and Conditions. Each Party shall reasonably cooperate with the other Party in obtaining and maintaining any required approvals and rights for which other Party is responsible.

128. Each of the Parties is and shall remain at all times an independent contractor. Neither Party is authorized and neither of the Parties nor their employees, agents, ~~representatives or subcontractors~~ shall at any time attempt to act or act on behalf of the other Party to bind the other Party in any manner whatsoever to any obligations. Neither Party nor its employees, agents, ~~representatives or subcontractors~~ shall engage in any acts which may lead any person to believe that such Party is an employee, agent or representative of the other Party. Nothing in the present General Terms and Conditions shall be deemed to constitute a partnership between the Parties.

129. In the framework of the applicable Belgacom Reference Offer for ULL Services, should a conflict arise between the Main Body and any or several Annexes, attachment or appendix to an Annex, the Main Body shall prevail, except for (a) the General Terms and Conditions, which will prevail over the Main Body unless otherwise specifically stated, (b) when otherwise agreed by the Parties, in writing or (c) when otherwise specifically stated in the Main Body or Annex, Attachment or Appendix. Should a conflict arise between the General Terms and Conditions and an Annex, attachment or an appendix to said Annex, the General Terms and Conditions shall prevail unless otherwise specifically stated. Should a conflict arise between an Annex and an attachment or an appendix to this Annex, the Annex shall prevail unless otherwise agreed by the Parties, in writing or otherwise specifically stated.

130. If any part of this Offer shall be held to be illegal, invalid or unenforceable for any

reason, each Party agrees that such provision shall be enforced to the maximum extent permissible so as to effect the intent of the Parties, and the validity, legality and enforceability of the remaining provisions of this Offer shall not in any way be affected or impaired thereby. If necessary to effect the intent of the Parties, the Parties shall forthwith negotiate in good faith to amend this Offer and the Parties' practices hereunder in such manner and with such language as will fully reflect as closely as possible the intent of the Parties and render further performance lawful.

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Annex B 1.1

Service Description 2010

Belgacom access to the Raw Copper Loop

Existing single pair
&
Small Network Adaptations

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1. Scope

1. This Service Description deals with the definition of services, equipment and application requirements and properties of the Belgacom offer for renting Raw Copper Loops and related Small Network Adaptations as described under Section 2, and procedures for ordering of and fault reporting to Belgacom with respect to the services described herein on the Raw Copper Circuit.

2. Definition

2.1. Product definition of Raw Copper Circuit

2. Raw Copper Loop or Raw Copper Circuit means a pair of fully metallic continuous unequipped copper wires on the section between Belgacom's Main Distribution Frame at the Belgacom Local Exchange and the Network Termination Point at the User's site. The Raw Copper Loop or Raw Copper Circuit can be delivered on a Non-active Loop or an active Loop.
3. Beneficiary has the right to gain access to an end-to-end Raw Copper Loop at Belgacom Local Exchange buildings, on the condition that that the requested copper pair is unequipped. A pair is equipped when load coils or Active Equipment (coupling, repeaters, correctors, etc.) are present in the relevant circuit/s. Belgacom will make an equipped pair unequipped when possible. In case that the equipped pair cannot be made unequipped, this will be proved to the Beneficiary. For the sake of clarity, pairs can not be made unequipped in case this equipment is dedicated to multiple users or in case this removal does impact in any possible way other services or Users. Beneficiary will have access to the Raw Copper Loop at the Main Distribution Frame level on which the Raw Copper Loop is terminated. It is further required that, in the scope of this Service Description, the Raw Copper Loop is existing and can be used without the need of severe network modification works. The Small Network Adaptations performed by Belgacom are described in Section 2.2 and 2.3.
4. The access to the Raw Copper Circuit at the Belgacom network side will be realized on the Belgacom Main Distribution Frame (MDF) by using dedicated Blocks per Beneficiary. The access to the Raw Copper circuit at the User site will be at the Belgacom Network Termination Point (NTP).
5. The Demarcation Point in case of Belgacom delivered Tie Cabling will be
-in case of Physical or Virtual Colocation: the point on the Tie Cable just before it is connected to the collocated equipment of the Beneficiary.
-in case of Distant Colocation: the Connectors in a Cross Connection Cabinet in the immediate vicinity of the Belgacom Local building.
6. The demarcation point in case of Beneficiary delivered Tie cabling shall be the Beneficiary dedicated Blocks on the MDF in case of Raw Copper. In case of Tie cabling delivered by the Beneficiary, the Beneficiary has access to the area where the demarcation point is situated (MDF area in case of Raw Copper) at the Belgacom Local Exchange or Local Distribution Center for maintenance and test purposes. Beneficiary shall have to justify the necessity of the maintenance and/or tests planned. Beneficiary shall have to indicate the purpose of this access substantially (to be mentioned with the application for guided access). The access shall always be with a security escort, at the expense of the Beneficiary, and pursuant the conditions for guided access as described in the framework of co-mingling (physical colocation with escort access).
8. It is further required that in the scope of this Service Description, the Raw Copper Circuit is existing and can be provided without new construction of physical copper wires in the

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network. The construction of new Raw Copper Circuits is outside the scope of this Service Description.

9. Establishment of a Network Termination Point (where relevant) and cross connections in the local access network between Distribution Cable and the Feeder Cable (where relevant) are part of the provisioning and installation of the Raw Copper Circuit under this Service Description.

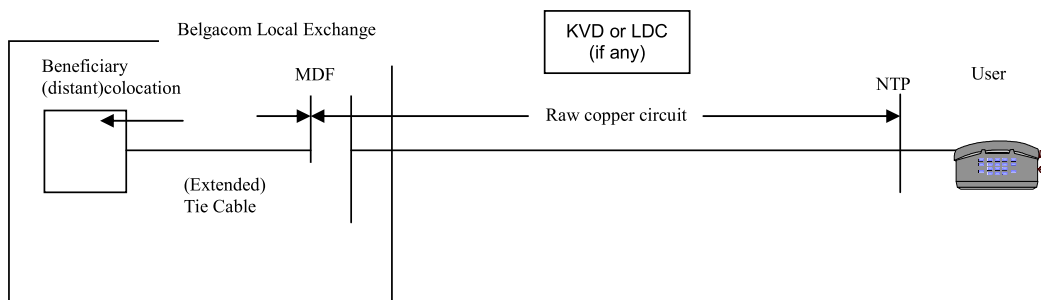


Fig. 1

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2.2. Product definition of Small Network Adaptations

10. The Introduction Cable (also referred to as drop wire) is defined as the part of a Raw Copper Loop that connects the Distribution Cable to the User Network Termination Point.
11. In some cases, the pair of fully metallic continuous unequipped copper wires exists from the Belgacom Main Distribution Frame at the Belgacom Local Exchange up to the Distribution Cable in the street in front of the User premises.
12. The present Service Description establishes the terms and conditions under which Belgacom will perform Small Network Adaptations by means of drop wire construction or drop wire intervention.

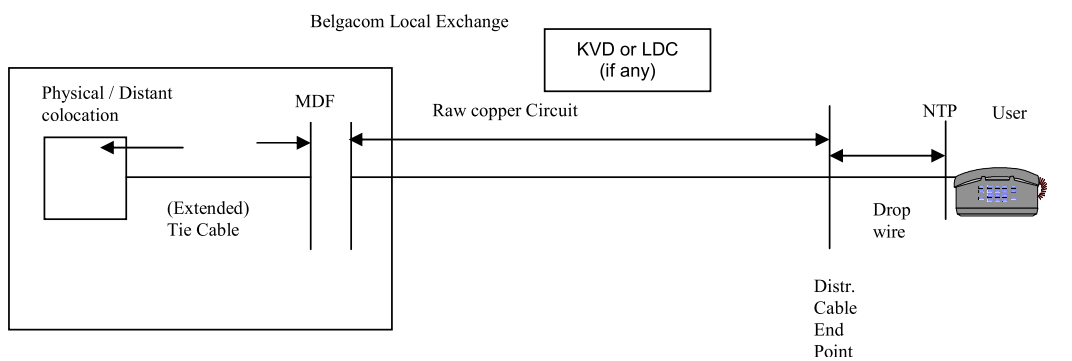


Fig. 2

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2.3. Small Network Adaptations

13. In some cases, the pair of fully metallic continuous unequipped copper wires exists from the Belgacom Main Distribution Frame at the Belgacom Local Exchange up to the Distribution Cable in the street in front of the User premises.
14. In case no Introduction Cable is available for the provisioning of a Raw Copper Loop, the following solutions will be applicable:
 - Realization of a new introduction in the building of the Beneficiaries User
 - Renewal of the introduction in the building of the Beneficiaries User
 - Splicing additional pairs in the existing introduction splice of the building of the Beneficiaries User
 - Moving existing introduction from an existing Distribution Cable to another existing Distribution Cable.
15. These solutions will only be available upon specific request of the Beneficiary and providing that the Belgacom standard conditions for access are fulfilled. This requires that a free duct or an open trench is available on the private domain. If a free duct or an open trench is not available on the private domain, Belgacom can be asked to also perform this part of the work on condition that the Beneficiary agrees to pay the non-discriminatory commercial price for that part of the work performed by Belgacom. This price will be determined on a case by case basis.
16. Belgacom will only perform the Small Network Adaptations if the splicing is done in front of the premises of that specific User. Belgacom will provide an Introduction Cable with a standard length of 20 meters to provide connection between the Distribution cable and the Network Termination Point. In case an introduction with a length of more than 20 meters has to be provided, Belgacom will charge the Beneficiary the relevant price for the extra work.
17. In case no more free pairs are available in the Distribution Cable or the Feeder Cable, the request for Raw Copper Loops will be rejected. The construction or trenching of new distribution cabling, new street cabinets or new feeder cabling is outside the scope of the present offer.

2.4. Network Termination Point.

18. If no Network Termination Point is present, such Network Termination Point will be installed by Belgacom. This is automatically the case for Small Network Adaptations. New internal cabling must always, except when specified otherwise, be provided by Belgacom, or under his responsibility, if existing internal cabling is insufficient in capacity of free pairs or of poor quality.
19. The attention is drawn to the fact that Belgacom reserves the right to propose to BIPT (which will decide on their implementation) on a non-discriminatory basis various scenarios to provide an adequate answer to the situation in which a cable (sometimes referred to as internal cabling) is placed between the Network Termination Point and the Introduction Cable. Such an answer is to be developed on a case-by-case basis and would need to take into account, in particular and where relevant, the presence of an introduction box, the way of introducing the Raw Copper Loop in the building of the User, the specific status of the cabling, the nature of the building and/or the work to be accomplished to offer the Service.
20. The current way of working will be evaluated after the necessary experience has been obtained by all Parties in the installation of Raw Copper Loops and Circuits. Belgacom will re-evaluate the offer and reserves the right to propose the necessary modifications on this item.

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2.5. Type of Loops offered by Belgacom

21. The following types of Raw Copper Loops are offered under the present Reference Offer for ULL (for technical details concerning the nature of the signals to be used on each type of Raw Copper Loops, see the Technical Specifications Document that can be found in Annex C):
 - **Raw Copper Loops of Type 1:** Basic Raw Copper Loop only to be used for the transmission of signals (including and starting from direct current) within the voice frequency band, being PSTN or Raw Copper Loop only to be used for the transmission of signals for which the binary rate is smaller or equal to 64 kbit/s or for the transmission of signals using ISDN basic access line code.
 - **Raw Copper Loops of Type 2:** Raw Copper Loop to be used According to the rules of the technical specifications document (annex c). The Beneficiary can also use the Raw Copper Loop like Type 1, obviously.
22. In ordering, Beneficiary indicates the type of loop per qualification as described above. Belgacom will handle requests for Type 1 as PSTN and Type 2 loops will by default be treated as ADSL over PSTN with respect to matters of repair and the quality of service related to the repair requests. Belgacom will not bear any liability relating to the absence of qualification of the loop when the loop qualification (e.g. Type 1 PSTN, Type 1 ISDN, Type 2 ADSL, Type 2 SDLS) was not included with the repair request. If this qualification is different from the default documented qualification as above, Beneficiary is invited to specify the service residing on the loop if this is necessary to facilitate the repair process.
23. The use of a totally unbundled Loop is free, provided that the Beneficiary complies with the "Spectrum Management" rules. The "Spectrum Management" rules regarding Unbundled Loops are described in Annex C to the present Reference Offer. Rules for "Spectrum Management" can be proposed by the Task Group Spectrum Management or BIPT and can be added to the Annex C of the present Reference Offer.
24. Depending on the type of equipment that is directly connected to the unbundled Local Loop, different rules for the bringing into service and for the service level can be applicable.

3. Connectivity to the Beneficiary Network

25. At the Belgacom Local Exchange building, the copper wires are terminated on the Main Distribution Frame. Beneficiary's access to the copper wire pairs will be established by connecting Tie Cables from the Main Distribution Frame to the colocation area in case of physical colocation and by connecting Extended Tie Cables from the Main Distribution Frame to the Cross Connection Cabinet in case of distant colocation.
26. The installation and maintenance of the (Extended) Tie Cable and the provisioning and maintenance of the Blocks will be made by Belgacom, as presented in Service Descriptions 2030 and 2035.

4. Colocation

27. For the provision of Colocation Services reference is made to the Colocation Agreement. Subscriptions to this agreement is a pre-requisite to install equipment in a Belgacom building. For the sake of clarity, Colocation Services can only be used to benefit from specific Belgacom Services requiring colocation.

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5. Spectrum Management and equipment aspects

30. “Annex C: Technical Specifications Document” to the contract, contains requirements related to Spectrum Management and equipment connected to the Raw Copper pair.

6. Boundary conditions and prerequisites

31. The Beneficiary is only allowed to use the indicated type of Raw Copper Loop for the purpose described in Section 2.5. In any case of changes by the Beneficiary of the equipment/technology used, the Beneficiary will inform Belgacom of this fact in order to avoid service degradation in the Belgacom Network for other Users.
32. At all times, the coexistence needs to be ensured between the services provided by the Beneficiary through the use of the Raw Copper Loops and the services provided by Belgacom or another Beneficiary on the Belgacom Network. In particular, Belgacom will be entitled to take a number of measures to protect its network integrity taking into account the need to ensure the coexistence of the different services mentioned above. In this case Belgacom will take measures either after prior approval by BIPT, either immediately in urgent cases. In the latter case, BIPT will be informed at the latest the next working day on the measures taken. Belgacom will inform and justify the Beneficiary as soon as possible on the measures taken. In all cases, Belgacom will follow the rules regarding spectrum management.
33. All equipment used by the Beneficiary will at least comply with the R&TTE Directive.
34. It is noted that Belgacom will not undertake customer care handling of End Users of the Beneficiary. If Belgacom receives requests from Users of the Beneficiary due to the inadequate handling of such requests by the Beneficiary, Belgacom will not deal with them.
35. In case there is a change of Raw Copper Loop type, the Beneficiary will address a request for a deactivation and an installation to Belgacom, in order to obtain the requested modification.
36. If Belgacom can demonstrate that if equipment or network components, that are operated by Beneficiary for its own use and that are connected to Belgacom’s public telecommunications network, cause disturbances in Belgacom’s network, Beneficiary shall be required to disconnect the User connection without any delay.

7. Ordering of Raw Copper

37. Belgacom shall deliver access to the Raw Copper according to Beneficiary’s orders transmitted to Belgacom. The general terms and conditions for delivering Raw Copper Loops are defined in “Annex E: Planning and Operations manual”.
38. The full details of the provisioning process can also be found in “Annex E: Planning and Operations manual”.

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7.1. Standard provisioning rules

39. Beneficiary orders and ends a Raw Copper Service by means of the electronic order form. See Annex E “Planning and Operations Manual” for more details.

40. The Beneficiary can obtain the following Standard Raw Copper Services:

<i>Service in respect of Raw Copper</i>	<i>Description</i>	<i>Fee</i>
1. <i>Inquiry</i>	<i>Examination of whether a Raw Copper (Sub-)Loop can be provided end to end</i>	<i>Inquiry fee</i>
2. <i>Request for a Raw Copper (Sub-)Loop</i>	<i>Physical cross connection of the Raw Copper (Sub-)Loop to the Beneficiary's Tie Cable at the Main Distribution Frame of the Belgacom Local Exchange, as well as - if necessary - related work at the User's site</i>	<i>Activation fee</i>
3. <i>Cancellation of a Request for a Raw Copper (Sub-)Loop</i>	<i>Orders that have been placed by the Beneficiary but that are cancelled prior to implementation</i>	<i>Cancellation fee</i>
4. <i>Installation of an NTP if necessary</i>	<i>Belgacom installs a Network Termination Point at the User's premises side</i>	<i>Telecom installation fee, invoiced on top of the activation fee</i>
5. <i>Deactivation of a Raw Copper (Sub-)Loop</i>	<i>Belgacom disconnects the related copper wires from the Beneficiary's dedicated Blocks</i>	<i>Deactivation fee</i>
6. <i>Change date</i>	<i>The Beneficiary requests a change in due date for the provisioning of a Raw Copper loop</i>	<i>Change date fee</i>
7. <i>Transfer¹</i>	<i>Transfer of a Raw Copper (Sub-)Loop from Beneficiary 1 to Beneficiary 2</i>	<i>Physical migration fee, billed to Beneficiary 2</i>

¹ See chapter 9: Migrations

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Further comments:

(1) Inquiry

41. The purpose of an inquiry is to investigate the availability of an end-to-end Raw Copper Loop at a particular User site. For Type 2 loops, Belgacom will additionally perform a pair selection test to verify that the service can coexist with the surrounding pairs. An inquiry gives only the status of a Raw Copper Loop in relation to a specific User at one specific moment in time. Belgacom guarantees the accuracy of the information provided at the moment of the inquiry, without prejudice to any subsequent change in the technical situation.

(2) Request for a Raw Copper Loop:

42. There are three possible situations, depending on the impact of the provision of Raw Copper (Sub-) Loops to the Beneficiary on the contractual relation between the User and Belgacom:
 - The Raw Copper Loop Request concerns a Non-active Loop and therefore does not affect the existing relation between Belgacom and the User. This is only possible if there is a (Non)-active Loop available at the User's premises.
 - The Raw Copper Loop Request concerns an Active Loop and therefore affects the existing relation between Belgacom and the User. This Request is also called a *Migration*.
 - The Raw Copper (Sub)-loop Request implies a small network adaptation (see 2.3).

Inquiry

43. In case the Beneficiary places a firm order for a Type 1 Raw Copper Loop as defined above, Belgacom will carry out an inquiry to determine whether a Non-active Loop exists between the User and the Belgacom Local Exchange (as indicated by the Beneficiary). For the firm order of a Type 2 Raw Copper Loop as defined above, Belgacom will perform additionally a pair selection test to verify whether the service, as indicated by the Beneficiary, can coexist with the surrounding pairs.

Rejection for technical reasons

44. In case the order cannot be implemented because of technical reasons, which has to be detailed and proved to the Beneficiary, the Beneficiary's Request will be rejected. In this case, the Beneficiary will be billed for the work done by Belgacom on validation of that order. If the firm order can be implemented, Belgacom will proceed with the implementation of that order according to the applicable process, which can be obtained at the Belgacom contact point mentioned above.

NTP installation

45. Belgacom will install an NTP, as termination point on the Raw Copper Loop, if such an NTP does not exist (see 2.4).

In case of Migration

46. In the case of a Migration, the user has the right to cancel an existing service that is currently made available to the User by Belgacom according to his contractual relationship with Belgacom. The services that can be terminated are the following: a single line PSTN service, a single line ISDN service or any other service (including a leased line). In such a case, Belgacom will ensure that the cancellation of the existing Belgacom Services and the provisions of the Raw Copper will take place on the same day, not exceeding 4 hours. In case the Raw Copper (Sub-)Loop between the User and Belgacom exists less than one year, the User may be billed by Belgacom an extra charge for the Migration of that specific loop.

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In case of Number Portability

47. In case of a request for Migration, the Beneficiary has also the possibility to request Belgacom to provide the porting of the User numbers in case the User formerly had a single line PSTN or ISDN service with Belgacom. In this case, there is an interaction with the Number Portability (NP) process, for which the Beneficiary will need to comply with the relevant procedures. The Beneficiary needs to introduce first an order for NP and later one for Raw Copper. In ordering Raw Copper, the Beneficiary Requested Date that is always provided by Beneficiary, need to match the requested execution date for Number Portability. Beneficiary will respect the rules for a Migration of Raw Copper and the procedures for number portability. In case there is a number portability request, the Beneficiary will indicate the numbers currently used by the User, which have to be ported to the Beneficiary on the Raw Copper Loop concerned.
48. In case NP is involved in the Migration, the Beneficiary will indicate that on the request form. If the User has a single line PSTN service with Belgacom, the Beneficiary is required to use the existing NTP that will not be removed by Belgacom. If the User has a single line ISDN service with Belgacom, the existing NTP will be removed by Belgacom and replaced with a TF95 or other device. These rules are not applicable in case the NTP is a cross-connectable distribution box where multiple pairs are connectable for that User.

In case of Small Network Adaptations

1. Beneficiary has the possibility to indicate 'SNA not allowed' when ordering. If 'SNA not allowed' is flagged when ordering, Belgacom will send a reject of the order should the need for a SNA be established at any point in the provisioning phase.
2. In case the order is not flagged 'SNA not allowed', the process is as follows:
 - a. If a Small Network Adaptation need is detected during the order validation,
Belgacom will notify this into the XML VALIDATE message by communication in the remark type SmallNetworkAdaptations the word "NEEDED".
 - b. If a SNA need is detected during provisioning,
Belgacom will create a HOLD message where a new appointment date will be proposed and with in the remark type SmallNetworkAdaptations the word "NEEDED".In both cases, the Beneficiary can then contact its End User for further negotiations.

(3) Cancellation of a Request for a Raw Copper Loop

49. The Beneficiary has the right to cancel an order that the Beneficiary has submitted to Belgacom for the implementation of a Raw Copper Loop. However, Belgacom will bill the Beneficiary for the work done in the process.

(4) Installation of an NTP if necessary

50. The circumstances under which an NTP is to be installed by Belgacom are described in point 2.1.3.

(5) Deactivation of a Raw Copper Loop

Deleted: <#>As the need for a Small Network Adaptation cannot be determined beforehand nor via the inquiry tool, the notification process between the Beneficiary and Belgacom can only start after investigation or by detection of such a SNA need during installation.¶

The Beneficiary does not have to indicate the SNA remark in its XML order anymore.¶ Depending when the SNA need will be determined Belgacom will notify it to the Beneficiary with an appropriate message;¶

¶ <#>If a SNA need is detected during the order validation, ¶

¶ Belgacom will notify this into the XML VALIDATE message by communication in the remark type SmallNetworkAdaptations the word NEEDED.¶

¶ <#>If a SNA need is detected during provisioning, ¶

¶ Belgacom will create a HOLD message where a new appointment date will be proposed and with in the remark type SmallNetworkAdaptations the word NEEDED.¶

¶ In both cases, the Beneficiary can then contact its End User for further negotiations.¶ Within 10 working days following the notification message the beneficiary will have to decide and communicate to Belgacom if the SNA may not be executed by sending a cancellation order.¶ If the SNA may be executed no specific message must be send by the Beneficiary, the order will automatically be continued after the 10 working-days.¶

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51. The Beneficiary can request the Deactivation of the Raw Copper Loop at a particular User site.

(6) Changed Use of a Raw Copper Loop

52. When the Beneficiary intends to use the Raw Copper Loop for other purposes than intended at the time of the first order, the Beneficiary will communicate the change of types to Belgacom (from Type 1 to Type 2 or vice versa). Belgacom then can take the necessary measurements for the changed use of that Raw Copper Loop. In addition, Belgacom reserves the right to reject the request of changed use for technical reasons in case the Raw Copper Loop cannot be provisioned in accordance with the request for changed use of the Beneficiary.

(7) Change Date

53. The Beneficiary will indicate on the order form the date at which the Beneficiary wishes Belgacom to provide the Raw Copper Loop (referred to as "Requested Installation Date" or "RID"). The Beneficiary has the right to change that date. In the latter case, the Beneficiary will be billed a Change Date fee.

(8) Transfer

54. When there is a transfer from Raw Copper Loops from Beneficiary 1 to Beneficiary 2, it is presumed that two Beneficiaries, according to agreement with the User, handle the removal of the User's services and co-ordinate the hand over of the Raw Copper.

55. It is acknowledged that Belgacom will transfer the Raw Copper Loop from Beneficiary 1 to Beneficiary 2 upon request of Beneficiary 2 solely. Belgacom will terminate the contract for that specific Raw Copper Loop by informing Beneficiary 1 of the request from Beneficiary 2, without revealing the identity of Beneficiary 2.

56. Belgacom handles the request of the Beneficiary 2, taking over the Raw Copper. Belgacom does not in any case handle complaints between Beneficiary 1 and Beneficiary 2.

57. The above services (listed under (1) to (8)) are settled according to the prices indicated in Annex H. For the installation fee, different price setting can apply to different types of Raw Copper Loops and different types of installations based on the work performed by Belgacom after approval by BIPT.

7.2. Non-standard provisioning rules

58. Belgacom will reject a Request for Raw Copper Loop, in particular:

- if no Non-active Loops are available (in case of a Request for a Non-active Loop); without prejudice of the right of the Beneficiary to request in that case a small network adaptation by Belgacom, according to the conditions as set out in Section 2
- if no Migration is possible due to technical constraints which must be detailed and proved to the Beneficiary in the implementation of the existing User connection;
- if the requested service is incompatible with the applicable pair selection rules as defined in annex C: Technical Specifications document;
- if no positions and/or pairs are available on the Beneficiary Blocks or Tie Cables in case of Physical colocation, or if no positions and/or pairs are available on the Beneficiary Blocks and Connectors or Extended Tie Cables in case of Distant colocation.

59. In case a Migration cannot be executed, the Beneficiary Request will be rejected. However, in that case the Beneficiary has the possibility to send to Belgacom a Non-active Loop

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Request. In the event that the latter Request can also not be executed, this Request will also be rejected.

8. Wrongful repair requests

- | 60. Belgacom's fault repair of the Raw Copper between the Main Distribution Frame at the Belgacom Local Exchange building and the User NTP is included in the periodic payment for the Raw Copper Loop. The procedures for that fault reporting are described in "Annex E: Planning and Operations manual".
- | 61. In case of a repair request where the fault was not caused by Belgacom and Belgacom has performed work for that repair request, Belgacom reserves the right to bill the Beneficiary for the work done by Belgacom in light of that specific request according to "Annex H: Price list" It is noted that Belgacom in a first phase will not automatically charge the Beneficiary for wrongful repair requests.

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Annex B 1.5

Service Description 2015

Belgacom access to the Raw Copper Loop

At Local Distribution Centers

Existing single pair
&
Small Network Adaptations

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1. Scope

1. This Service Description deals with the definition of services, equipment and application requirements and properties of the Belgacom offer for renting Raw Copper Loops and related Small Network Adaptations as described under Section 2, and procedures for ordering of and fault reporting to Belgacom with respect to the services described herein on the Raw Copper Circuit.

2. Definition

2.1. Product definition of Raw Copper Circuit

2. Raw Copper Loop or Raw Copper Circuit means a pair of fully metallic continuous unequipped copper wires on the section between Belgacom's Main Distribution Frame at the Belgacom LDC and the a Network Termination Point at the User's site. The Raw Copper Loop or Raw Copper Circuit can be delivered on a Non-active Loop or an active Loop.
3. Beneficiary has the right to gain access to an end-to-end Raw Copper Loop at Belgacom LDC s, on the condition that the requested copper pair is unequipped. A pair is equipped when load coils or Active Equipment (coupling, repeaters, correctors, etc.) are present in the relevant circuit/s. Belgacom will make an equipped pair unequipped when possible. In case that the equipped pair cannot be made unequipped, this will be proved to the Beneficiary. Beneficiary will have access to the Raw Copper Loop at the Main Distribution Frame level on which the Raw Copper Loop is terminated. It is further required that, in the scope of this Service Description, the Raw Copper Loop is existing and can be used without the need of severe network modification works. The Small Network Adaptations performed by Belgacom are described in Section 2.2 and 2.3.
4. The access to the Raw Copper Circuit at the Belgacom network side will be realized on the Belgacom Main Distribution Frame (MDF) by using dedicated Blocks per Beneficiary. The access to the Raw Copper circuit at the User site will be at the Belgacom Network Termination Point (NTP).
5. The Demarcation Point will be
 - in case of Physical or Virtual Colocation: the point on the Tie Cable just before it is connected to the colocated equipment of the Beneficiary.
 - in case of Distant Colocation: the Connectors in a Cross Connection Cabinet in the immediate vicinity of the Belgacom Local building.

The demarcation point in case of Beneficiary delivered Tie cabling shall be the Beneficiary dedicated Blocks on the MDF in case of Raw Copper. In case of Tie cabling delivered by the Beneficiary, the Beneficiary has access to the area where the demarcation point is situated (MDF area in case of Raw Copper) at the Belgacom Local Exchange or Local Distribution Center for maintenance and test purposes. Beneficiary shall have to justify the necessity of the maintenance and/or tests planned. Beneficiary shall have to indicate the purpose of this access substantially (to be mentioned with the application for guided access). The access shall always be with a security escort, at the expense of the Beneficiary, and pursuant the conditions for guided access as described in the framework of co-mingling (physical colocation with escort access).

6. It is further required that in the scope of this Service Description, the Raw Copper Circuit is existing and can be provided without new construction of physical copper wires in the network. The construction of new Raw Copper Circuits is outside the scope of this Service Description.

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7. Establishment of a Network Termination Point (where relevant) and cross connections in the local access network between Distribution Cable and the Feeder Cable (where relevant) are part of the provisioning and installation of the Raw Copper Circuit under this Service Description.

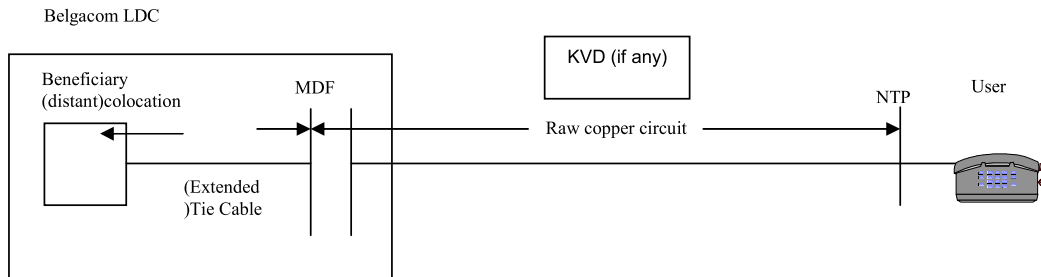


Fig. 1

2.2. Product definition of Small Network Adaptations

8. The Introduction Cable (also referred to as drop wire) is defined as the part of a Raw Copper Loop that connects the Distribution Cable to the User Network Termination Point.
9. In some cases, the pair of fully metallic continuous unequipped copper wires exists from the Belgacom Main Distribution Frame at the Belgacom LDC up to the Distribution Cable in the street in front of the User premises.
10. The present Service Description establishes the terms and conditions under which Belgacom will perform Small Network Adaptations by means of drop wire construction or drop wire intervention.

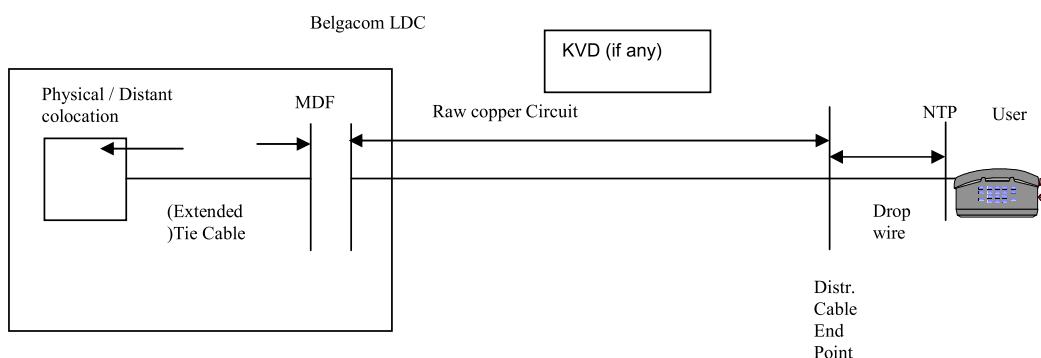


Fig. 2

2.3. Small Network Adaptations

11. In some cases, the pair of fully metallic continuous unequipped copper wires exists from the Belgacom Main Distribution Frame at the Belgacom LDC up to the Distribution Cable in the street in front of the User premises.

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12. In case no Introduction Cable is available for the provisioning of a Raw Copper Loop, the following solutions will be applicable:
 - Realization of a new introduction in the building of the Beneficiaries User
 - Renewal of the introduction in the building of the Beneficiaries User
 - Splicing additional pairs in the existing introduction splice of the building of the Beneficiaries User
 - Moving existing introduction from an existing Distribution Cable to another existing Distribution Cable.
13. These solutions will only be available upon specific request of the Beneficiary and providing that the Belgacom standard conditions for access are fulfilled. This requires that a free duct or an open trench is available on the private domain. If a free duct or an open trench is not available on the private domain, Belgacom can be asked to also perform this part of the work on condition that the Beneficiary agrees to pay the commercial price for that part of the work performed by Belgacom. This price will be determined on a case by case basis.
14. Belgacom will only perform the Small Network Adaptations if the splicing is done in front of the premises of that specific User. Belgacom will provide an Introduction Cable with a standard length of 20 meters to provide connection between the Distribution cable and the Network Termination Point. In case an introduction with a length of more than 20 meters has to be provided, Belgacom will charge the Beneficiary the relevant price for the extra work.
15. In case no more free pairs are available in the Distribution Cable or the Feeder Cable, the request for Raw Copper Loops will be rejected. The construction or trenching of new distribution cabling, new street cabinets or new feeder cabling is outside the scope of the present offer.

2.4. Network Termination Point.

16. If no Network Termination Point is present, such Network Termination Point will be installed by Belgacom. This is automatically the case for Small Network Adaptations. New internal cabling must always, except when specified otherwise, be provided by Belgacom, or under his responsibility, if existing internal cabling is insufficient in capacity of free pairs or of poor quality.
17. The attention is drawn to the fact that Belgacom reserves the right to propose on a non-discriminatory basis various scenarios to provide an adequate answer to the situation in which a cable (sometimes referred to as internal cabling) is placed between the Network Termination Point and the Introduction Cable. Such an answer is to be developed on a case-by-case basis and would need to take into account, in particular and where relevant, the presence of an introduction box, the way of introducing the Raw Copper Loop in the building of the User, the specific status of the cabling, the nature of the building and/or the work to be accomplished to offer the Service.
18. The current way of working will be evaluated after the necessary experience has been obtained by all Parties in the installation of Raw Copper Loops and Circuits. Belgacom will re-evaluate the offer and reserves the right to propose the necessary modifications on this item.

2.5. Type of Loops offered by Belgacom

19. The following types of Raw Copper Loops are offered under the present Reference Offer for ULL (for technical details concerning the nature of the signals to be used on each type of Raw Copper Loops, see the Technical Specifications Document that can be found in Annex C):

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- **Raw Copper Loops of Type 1:** Basic Raw Copper Loop only to be used for the transmission of signals (including and starting from direct current) within the voice frequency band, being PSTN or Raw Copper Loop only to be used for the transmission of signals for which the binary rate is smaller or equal to 64 kbit/s or for the transmission of signals using ISDN basic access line code.
 - **Raw Copper Loops of Type 2:** Raw Copper Loop to be used According to the rules of the technical specifications document (annex c). The Beneficiary can also use the Raw Copper Loop like Type 1, obviously.
20. In ordering, Beneficiary indicates the type of loop per qualification as described above. Belgacom will handle requests for Type 1 as PSTN and Type 2 loops will by default be treated as ADSL over PSTN with respect to matters of repair and the quality of service related to the repair requests. Belgacom will not bear any liability relating to the absence of qualification of the loop when the loop qualification (e.g. Type 1 PSTN, Type 1 ISDN, Type 2 ADSL, Type 2 SDSL) was not included with the repair request. If this qualification is different from the default documented qualification as above, Beneficiary is invited to specify the service residing on the loop if this is necessary to facilitate the repair process.
21. The use of a totally unbundled Loop is free, provided that the Beneficiary complies with the “Spectrum Management” rules. The “Spectrum Management” rules regarding Unbundled Loops are described in Annex C to the present Reference Offer. Rules for “Spectrum Management” can be proposed by the Task Group Spectrum Management or BIPT can be added to the present Reference Offer. Depending on the type of equipment that is directly connected to the unbundled Local Loop, different rules for the bringing into service and for the service level can be applicable.

3. Connectivity to the Beneficiary Network

22. At the Belgacom LDC, the copper wires are terminated on the Main Distribution Frame. Beneficiary’s access to the copper wire pairs will be established by connecting Tie Cables from the Main Distribution Frame to the colocation area, as described in the relevant LDC colocation documents.
23. The installation and maintenance of the (Extended) Tie Cable and the provisioning and maintenance of the Blocks will be made by Belgacom, as presented in Service Description 2045.

4. Colocation

24. For the provision of Colocation Services reference is made to the Colocation Agreement. Subscriptions to this agreement is a pre-requisite to install equipment in a Belgacom building. For the sake of clarity, Colocation Services can only be used to benefit from specific Belgacom Services requiring colocation.

5. Spectrum Management and equipment aspects

25. “Annex C: Technical Specifications Document” to the contract, contains requirements related to Spectrum Management and equipment connected to the Raw Copper pair.

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6. Boundary conditions and prerequisites

26. The Beneficiary is only allowed to use the indicated type of Raw Copper Loop for the purpose described in Section 2.5. In any case of changes by the Beneficiary of the equipment/technology used, the Beneficiary will inform Belgacom of this fact in order to avoid service degradation in the Belgacom Network for other Users.
27. At all times, the coexistence needs to be ensured between the services provided by the Beneficiary through the use of the Raw Copper Loops and the services provided by Belgacom or another Beneficiary on the Belgacom Network. In particular, Belgacom will be entitled to take a number of measures to protect its network integrity taking into account the need to ensure the coexistence of the different services mentioned above.
28. All equipment used by the Beneficiary will at least comply with the R&TTE Directive.
29. It is noted that Belgacom will not undertake customer care handling of Users of the Beneficiary. If Belgacom receives requests from Users of the Beneficiary due to the inadequate handling of such requests by the Beneficiary, Belgacom will not deal with them.
30. In case there is a change of Raw Copper Loop type, the Beneficiary will address a request for a deactivation and an installation to Belgacom, in order to obtain the requested modification.
31. If equipment or network components, that are operated by Beneficiary for its own use and that are connected to Belgacom's public telecommunications network, cause disturbances in Belgacom's network, Beneficiary shall be required to disconnect the User connection without any delay.
32. Belgacom shall use all reasonable endeavours to correct any trouble affecting the quality of service Belgacom is providing to its own Users. In this respect, Belgacom is entitled to disconnect Beneficiary's connection to Belgacom's access network, on the basis of User complaints, reports from the operational services of Belgacom, etc., and provided that Belgacom can demonstrate that Beneficiary's systems cause service degradation or disruption of the services offered by Belgacom in the network.

7. Ordering of Raw Copper

33. Belgacom shall deliver access to the Raw Copper according to Beneficiary's orders transmitted to Belgacom. The general terms and conditions for delivering Raw Copper Loops are defined in "Annex E: Planning and Operations manual".
34. The full details of the provisioning process can also be found in "Annex E: Planning and Operations manual".

7.1. Standard provisioning rules

Beneficiary orders and ends a Raw Copper Service by means of the electronic order form. See Annex E "Planning and Operations Manual" for more details.

The Beneficiary can obtain the following Standard Raw Copper Services:

Service in respect of Raw Copper	Description	Fee

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<i>Service in respect of Raw Copper</i>	<i>Description</i>	<i>Fee</i>
1. <i>Inquiry</i>	<i>Examination of whether a Raw Copper (Sub-)Loop can be provided end to end</i>	<i>Inquiry fee</i>
2. <i>Request for a Raw Copper (Sub-)Loop</i>	<i>Physical cross connection of the Raw Copper (Sub-)Loop to the Beneficiary's Tie Cable at the Main Distribution Frame of the Belgacom Local Exchange, as well as - if necessary - related work at the User's site</i>	<i>Activation fee</i>
3. <i>Cancellation of a Request for a Raw Copper (Sub-)Loop</i>	<i>Orders that have been placed by the Beneficiary but that are cancelled prior to implementation</i>	<i>Cancellation fee</i>
4. <i>Installation of an NTP if necessary</i>	<i>Belgacom installs a Network Termination Point at the User's premises side</i>	<i>Telecom installation fee ,invoiced on top of the activation fee</i>
5. <i>Deactivation of a Raw Copper (Sub-)Loop</i>	<i>Belgacom disconnects the related copper wires from the Beneficiary's dedicated Blocks</i>	<i>Deactivation fee</i>
6. <i>Change date</i>	<i>The Beneficiary requests a change in due date for the provisioning of a Raw Copper loop</i>	<i>Change date fee</i>
7. <i>Transfer¹</i>	<i>Transfer of a Raw Copper (Sub-)Loop from Beneficiary 1 to Beneficiary 2</i>	<i>Physical migration fee, billed to Beneficiary 2</i>

¹ See chapter 9: Migrations

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Further comments:

(1) Inquiry

The purpose of an inquiry is to investigate the availability of an end-to-end Raw Copper Loop at a particular User site. For Type 2 loops, Belgacom will additionally perform a pair selection test to verify that the service can coexist with the surrounding pairs. An inquiry gives only the status of a Raw Copper Loop in relation to a specific User at one specific moment in time. Belgacom guarantees the accuracy of the information provided at the moment of the inquiry, without prejudice to any subsequent change in the technical situation.

(2) Request for a Raw Copper Loop

There are three possible situations, depending on the impact of the provision of Raw Copper (Sub-) Loops to the Beneficiary on the contractual relation between the User and Belgacom:

- The Raw Copper Loop Request concerns a Non-active Loop and therefore does not affect the existing relation between Belgacom and the User. This is only possible if there is a (Non)-active Loop available at the User's premises.
- The Raw Copper Loop Request concerns an Active Loop and therefore affects the existing relation between Belgacom and the User. This Request is also called a **Migration**.
- The Raw Copper (Sub)-loop Request implies a small network adaptation (see 2.3).

Inquiry

In case the Beneficiary places a firm order for a Type 1 Raw Copper Loop as defined above, Belgacom will carry out an inquiry to determine whether a Non-active Loop exists between the User and the Belgacom LDC (as indicated by the Beneficiary). For the firm order of a Type 2 Raw Copper Loop as defined above, Belgacom will perform additionally a pair selection test to verify whether the service, as indicated by the Beneficiary, can coexist with the surrounding pairs.

Rejection for technical reasons

In case the order cannot be implemented because of technical reasons, which has to be detailed and proved to the Beneficiary, the Beneficiary's Request will be rejected. In this case, the Beneficiary will be billed for the work done by Belgacom on validation of that order. If the firm order can be implemented, Belgacom will proceed with the implementation of that order according to the applicable process, which can be obtained at the Belgacom contact point mentioned above.

NTP installation

Belgacom will install an NTP, as termination point on the Raw Copper Loop, if such an NTP does not exist (see 2.4).

In case of Migration

In the case of a Migration, the user has the right to cancel an existing service that is currently made available to the User by Belgacom according to his contractual relationship with Belgacom. The services that can be terminated are the following: a single line PSTN service, a single line ISDN service or any other service (including a leased line). In such a case, Belgacom will ensure that the cancellation of the existing Belgacom Services and the provisions of the Raw Copper will take place on the same day, not exceeding 4 hours. In case the Raw Copper (Sub-)Loop between the User and Belgacom exists less than one year, the User may be billed by Belgacom an extra charge for the Migration of that specific loop.

In case of Number Portability

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In case of a request for Migration, the Beneficiary has also the possibility to request Belgacom to provide the porting of the User numbers in case the User formerly had a single line PSTN or ISDN service with Belgacom. In this case, there is an interaction with the Number Portability (NP) process, for which the Beneficiary will need to comply with the relevant procedures. The Beneficiary needs to introduce first an order for NP and later one for Raw Copper. In ordering Raw Copper, the Beneficiary Requested Date that is always provided by Beneficiary, need to match the requested execution date for Number Portability. Beneficiary will respect the rules for a Migration of Raw Copper and the procedures for number portability. In case there is a number portability request, the Beneficiary will indicate the numbers currently used by the User, which have to be ported to the Beneficiary on the Raw Copper Loop concerned.

In case NP is involved in the Migration, the Beneficiary will indicate that on the request form. If the User has a single line PSTN service with Belgacom, the Beneficiary is required to use the existing NTP that will not be removed by Belgacom. If the User has a single line ISDN service with Belgacom, the existing NTP will be removed by Belgacom and replaced with a TF2001 or other device. These rules are not applicable in case the NTP is a cross-connectable distribution box where multiple pairs are connectable for that User.

In case of Small Network Adaptations

1. Beneficiary has the possibility to indicate 'SNA not allowed' when ordering. If 'SNA not allowed' is flagged when ordering, Belgacom will send a reject of the order should the need for a SNA be established at any point in the provisioning phase.

2. In case the order is not flagged 'SNA not allowed', the process is as follows:

1. If a Small Network Adaptation need is detected during the order validation,

Belgacom will notify this into the XML VALIDATE message by communication in the remark type SmallNetworkAdaptations the word "NEEDED".

2. If a SNA need is detected during provisioning,

Belgacom will create a HOLD message where a new appointment date will be proposed and with in the remark type SmallNetworkAdaptations the word "NEEDED".

In both cases, the Beneficiary can then contact its End User for further negotiations.

(3) Cancellation of a Request for a Raw Copper Loop

The Beneficiary has the right to cancel an order that the Beneficiary has submitted to Belgacom for the implementation of a Raw Copper Loop. However, Belgacom will bill the Beneficiary for the work done in the process.

(4) Installation of an NTP if necessary

The circumstances under which an NTP is to be installed by Belgacom are described in point 2.4.

(5) Deactivation of a Raw Copper Loop

The Beneficiary can request the Deactivation of the Raw Copper Loop at a particular User site.

(6) Changed Use of a Raw Copper Loop

When the Beneficiary intends to use the Raw Copper Loop for other purposes than intended at the time of the first order, the Beneficiary will communicate the change of types to Belgacom (from Type 1

Deleted: With every request for a Raw Copper loop, Beneficiary has the possibility to indicate whether executions of small network adaptations are allowed if required. If small network adaptations are needed to provide the requested service and Beneficiary included its approval in the request, small network adaptations will be executed automatically. If the Beneficiary's approval is not included, the request will be put on hold, with information given to Beneficiary about the effective need, and with a delay of ten working days given to the Beneficiary to confirm its order, and notify by that its acceptance of the needed Small Network Adaptations. Belgacom will charge the Beneficiary the relevant fees for this specific Network Adaptations, according to the different elements set out in "Annex H: Price List" after having given to the Beneficiary the proof of the effective need and execution (with number of pairs introduced) of the Small Network Adaptations. This has to be done in written form. If no proof is given, the relevant fees are not due by the Beneficiary. Only the number of pairs related to the request are due, on a proportional base. ¶

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to Type 2 or vice versa). Belgacom then can take the necessary measurements for the changed use of that Raw Copper Loop. In addition, Belgacom reserves the right to reject the request of changed use for technical reasons in case the Raw Copper Loop cannot be provisioned in accordance with the request for changed use of the Beneficiary.

(7) Change Date

The Beneficiary will indicate on the order form the date at which the Beneficiary wishes Belgacom to provide the Raw Copper Loop (referred to as "Requested Installation Date" or "RID"). The Beneficiary has the right to change that date. In the latter case, the Beneficiary will be billed a Change Date fee.

(8) Transfer

When there is a transfer from Raw Copper Loops from Beneficiary 1 to Beneficiary 2, it is presumed that two Beneficiaries, according to agreement with the User, handle the removal of the User's services and co-ordinate the hand over of the Raw Copper.

It is acknowledged that Belgacom will transfer the Raw Copper Loop from Beneficiary 1 to Beneficiary 2 upon request of Beneficiary 2 solely. Belgacom will terminate the contract for that specific Raw Copper Loop by informing Beneficiary 1 of the request from Beneficiary 2, without revealing the identity of Beneficiary 2.

Belgacom handles the request of the Beneficiary 2, taking over the Raw Copper. Belgacom does not in any case handle complaints between Beneficiary 1 and Beneficiary 2.

The above services (listed under (1) to (8)) are settled according to the prices indicated in Annex H. For the installation fee, different price setting can apply to different types of Raw Copper Loops and different types of installations based on the work performed by Belgacom after approval by BIPT.

7.2. Non-standard provisioning rules

Belgacom will reject a Request for Raw Copper Loop, in particular:

- if no Non-active Loops are available (in case of a Request for a Non-active Loop); without prejudice of the right of the Beneficiary to request in that case a small network adaptation by Belgacom, according to the conditions as set out in Section 2
- if no Migration is possible due to technical constraints which must be detailed and proved to the Beneficiary in the implementation of the existing User connection;
- if the requested service is incompatible with the applicable pair selection rules as defined in annex C: Technical Specifications document;
- if no positions and/or pairs are available on the Beneficiary Blocks or Tie Cables in case of Physical colocation, or if no positions and/or pairs are available on the Beneficiary Blocks and Connectors or Extended Tie Cables in case of Distant colocation.

In case a Migration cannot be executed, the Beneficiary Request will be rejected. However, in that case the Beneficiary has the possibility to send to Belgacom a Non-active Loop Request. In the event that the latter Request can also not be executed, this Request will also be rejected.

8. Wrongful repair requests

Belgacom's fault repair of the Raw Copper between the Main Distribution Frame at the Belgacom LDC and the User NTP is included in the periodic payment for the Raw Copper Loop. The procedures for that fault reporting are described in "Annex E: Planning and Operations manual".

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In case of a repair request where the fault was not caused by Belgacom and Belgacom has performed work for that repair request, Belgacom reserves the right to bill the Beneficiary for the work done by Belgacom in light of that specific request according to “Annex H: Price list” It is noted that Belgacom in a first phase will not automatically charge the Beneficiary for wrongful repair requests.

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Annex C

Belgacom Raw Copper and Shared Pair Products

Technical Specifications

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1. Preliminary remark

1. In order to safeguard the integrity of local access lines and maintain an acceptable performance of higher bandwidth services, Beneficiaries must notify their acceptance of and

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willingness to comply with the Belgacom technical requirements before they can be supplied with the raw copper and shared pair products.

2. Conformity with the Belgacom technical requirements is essential for all if the performance and reach of higher bandwidth services is to be maximised, and failure to comply is a serious matter.
3. Each equipment connected to the Access Network pairs has to comply with the principles of the RTTE guideline.
4. In addition equipment has to conform to other relevant standards, such as those governing product safety and EMC [ETSI EN 300 386 V1.2.1].
5. This document contains a detailed description of the requirements that equipment must meet to be suitable for use on unbundled local loops, without any guarantee of speed and/or quality of data transmission. References are made to international standards.
6. Note that the Spectrum Management issues are discussed in the Task Group Spectrum Management set up by the BIPT; evolution in the requirements and rules are always possible by decision of BIPT.
7. Belgacom has also to comply with these requirements without limitations nor exceptions pursuant to the regulatory framework.

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2. Transmission properties of the access network

2.1. Generalities

8. A subscriber loop consists of sections of twisted pairs cables of different gauges. All the sections are buried and connected together by means of electrical joints, called splices, directly placed in the ground or sometimes in a manhole.

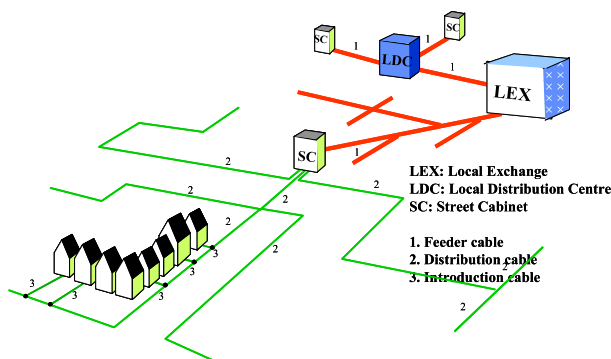


Fig.1

9. In the ideal situation, the Access Network has a star configuration with the feeder cable bundles going from the main distribution frame to the street cabinet. From the street cabinet, via distribution cables and drop wires, the wire pairs are terminated in the individual customer sites. The reality shows that cable arrangements leads sometimes to a meshed structure in the feeding network. No bridged taps are present in the outside local network.
10. Each telecom cable consists of a number of copper conductors generally grouped in quads; these quads can be arranged in bundles or in layers, depending on the type of cable.
11. Definition:

We will consider 2-wire circuits realized by using unloaded twisted copper pairs. These will bind the two ends via infrastructure telephony cables. These circuits don't contain any separating, coupling, correcting, amplifying ... elements. They are usually made of different conductor sections with different characteristics.

2.2. Physical characteristics of the cables

12. A conductor can be isolated by a layer of paper (in the old generation cables) or synthetic material, usually polyethylene.
13. Most of the conductors have a 0.5 mm or 0.6 mm diameter; distant customers however need to be connected via conductors of 0.8 and 1.0 mm; 2000 pairs cables going out of the central office are sometimes made of 0.4 mm conductors.
14. In paper insulated cables, the conductors are surrounded by a lead sheath, generally protected by armouring and polyethylene sheath.
15. In plastic insulated cables used in the distribution network, the conductors are surrounded by a polyethylene sheath.

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16. In plastic insulated cables used in the feeding network, the conductors are surrounded by an aluminium screen, a polyethylene internal sheath, an armouring and a polyethylene external sheath.
17. The plastic cables are in the majority of the cases longitudinally waterproof.

2.3. Electrical characteristics of the cables

18. The table below gives some typical characteristics of the access network cables [figures given by the cable manufacturers or by measurements in the field]

Diameter	LR	KC	A800	A40.000	A150.000	A300.000
0.4 mm	275	55	2.0	7.5	12.5	14.5
0.5 mm	180	50-55	1.3	6	9	11
0.6 mm	123	38.5-46	1.0	4	6.5	9
0.8 mm	69	38.5	0.7	2.5	5	6

LR = Loop Resistance in Ohm/km

KC = average Kilometric Capacity in nF/km (it depends on the type of cable)

A800 = Attenuation measured at 800 Hz in dB/km

A40.000 = Attenuation measured at 40.000 Hz in dB/km

A150.000 = Attenuation measured at 150.000 Hz in dB/km

A300.000 = Attenuation measured at 300.000 Hz in dB/km

19. NB: the attenuation values are conditional. A loop is made of several pieces of cables and then additional attenuation and reflections due to the splices and the different cable gauges will occur.

2.4. Insulation resistance

20. The insulation resistance between the 'a' and 'b' wires of a pair (without terminal equipment) or between wire and earth is supposed to be at least 750 kOhms. Values measured less than this may as far as the provisioning and repair is concerned, be reported as a fault. For the lines of type 2, a value lower than 1 MOhm may be reported as a fault if the Beneficiary establishes in good faith the relation between a resistance lower than 1 MOhm and the problem observed.

2.5. Measurements

21. BGC line parameters measurements are performed with measurement systems of Teradyne. This system uses many concepts and techniques that are covered by one or more patents.
22. In summary the general principles of these methods are the following:
To measure the insulation resistances between wires "a" and "b", "a" and earth and "b" and earth, the system uses a complex measurement bridge and a specific algorithm which allow to determine the real values of these resistances and not a combination of their values like obtained by measurements performed with a single insulation measurement bridge. The accuracy of the measurements is equal to 1.5 % in the range 10 Kohms-20 Mohms.
23. The same measurement bridge allows to measure the alternative currents induced in each wire, which gives an idea of the noise between "a" and earth and "b" and earth: typical acceptable values range from 0 to 59 µA. This measurement takes only into account frequencies below 20 Khz.

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24. This will be studied further in the Task Group Spectrum Management.

3. Pair selection rules

- 25. The number of broadband systems that can be deployed within an access cable is not limited. Adding a lot of broadband systems within a cable nevertheless leads to a general decrease of the performance, compared with the situation where only a few high frequency systems are deployed.
- 26. In order to maintain a good performance level for the xDSL services, Belgacom is applying some pair selection rules. The purpose is to keep the new xDSL technologies at a distance of the existing and disturbing technologies, namely HDB3 and HDSL (2 Mbits systems). In some cases, if HDSL or HDB3 equipment presently used by Belgacom are the source of the problem or the source of the impossibility to find a solution, Belgacom will replace this equipment using an acceptable technology.
- 27. The only rules to be considered are the following: a line type 2 will not be located in the same quad than or in the adjacent quad of an existing 2 Mbits system.
- 28. The pair selection rules do not offer any guarantees as to the potential bitrate in any access cable or on any specific copper pair.
- 29. The principle of “pair selection rules” is presently applicable, but non necessary applicable in the long term.

4. References

- 30. In case a new version of the references below is published, the reader must always refer to the most recent version.
- 31. When a reference is made to an international standard document and ETSI document and when a list of values is given (if the country particularities are foreseen), the Belgian value must always be taken.
- 32. This list is given for information purpose only, unless otherwise explicitly mentioned.

4.1. General

ETSI TR 101 830-1 V1.2.1 (2001-08):	Transmission and Multiplexing (TM); Spectral Management on Metallic Access Networks; Part 1: Definitions and Signal Library
EN 60950 (CENELEC):	Safety of information technology equipment including electrical business equipment
ITU-T Rec. 0.153:	Norme de l'ITU-T. Basic parameters for the measurement of error performance at bit rates below the primary rate.
CCITT Rec. 0.9:	Measuring arrangements to assess the degree of unbalance about earth. (Blue book vol IV)
Directive 1999/5/CE:	Directive du Parlement Européen et du Conseil, du 09 mars 1999, concernant les équipements hertziens et les équipements terminaux de télécommunications et la reconnaissance mutuelle de leur conformité (1999/5/CE)

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ITU-T Recommendation G.997.1	publiée au journal officiel des Communautés européennes du 07.04.1999. Physical layer management for digital subscriber line (DSL) transceivers ITU-T

4.2. PSTN

ETS 300 001:	European Telecommunication Standard. Attachments to the Public Switched telephone Network (PSTN) ; General requirements for equipment connected to an analogue subscriber interface in the PSTN (Edition 3 1996-03) (Belgian part)
ETSI-specification “EG 201 188 V1.1.1”:	Public Switched Network (PSTN); Network Termination Point (NTP) analog interface; Specification of physical and electrical characteristics at a 2-wire analog presented NTP for short to medium length loop applications (1999-06)
Belgacom – User to Network Interface (UNI) Specification:	“Analog Subscriber Line Signalling (Basic Call)” (ref.: BGC_D_48_9807_30_02_E.DOC) http://www.belgacom.be

4.3. ISDN

ETSI TS 102 080 V1.3.2. (2000-05) :	Transmission and Multiplexing (TM); Integrated Services Digital Network (ISDN) basic rate access, Digital transmission system on metallic local lines”.

4.4. ADSL

ETR 328:	Transmission and Multiplexing (TM) ; Asymmetric Digital Subscriber Line (ADSL) ; Requirements and performance
ITU-T Recommendation G.992.1:	“Asymmetrical Digital Subscriber Line (ADSL) Transceivers”.
ANSI Standard T1.413-1998:	“Network and Customer Installation Interfaces – Asymmetrical Digital Subscriber Line (ADSL) Metallic Interface”.
ETSI Technical specification TS 101 388 (V 1.3.1.):	“Transmission and Multiplexing ; Access transmission systems on metallic access cables ; Asymmetric Digital Subscriber Line (ADSL) – Coexistence of ADSL and ISDN-BA on the same pair “.

4.5. SHDSL

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ETSI TS 101 524:	Transmission and Multiplexing (TM) ; Access transmission system on metallic access cables; Symmetrical single pair high bitrate Digital Subscriber Line (SDSL)
ITU G.991.2:	Single pair High Speed Digital Subscriber Line (SHDSL) Transceivers.

4.6. ADSL2

ITU-T Recommendation ITU G.992.3 :	« (Asymmetrical Digital Subscriber Line Transceivers 2 (ADSL2) »

4.7. ADSL2plus

ITU-T Recommendation ITU G.992.5 :	« Asymmetric Digital Subscriber Line (ADSL) transceivers – Extended bandwidth ADSL2 (ADSL2plus)

4.8. VDSL

ITU-T Recommendation G.993.1	Very high speed digital subscriber line transceivers (VDSL)
ETSI TS 101 270-1	Very high speed digital subscriber line transceivers (VDSL); Part 1: Functional requirements

4.9. VDSL2

ITU-T Recommendation G.993.2	Very high speed digital subscriber line transceivers 2 (VDSL2)

5. Common technical specifications for the equipment to be connected to the loop or sub-loop

5.1. VDSL2

VDSL2 as defined in sections 6.13 (VDSL2 from LEX), 10.6 (VDSL2 from LDC) or 10.7 (VDSL2 from KVD) shall respect following deployment rules:

Upstream bands U1 and U2 may not be used in situations where UPBO mechanism may fail to protect upstream transmission of other VDSL2 lines.

Stubs into customer premises internal cabling (i.e. star configuration or pairs connected in parallel to connect the different rooms of a household) may make Upstream Power Back Off mechanism fail to perform correctly. In such conditions one VDSL2 line could disturb the other VDSL2 lines by sending too high upstream power. Therefore upstream bands U1 and U2 are not allowed if at customer premises there is not one direct path without any stub between the introduction point and the VDSL2 NT (modem). As illustrated in figure below, in case of POTS or ISDN overlay, this condition requires that a centralized splitter shall be used (= no distributed splitters for full spectrum VDSL2).

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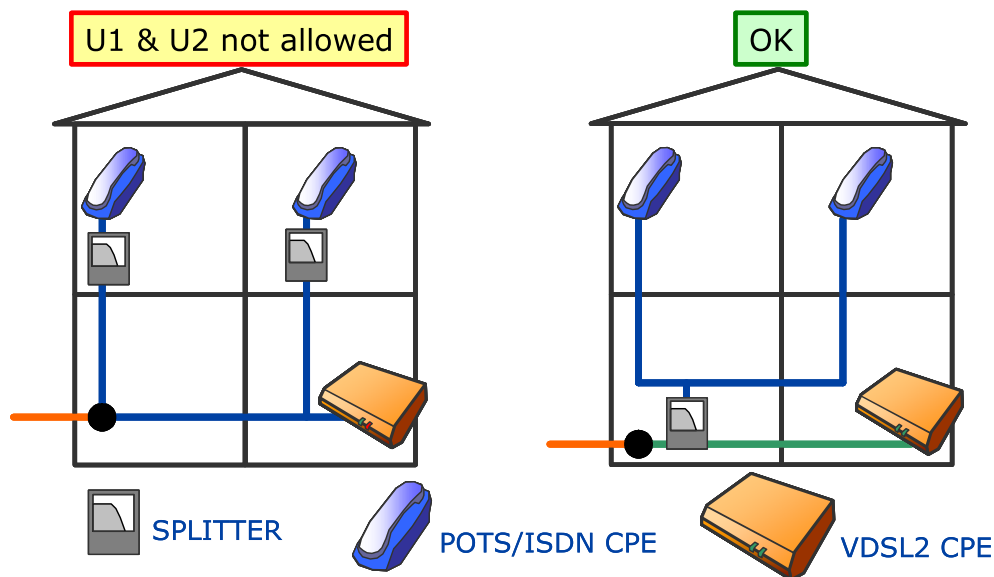


Figure 2: "Customer premises internal cabling"

Figure below depicts a distribution cable where direct and return pairs are present.

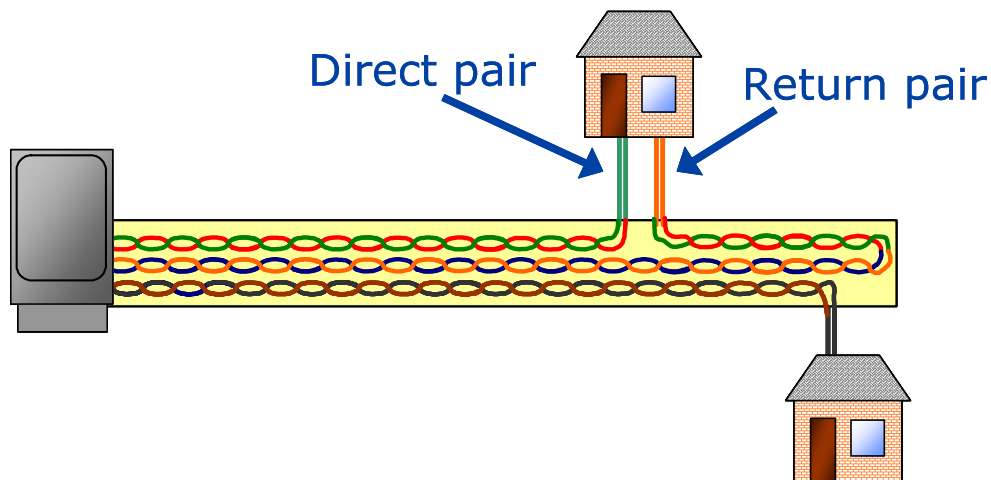


Figure 3: "return pair"

Pairs that have a section over the return, as depicted in Figure 3 , are not compatible with the Upstream Power Back Off mechanism. A VDSL2 system that would be connected over such pair will transmit at higher upstream level in the bands U1 and U2, if they were enabled, compared to lines situated over the direct path. This will result in the fact that a VDSL2 line may be seriously disturbed in the upstream bands U1 and U2, if this line is situated further from the DSLAM than another VDSL2 line that goes over the return in the same cable. Therefore upstream bands U1 and U2 are not allowed over pairs that go over the return.

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Figure below depicts a ring topology in distribution network

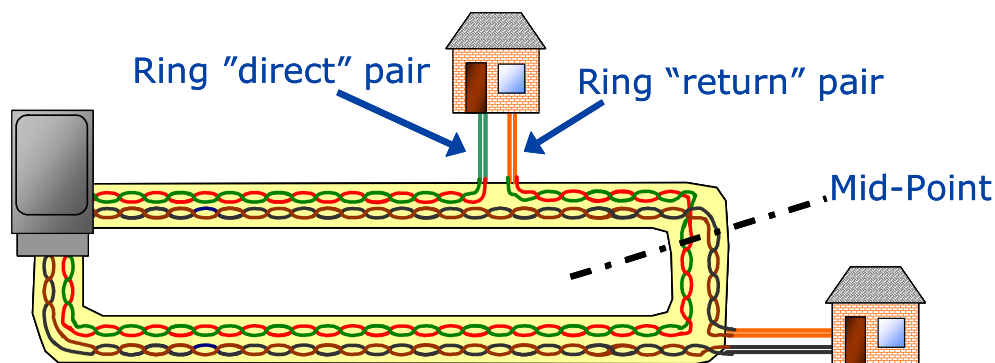


Figure 4: "ring topology"

In case of ring topologies, as depicted in Figure 4 , the presence of opposite streams may seriously impact downstream and upstream performances of all VDSL2 lines in the cable. Therefore Belgacom shall define an optimum mid-point of the ring and the use of frequencies above f_{max} , where f_{max} is to be set in the range between 2208kHz and 3750kHz, shall not be allowed for VDSL2 lines over pairs that cross over the ring mid-point.

6. Technical specifications for the equipment to be connected to the raw copper loop

6.1. General requirements

33. The attention of the reader is drawn to the following points:

- The systems must be insensitive to the crossing of the wires in a pair.
- The direct current must be always limited to 120 mA.
- If a ringing voltage is to be used, when generating the signal, it must be assured that the signal is a sine and that zero – detection of the signal is applied.

Insulation

34. Different lines will always be isolated from each other. The insulation resistance will be greater than 10 MOhm under 200 VDC. This also applies for the insulation between the emission and reception circuits. This requirement is withdrawn when considering multi-line equipments using a centralised feeding for the disposal of direct current on the line. In this case, the line interfaces of this equipment must be symmetrical towards the earth.

Signalisation and Remote feeding

35. The conformity towards the "connection to telecommunication networks" (EN 60950) aspect will be established by the delivery of a document testifying the conformity of the equipments for the considered application.

36. When a numbering signaling by loop opening is used, this one will have a rhythm of maximum 10 ± 1 Hz.

37. The internal impedance of the ringing current generator must be 400 Ohm minimum.

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6.2. Requirements for PSTN equipment to be connected to the Raw Copper Loop

38. The document ETSI TR 101 830-1 V1.1.1 and the Belgacom User to Network Interface (UNI) specifications have to be considered as references. When both are mentioned, the Belgacom UNI is **the** document where the specifications have to be found, due to the Belgacom network specificity, whereas the ETSI document will give a general overview and eventually some additional pieces of information.

Requirements	Requirements or reference to requirements
Total signal voltage	ETSI TR 101 830-1 Subclause 7.1.1.
Peak amplitude	ETSI TR 101 830-1 Subclause 7.1.2.
Narrow-band signal power	ETSI TR 101 830-1 Subclause 7.1.3.
Unbalance about earth	ETSI TR 101 830-1 Subclause 7.1.4. Belgacom – User to Network Interface (UNI) Specification: “Analog Subscriber Line Signalling (Basic Call)” Subclause 5.4
Feeding power (from the LT-port)	ETSI TR 101 830-1 Subclause 7.1.5. Belgacom – User to Network Interface (UNI) Specification: “Analog Subscriber Line Signalling (Basic Call)” Subclause 5.1 and Subclause 5.2
Reference impedance Z_r	ETSI TR 101 830-1 Subclause 7.1.6.
Ringing signal	ETSI TR 101 830-1 Subclause 7.1.7. Belgacom – User to Network Interface (UNI) Specification: “Analog Subscriber Line Signalling (Basic Call)” Subclause 8.1.1, Subclause 8.1.2, Subclause 8.1.4 Frequency – The nominal frequency must be between 20 Hz and 55 Hz with a tolerance of +/- 5% Parasitic signals – The total power of the parasitic signals (harmonic included) created by the generator shall be 26 dB lower than the power of the nominal frequency wave
Metering signals	ETSI TR 101 830-1 Subclause 7.1.8.

Except for voice band, the paragraph 4.4.3. of ETS 300 001 (Belgian values) applies.

6.3. Requirements for equipment delivering signals for which the binary rate is smaller or equal to 64 kbit/s

39. The major points are the following:

40. Impedance

The line interface impedance, at the different transmission rates and/or with the different coding types or transmitted signals types, will preferably be adapted to the line characteristic impedance at the central frequency of the modem usable spectrum.

41. Line impedance typical values:

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Frequency (kHz)	Impedance (Ohms)
1.6	600
6	300
32	150
64	120
200 and more	100

42. The impedance of the transceivers and the receivers will be the same, with a tolerance of $\pm 20\%$, as measured at the central frequency of the usable spectrum. The measurement needs to be done for each of the impedances as different options are foreseen.

43. Symmetry

The symmetry of the input and output interface with the earth will be in accordance with the following values:

- From 10 Hz to F (Hz): ≥ 48 dB
- From F (Hz) to F_1 (Hz) : 48 dB – 10 dB/decade

44. where:

- F = the highest frequency of the spectrum, measured at the -10 dB point below the level of the spectrum usable component of the spectrum with the highest level.
- F_1 = the highest frequency of the measured spectrum, including the harmonics; the components below -60 dBm/600 Ohm will be ignored.

45. Spectrum of the transmitted frequencies

The spectrum will be limited to 130 kHz (point -30 dBm/600 Ohm) in all the cases.

46. Emission level

The emission level is maximum 0 dBm/ref 600 Ohm in the 300Hz-3400 Hz frequency range.

47. The signal emitted out of the voice band (300Hz-3400Hz) must be limited to 3 Vpp.

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6.4. Requirements for equipment for the transmission of signals using ISDN basic access line code

6.4.1. ISDN 2B1Q signals

48. This category covers signals, generated by ISDN transmission equipment on a single pair, based on 2B1Q line coding. This subclause is based on the ETSI reports on ISDN equipment. A signal can be classified as an ISDN 2B1Q signal if it is compliant with all subclauses below.
49. The equipment must in particular be compliant to the ETS 102 080 (V1.3.2.). In order to be compliant to the spectral management rules, the paragraph 8.1. of the recommendation ETSI ETR 101 830-1 V1.1.1 needs to be matched.

Requirements	Reference to requirements
Total signal power	TS102 080 Subclause A.12.3
Peak amplitude	TS102 080 Subclause A.12.1
Narrow-band signal power	ETSI TR 101 830-1 Subclause 8.1.3 TS102 080 Subclause A.12.4
Unbalance about earth	ETSI TR 101 830-1 Subclause 8.1.4 TS102 080 Subclause A.13.3.1
Feeding power (from the LT-port)	ETSI TR 101 830-1 Subclause 8.1.5 EN60950

6.4.2. ISDN MMS43 signals

50. This category covers signals, generated by ISDN transmission equipment on a single pair, based on MMS43 (also called 4B3T) line coding. This subclause is based on the ETSI reports on ISDN equipment. A signal can be classified as an ISDN MMS43 signal if it is compliant with all subclauses below.
51. The equipment must in particular be compliant to the ETS 102 080 (V1.3.2.). In order to be compliant to the spectral management rules, the paragraph 8.2. of the recommendation ETSI ETR 101 830-1 V1.1.1 needs to be matched.

Requirements	Reference to requirements
Total signal power	ETSI TR 101 830-1 Subclause 8.2.1
Peak amplitude	TS102 080 Subclause B.12.1
Narrow-band signal power	ETSI TR 101 830-1 Subclause 8.2.3 TS102 080 Subclause B.12.4
Unbalance about earth	ETSI TR 101 830-1 Subclause 8.2.4 TS102 080 Subclause B.13.3
Feeding power (from the LT-port)	ETSI TR 101 830-1 Subclause 8.2.5 EN 60950

6.5. Requirements for equipment using ADSL over POTS to be connected to the Raw Copper Loop

52. This clause summarizes asymmetrical signals that are generated by digital transmission equipment up to 8 Mbit/s, including ADSL. Asymmetrical means a bitrate in the downstream direction and a significantly lower bitrate in the upstream direction.
53. Generally, the applied technology must comply with the following recommendations:

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- ITU-T 992.1
- ANSI T1.413 Issue 2

54. Further, in order to comply with the spectral management rules, the equipment shall match the following requirements:

- No ADSL – systems with spectral overlap of upstream and downstream (Echo Cancelling systems) are allowed on the loops. Only ATU-C 's with a PSD – mask for reduced NEXT (FDD) are allowed on the loops.
- The power cutback mechanism for the upstream transmission, as described in ITU-T 992.1, needs to be applied.
- It is **STRICTLY FORBIDDEN** to reverse the transmission direction. ADSL systems are designed to maximize self – compatibility when all 'downstream' signals in one cable flow into the same direction. This for the reasons explained in ETSI TR 101 830-1 V1.1.1 clause 5.2 / Note 1.

55. In this case, the following naming convention is used in the present document:

- **Downstream** signal limits are mandatory for signals that are injected into an LT- port of the Local Loop Wiring. LT- ports are located at the central office side of the local loop wiring.
- **Upstream** signal limits are mandatory for signals that are injected into an NT-port of the local loop wiring. NT – ports are located at the customer side.

56. These ADSL–signals may share the same wire pair with POTS –signals.

57. The following clauses are based on ANSI and ITU-reports on ADSL-equipment. A signal can be classified as an ADSL over PSTN – signal if it is compliant with all subclauses below:

General Requirements	Reference to requirements
Total signal power (downstream only) < 100 mW = 20 dBm	ANSI T1.413 Issue 2, subclauses 6.15.1 and 6.15.3 ITU-T Recommendation G.992.1 subclause A.1.2.3.1
Total signal power (upstream only) < 18 mW = 12.5 dBm	ANSI T1.413 Issue 2, subclauses 7.15.1 and 7.15.3 ITU-T Recommendation G.992.1 subclause A.2.4.3.1
Narrow-band signal power (downstream only) For ADSL with DMT with carriers spaced at 4.3125 kHz the carriers 33 –255	ANSI-T1.413 Issue 2 ANNEX F (ATU-C Transmitter PSD mask for reduced NEXT) ITU-T Recommendation G.992.1 subclause A.1.3 (PSD – mask for Reduced NEXT)
Narrow-band signal power (upstream only) For ADSL with DMT with carriers spaced at 4.3125 kHz the carriers < 32	ANSI-T1.413 Issue 2 Subclause 7.14 ITU-T Recommendation G.992.1 subclause A.2.4
Unbalance about earth (upstream AND downstream)	ANSI T1.413 Issue 2 Subclause 12.3.1 ITU –T Recommendation G.992.1 subclause A.4.3.1
Feeding power (from the LT-port)	Not applicable

58. The requirements for any PSTN equipment operating in the frequency band below ADSL on the same wire pair appear from the PSTN requirements.

6.6. Requirements for ADSL over ISDN equipment to be connected to Raw Copper Loop

59. This category covers signals, generated by ADSL transmission equipment. These signals share the same wire pair with ISDN-signals.

60. Generally, the applied technology must comply with the following recommendations:

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- ITU-T 992.1
- ETSI TS 101 388

61. Further, in order to comply with the spectral management rules, the equipment shall match the following requirements:

- No ADSL – systems with spectral overlap of upstream and downstream (Echo Canceling systems) are allowed on the loops. Only ATU-C ‘s with a PSD – mask for reduced NEXT (FDD) are allowed on the loops.
- In accordance with ETSI TS 101 388 §4.2.2.1 , tones above 254kHz are used for downstream transmission, and thus shall not be used for upstream transmission.
- The power cutback mechanism for the upstream transmission, as described in ITU-T 992.1, needs to be applied.
- It is STRICTLY FORBIDDEN to reverse the transmission direction. ADSL systems are designed to maximize self – compatibility when all ‘downstream’ signals in one cable flow into the same direction. This for the reasons explained in ETSI TR 101 830-1 V1.1.1 clause 5.2 / Note 1.
- Note that the ISDN – lines in Belgium are operating with 4B3T line coding.

62. In this case, the following naming convention is used in the present document:

- **Downstream** signal limits are mandatory for signals that are injected into an LT- port of the Local Loop Wiring. LT- ports are located at the central office side of the local loop wiring.
- **Upstream** signal limits are mandatory for signals that are injected into an NT-port of the local loop wiring. NT – ports are located at the customer side.

63. The following clauses are based on ETSI and ITU-reports on ADSL-equipment. A signal can be classified as an ADSL over ISDN – signal if it is compliant with all subclauses below:

Requirements	Reference to requirements
Total signal power (downstream only) < 90 mW = 19.3 dBm	ETSI TS 101 388
Total signal power (upstream only) < 22.5 mW = 13.3 dBm	ETSI TS 101 388
Narrow-band signal power (downstream only) For ADSL with DMT with carriers spaced at 4.3125 kHz the carriers 56–255	Only FDD (Frequency Division Duplexed) systems allowed
Narrow-band signal power (upstream only) For ADSL with DMT with carriers spaced at 4.3125 kHz the carriers below 64	ETSI TS 101 388 Subclause 6.10 ITU-G992.1 Subclause B.2.2
Unbalance about earth (upstream AND downstream)	ITU –T Recommendation G.992.1 subclause A.4.3.1
Feeding power (from the LT-port)	Not applicable

64. The requirements for any ISDN basic access equipment operating in the frequency band below ADSL on the same wire pair appear from the ISDN requirements.

6.7. Specific requirements for spectral compatibility between ADSL over POTS and ADSL over ISDN

65. Additionally, the ATU-C ADSL above POTS must be capable to apply ‘tone suppression’ in the downstream part, in order to have the possibility to reduce additional NEXT (Near End Cross Talk) from a part of the downstream tones on a part of the upstream tones of an adjacent ADSL over ISDN transmission system.

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66. Example: the ADSL above POTS downstream could be forced to start above carrier 40, to allow ADSL above ISDN upstream to be able to use all carriers below 40 without ADSL downstream NEXT.
67. The location of the masking frequency for ADSL over POTS downstream will be in the range of carrier 32 to 56.
68. A new PSD mask applies here, which is generated by applying the wider mask of the relevant PSDs defined under section 4.5 and 4.6 above, and by additionally masking the carriers of the DMT transmission in the passband.

6.8. Specific requirements for SHDSL equipment to be connected to Raw Copper Loop

69. The equipment must be conforming to the relevant ITU G.991.2 and ETSI Technical specifications.
70. Only SHDSL equipment with Line code PAM16 and Symetrical PSD – ANNEX B (European version) is allowed to be connected to the Raw Copper Loop.

6.9. Specific requirements for ADSL2

71. ADSL2 systems complying with recommendation ITU G.992.3 (Asymmetrical Digital Subscriber Line Transceivers 2 (ADSL2)), and to one of the annex A (ADSL2 over POTS) , annex B (ADSL2 over ISDN), annex L (Reach Extended ADSL2 – READSL2) or M (ADSL2 extended upstream) of the recommendation ITU G.992.3 are authorized for use from the Central Office (LEX) on local loops (raw copper or shared pair).
72. The systems shall comply with the following rules:
 - It is strictly forbidden to reverse the transmission direction.
 - In this case, the following naming convention is used:
 - Downstream signal limits are mandatory for signals that are injected into an LT-port of the local loop wiring. LT- ports are located at the central office side of the local loop wiring.
 - Upstream signal limits are mandatory for signals that are injected into an NT-port of the local loop wiring. NT- ports are located at the customer side.
 - These ADSL2 signals may share, accordingly, the same wire pair with POTS or ISDN BA signals.
 - ADSL2 over POTS Downstream passband PSD shall respect PSD mask defined by ITU-T G.992.3 §A.1.3 ATU-C transmitter PSD mask for non-overlapped spectrum operation (supplements 8.10)
 - ADSL2 over POTS Upstream PSD shall respect PSD mask defined by ITU-T G.992.3 §A2.2 ATU-R upstream transmit special mask (supplements 8.10)
 - ADSL2 over ISDN Downstream passband PSD shall respect PSD mask defined by ITU-T G.992.3 §B.1.3 ATU-C transmitter PSD mask for non-overlapped spectrum operation (supplements 8.10)

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- ADSL2 over ISDN Upstream PSD shall respect PSD mask defined by ITU-T G.992.3 §B.1.3 ATU-C transmitter PSD mask for non-overlapped spectrum operation (supplements 8.10). In accordance with ITU-T G.992.3 §B.1.3, tones above 254kHz are used for downstream transmission, and thus shall not be used for upstream transmission.
- ADSL2 annex L Downstream pass band PSD shall respect PSD mask defined by ITU-T G.992.3 §L.1.3 ATU-C downstream transmit spectral mask for non-overlapped spectrum reach-extended operation (supplements clause 8)
- ADSL2 annex L Upstream Masks shall respect one of the PSD mask defined into ITU-T G.992.3 §L.2.2 (known as mode 1) or ITU-T G.992.3 §L.2.3 (known as mode 2)
- ADSL2 annex M Downstream pass band PSD shall respect PSD mask defined by ITU-T G.992.3 §M.1.3 ATU-C transmitter PSD mask for non-overlapped spectrum operation (supplements 8.10)
- ADSL2 annex M Upstream PSD shall respect PSD mask defined by ITU-T G.992.3 §M.2.2 ATU-R upstream transmit special mask (supplements 8.10).
- The spectral masks EU-64 defined by ITU-T G.992.3 table M.3 is not allowed.
- ADSL2 annex M is not allowed for local loops with attenuation at 800Hz exceeding 3,5dB.
- ADSL2 annex L is not allowed for local loops with attenuation at 800Hz less than 5,8dB.

73. Further, ADSL2 systems shall also comply with the same restrictions as outlined for ADSL in § 5.7.

6.10. Specific requirements for ADSL2plus

74. ADSL2+ systems complying with recommendation ITU G.992.5 (Asymmetric Digital Subscriber Line (ADSL) transceivers – Extended bandwidth ADSL2 (ADSL2+)) and to one of the annex A (ADSL2+ over POTS), B (ADSL2+ over ISDN) or M (ADSL2+ extended upstream) of the recommendation ITU G.992.5 are authorized for use from the Central Office (LEX) on local loops (raw copper or shared pair).

75. The systems shall comply with the following rules:

- It is strictly forbidden to reverse the transmission direction.
- In this case, the following naming convention is used:
 - Downstream signal limits are mandatory for signals that are injected into an LT-port of the local loop wiring. LT- ports are located at the central office side of the local loop wiring.
 - Upstream signal limits are mandatory for signals that are injected into an NT-port of the local loop wiring. NT- ports are located at the customer side.
- These ADSL2plus signals may share, accordingly, the same wire pair with POTS or ISDN BA signals
- ADSL2plus over POTS Downstream passband PSD shall respect PSD mask defined by ITU-T G.992.5 §A.1.3 ATU-C transmitter PSD mask for non-overlapped spectrum operation (supplements 8.10)
- ADSL2PLUS over POTS Upstream PSD shall respect PSD mask defined by ITU-T G.992.5 §A.2.2 ATU-R upstream transmit spectral mask (supplements 8.10)
- ADSL2PLUS over ISDN Upstream PSD shall respect PSD mask defined by ITU-T G.992.5 §B.1.3 ATU-C transmitter PSD mask for non-overlapped spectrum operation (supplements 8.10). In accordance with ITU-T G.992.5 §B.1.3, tones above 254kHz are used for downstream transmission, and thus shall not be used for upstream transmission.

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- ADSL2+ annex M Downstream pass band PSD shall respect PSD mask defined by ITU-T G.992.5 §M.1.3 ATU-C transmitter PSD mask for non-overlapped spectrum operation (supplements 8.10)
- ADSL2+ annex M Upstream PSD shall respect PSD mask defined by ITU-T G.992.5 §M.2.2 ATU-R upstream transmit special mask (supplements 8.10).
- The spectral masks EU-64 defined by ITU-T G.992.5 table M.3 is not allowed.
- ADSL2+ annex M is not allowed for local loops with attenuation at 800Hz exceeding 3,5dB.

76. Further, ADSL2PLUS systems shall also comply with the same restrictions as outlined for ADSL in § 5.7.

6.11. Specific requirements for extended SDSL

77. Extended SDSL (ETSI TS 101 524 annex E and ITU-T G991.2 Annex G) is allowed for deployment in the loop on type 2 raw copper loops (i.e. from a LEX or a LDC). (it is not allowed for deployment in the subloop).
78. Only TC-PAM32 is allowed above 2312 kbps.
79. Following table defines extended SDSL deployment rules. In order to protect other xDSL systems performances, the rules define the maximum allowed line rate as function of the loop attenuation at 800Hz, linear interpolation is to be used for line rates that are not listed in the table:

Att @ 800Hz	Line Rate (kbps)
1,7	5696
2,2	4640
2,6	4000
3,2	2312
3,4	2056
3,7	1800
3,8	1672
3,9	1552
4	1480
4,4	1300
4,8	1224
5,1	1160
5,9	1033
No Limit	<1033

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6.12. VDSL¹

80. VDSL is only allowed for deployment by Belgacom in some subloops (not in the loop from a LEX) with the frequency plan 998 and the modulation code DMT (discrete multitone). The subloops where this is allowed are defined to be from a KVD where the attenuation of the feeding cable pairs at 800 Hz between the LEX and the concerned KVD is above 2.0 db. A list of all KVD with the attenuation of the feeding cable pairs at 800 Hz between the LEX and the concerned KVD is published by Belgacom on the personal page of the BRUO part in the Belgacom web site. In case of multiple feeding cables, the minimum attenuation is to be given, and this minimum attenuation is the one which is to taken into consideration for applying the 2.0 db rule.

Installed VDSL which shouldn't be allowed in this framework, but which were installed before the date of 15.11.2005 are allowed the stay in service.

6.13. VDSL₂

81. VDSL₂ systems complying with recommendation ITU-T G.993.2 main body and annex B shall be allowed for use on local loop from LEX in any of the following situations

Loops are directly connected to the LEX without any KVD.

Loops are connected to a specific KVD wherefore it has been estimated that over 90% of the end-users behind it are located at less than one 1 km from LEX.

When allowed, VDSL₂ systems for use on local loop from LEX shall respect following rules:

- Respect of the deployment rules as defined in section 5.1.
- Spectrum usage below 12MHz shall respect at least one of the 998 Limit PSD Masks listed in Table B-3 of G.993.2 (all limit mask in table B-3 with maximum used frequency = 12MHz are allowed, spectrum usage above 12MHz is for later study).
- Upstream Power Back Off shall be applied for upstream bands U1 and U2.
- Noise D reference PSD described in table 13 of ETSI TS 101 270-1 shall be used for Upstream Power Back Off (ETSI TS 101 270-1 reference PSD is used because the reference UPBO PSD is for further study in ITU-T G.993.2 version of 2006/02).
- When spectral compatibility with VDSL systems in the same cables is needed, it shall be possible to limit downstream transmit PSD level in order not to exceed -61dBm/Hz in template value (or -57.5 in peak values as defined in G.993.2)

¹ Reference is made to the relevant ETSI and ITU standards:

- ETSI TS 101 270-1 V1.3.1 "Very High Speed Digital Subscriber Line (VDSL); Part 1: Functional requirements"
- ETSI TS 101 270-2 V1.2.1 "Very High Speed Digital Subscriber Line (VDSL); Part 2: Transceiver specification"
- ITU-T G.993.1 Recommendation "Very high speed digital subscriber line foundation"

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7. Technical specifications for the equipment to be connected to the Shared Pair Loop

7.1. General requirements

82. For all applications the following general requirements are made for user equipment.

- The systems must be insensitive to the crossing of the wires in a pair.

7.2. Requirements for ADSL over POTS equipment to be connected to Shared Pair Loop

83. The requirements are identical to the requirements given in 5.5.

84. Note that the only equipment that can be connected is ADSL equipment; no PSTN equipment can be connected to the Shared Pair Loop.

7.3. Requirements for ADSL over ISDN equipment to be connected to Shared Pair Loop

85. The requirements are identical to the requirements given in 5.6.

86. Note that the only equipment that can be connected is ADSL equipment, no ISDN equipment can be connected to the Shared Pair Loop.

7.4. Specific requirements for spectral compatibility between ADSL over POTS and ADSL over ISDN

87. The requirements are identical to the requirements given in 5.7.

7.5. Requirements for ADSL2 over POTS equipment to be connected to Shared Pair Loop

88. The requirements are identical to the requirements given in 5.9.

89. Note that the only equipment that can be connected is ADSL2 equipment; no PSTN equipment can be connected to the Shared Pair Loop.

7.6. Requirements for ADSL2 over ISDN equipment to be connected to Shared Pair Loop

90. The requirements are identical to the requirements given in 5.9.

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91. Note that the only equipment that can be connected is ADSL2 equipment, no ISDN equipment can be connected to the Shared Pair Loop.

7.7. Specific requirements for special compatibility between ADSL2 over POTS and ADSL2 over ISDN

92. The requirements are identical to the requirements given in 5.9.

7.8. Requirements for ADSL2plus over POTS equipment to be connected to Shared Pair Loop

93. The requirements are identical to the requirements given in 5.10.
94. Note that the only equipment that can be connected is ADSL2plus equipment; no PSTN equipment can be connected to the Shared Pair Loop.

7.9. Requirements for ADSL2plus over ISDN equipment to be connected to Shared Pair Loop

95. The requirements are identical to the requirements given in 5.10.
96. Note that the only equipment that can be connected is ADSL2plus equipment, no ISDN equipment can be connected to the Shared Pair Loop.

7.10. Specific requirements for spectral compatibility between ADSL2plus over POTS and ADSL over ISDN

97. The requirements are identical to the requirements given in 5.10.

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8. Technical specifications of the splitter interface used by Belgacom in order to provide the Shared Pair

8.1. General

98. The interface that will be described is the interface between the splitter and the ADSL equipment from the Beneficiary as depicted in the figure below:

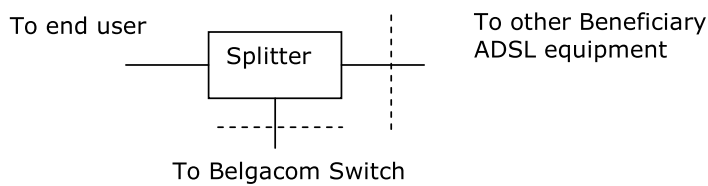


Fig. 2

99. Two types of splitters will be used: the splitters to be used for ADSL over POTS and the splitters to be used for ADSL over ISDN.

8.2. Splitter specifications

100. The POTS splitter is fully compliant with the Recommendation found in ITU-T 992.1 Annex E Type 1 European.

101. The ISDN (4B3T) splitter is fully compliant with the Recommendation found into ETSI TS 101 952-1 sub-part 3.

102. Both splitters (POTS and ISDN) include a DC-blocking functionality.

103. The splitter does not include any High Pass Filter (HPF) Functionality.

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9. g.ShDSL deployment rules

104. Following table defines g.SHDSL deployment rules. In order to protect other xDSL systems performances, the rules define the maximum allowed line rate as function of the loop attenuation at 800Hz, linear interpolation is to be used for line rates that are not listed in the table:

Att @ 800Hz	Line Rate (kbps)
3,2	2312
3,4	2056
3,7	1800
3,8	1672
3,9	1552
4	1480
4,4	1300
4,8	1224
5,1	1160
5,9	1033
No Limit	<1033

Note: this table is subject to evolution, and has to be considered as starting point for the deployment of the first g.SHDSL systems.

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10. Sub-loop unbundling

10.1. Sub-loop unbundling applications

10.1.1.LDC

105.A Local Distribution Center (LDC) is a concentration point, created essentially in order to de-saturate feeding cables and to avoid expensive works of laying new cables.

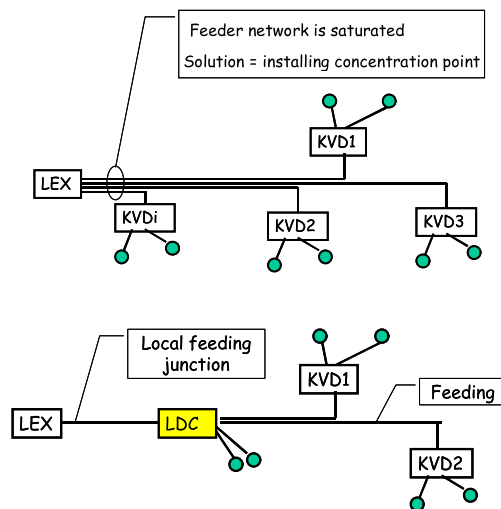


Fig. 4

106.The customers located behind the LDC are normally connected to this LDC; nevertheless, optimization of the switching resources in the LEX and in the LDC may lead to still connect a certain percentage of these customers to the LEX. It is however impossible to connect all the customers located behind the LDC to the LEX, due to the fact that the local junction - cables between the LEX and the LDC - does not have a sufficient capacity.

107.Sub-loop at the LDC offers the possibility to install DSLAM equipment in the LDC or close to it.

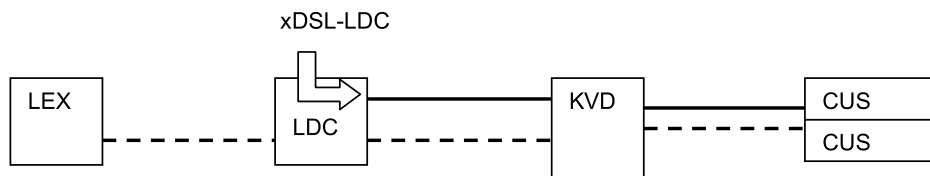


Fig. 5

108.The distance between the LEX and the LDC varies between about 800 meters and several kilometers; the majority of the LDC are located at less than 5 km from the LEX. A complete list of LDCs with the real distance (measured in effective cable length) between LEX and LDC is published on the secured part of the Belgacom web site.

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109. The distance between the LDC and the customers may also reach several kilometers.

10.1.2. KVD

110. The KVD (“KabelVerDeler”, = street cabinet) is a passive installation; its role is to distribute the feeding pairs on a flexible way between the customers connected to this KVD.

111. Sub-loop at the KVD means the installation of DSLAM equipment in the proximity of the KVD in order to offer xDSL services to the customers connected to this KVD. (Note: The KVD being of limited size, it is physically not possible to install a DSLAM in a KVD)



Fig. 6

112. The distances between the KVD and the customers are generally low (some hundreds of meters).

10.2. Spectrum management issues

10.2.1. Introduction

113. A remote signal may have negative impact on a signal generated in the LEX. The impact depends on different factors, i.e.:

- the technologies present,
- the bitrate (in case of SDSL),
- the distance between the LEX and the remote injection point,
- the distance to the user,
- the number of systems deployed from the remote point,
- the spectral proximity of the systems (disturbers – victims)

114. The following table summarizes the effect between ADSL and SDSL. The relevant combinations are treated more in detail further on.

“Disturber”	“Victim”		
	ADSL-LEX downstream	ADSL-LEX upstream	SHDSL-LEX
Remote ADSL	Interference	No problem	No problem
Remote SHDSL 2 Mbps	Interference	No problem	No problem
Remote SHDSL 1 Mbps	No problem	No problem	No problem

115. The intensity of the “interference” can be different according to the fact that the remote injection is at LDC or at KVD level.

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10.2.2. Impact of remote ADSL on ADSL-LEX

10.2.2.1. Generalities

116. Remote ADSL does not interfere with ADSL-LEX upstream.

117. ADSL-LDC may have impact on ADSL-LEX downstream due to FEXT coupling. This impact mainly depends on the following parameters:

- the spectral proximity of the disturber and the victim in the cable: spectral pollution generally occurs between pairs located in the same cable binder
- distance between the LEX and the LDC
 - ADSL-LEX will maintain acceptable performance (> 1 Mbps) when the distance between the LEX and the LDC is short (about 1 to 1,5 km)
 - ADSL injected in LDC located at large distance (about 4,5 km) from the LEX do not cross ADSL-LEX, because the distance to the customer (from the LEX) is too high to offer ADSL service from the LEX
- the number of disturbers.

118. ADSL-KVD may have important impact on ADSL-LEX downstream due to FEXT coupling. This impact mainly depends on the following parameters:

- the spectral proximity of the disturber and the victim in the cable: this proximity can be rather important, because of the cables with small capacity used in the distribution network
- distance between the LEX and the KVD
 - ADSL-LEX will maintain acceptable performance (> 1 Mbps) when the distance between the LEX and the KVD is short (about 1 to 1,5 km)
 - the majority of the KVD are located at less than 5 km from the LEX; important spectral problem may be expected for most of them
- the number of disturbers.

10.2.2.2. Probability of disturbance

119. Subloop at the LDC: due to the fact that the cables between LDC and KVD's are composed with layers or with binders; that the percentage of pairs in service between LDC and KVD is relatively low; and that the splicing in this part of the network is not homogeneous, a random separation occurs between the circuits coming from the LEX and the circuits coming from the LDC; and therefore the probability of experiencing disturbance is expected to be low.

120. Subloop at the KVD: in the distribution network, the cables have smaller composition, and in this case the different circuits are less separated; the probability that the remote ADSL disturbs the ADSL-LEX is therefore expected to be higher.

10.2.3. Impact of remote ADSL on SDSL-LEX

121. Remote ADSL has no impact on the performance of SDSL-LEX.

10.2.4. Impact of a remote SDSL on ADSL-LEX

122. The impact of remote SDSL essentially depends on the bitrate of the SDSL:

- SDSL at bitrate higher than 1 Mbps has an important impact on the performance of the ADSL-LEX

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- SDSL at max 1 Mbps has a low impact on ADSL-LEX

10.2.5. Impact of a remote SDSL on SDSL-LEX

123. Remote SDSL has no impact on the performance of SDSL-LEX.

10.3. How to reduce the effect of remote ADSL ?

124. Because of the differences between LDC and KVD in terms of distances to the customer and disturbance probability, different solutions have to be considered.

10.3.1. Sub-loop at the LDC

125. LDC's have been created due to the saturation of the cables feeding some directions in a local network. Offering ADSL to the customers located behind the LDC is mainly possible by installing DSLAM in the LDC.

10.3.1.1. Migration to the LDC

126. Descending to the LDC to generate ADSL is a logical and efficient way to connect the customers located behind the LDC and to avoid spectral problems. It is moreover the only way, to address and connect the entirety or nearly entirety of customers behind the LDC.

127. Therefore, when one Beneficiary begins to deploy from a LDC, Belgacom advises that it is preferable – but not mandatory – that all other operators also offer their ADSL services from this LDC.

10.3.1.2. Power Back Off

128. 111. Power back off consists in reducing up to 12 dB the power level of the remote ADSL.

129. Thanks to PBO, the distance between LEX and LDC for which the impact on ADSL-LEX remains acceptable is about 2,5 km. It is therefore mandatory that any DSLAM installed in an LDC is able to deliver at least PBO up to 12 dB..

130. PBO may not be considered as an universal solution. Moreover, applying PBO to the ADSL-LDC will reduce the performance of this circuit (reducing the reach or bitrate).

10.3.1.3. Application of the solution

131. LDC has to be considered a good injection point for ADSL, and migration of the DSLAM to the LDC is a possible solution in the long term perspective with the present available technology.

132. Because of the low risk of disturbance (see before), other solution like PBO will only be applied in case of ADSL-LEX problem due to the presence of DSLAM in the LDC and after examination of the benefits and impacts of the chosen solution.

10.3.2. Sub-loop at the KVD

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133. The logical injection point to offer ADSL to the customers located behind a KVD is the LEX. Offering ADSL from the KVD could present some advantages in terms of architecture, but may not imply a migration of ADSL to the KVD.
134. Below some means to reduce the effect of the ADSL-KVD are listed. It should be noted however that all these means require further analysis.
135. A case by case analysis of concrete demand will be done at the relevant moment.

10.3.2.1. Power Back Off – Attenuation

136. Power Back Off (attenuation up to 12 dB) or higher attenuation (by means of attenuators integrated in the ADSL-KVD line) may be envisaged.

10.3.2.2. ADSL variants

137. Technologies like ADSL Plus or techniques like shaped ADSL adapted PSD (Mask shaping) used for the ADSL KVD lead to better compatibility with ADSL LEX signals.
138. As well as PBO/Attenuation, the use of these ADSL variants has the consequence of decreasing the performance of the ADSL KVD, but due to the generally small distance between the KVD and the customer, this consequence would be expected to be acceptable.
139. Note that these variants are not yet mature and need further study (example: spectral compatibility between VDSL and ADSL variants).
140. It should be noted that the concepts developed in sections 9.2. and 9.3. above are in principle also applicable to ADSL2 and ADSL2plus. The concepts for Annex L and M are for further study.

10.4. How to reduce the effect of remote injected SDSL at LDC?

141. As explained before, SDSL injected at a remote point leads to ADSL-LEX important degradation when the bitrate exceeds 1 Mbps.
142. A solution is to limit the bitrate of remote injected SDSL at 1 Mbps on one pair (services at 2 Mbps are possible by using 2 pairs). Remote injection is also permitted at another bitrate on condition the remote injection respects the deployment rules for SDSL from LEX as depicted in point 9. Therefore the distance on the X-axis has to be considered as the sum of the distance LEX-LDC and the loop length.

10.5. Summary

143. Although migration of all the ADSL to the LDC seems to be a solution (with the present available technology) to avoid any spectral pollution between ADSL-LEX and ADSL-LDC when the distance LEX-LDC is comprised between 1,5 and 4,5 km, other solutions like PBO and pair changes will be used in the short term when a problem occurs. In some cases, if HDSL or HDB3 equipment presently used by Belgacom are the source of the problem or the source of the impossibility to find a solution, Belgacom has the obligation to replace this equipment by equipment using an allowed technology. Solutions for the subloop in the KVD need further study. ADSL from the KVD could cause a lot of problems. A case by case analysis of specific requests/requested solutions will be performed and discussed in

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meetings of Task group spectrum management if relevant to meet the actual demand, including the demand by Belgacom.²

10.6. Remote VDSL2 from LDC

144. VDSL2 systems complying with recommendation ITU-T G.993.2 main body and annex B shall be allowed for use on local loop from LDC in any of the following situations

- Loops are directly connected to the LDC without any KVD.
- Loops are connected to a specific KVD wherefore it has been estimated that over 90% of the end-users behind it are located at less than one 1 km from LDC.

145. When allowed, VDSL2 systems for use on local loop from LDC shall respect following rules:

- Respect of the deployment rules as defined in section 5.1.
- Spectrum usage below 12MHz shall respect at least one of the 998 Limit PSD Masks listed in Table B-3 of G.993.2 (all limit mask in table B-3 with maximum used frequency = 12MHz are allowed, spectrum usage above 12MHz is for later study).
- Upstream Power Back Off shall be applied for upstream bands U1 and U2.
- Noise D reference PSD described in table 13 of ETSI TS 101 270-1 shall be used for Upstream Power Back Off (ETSI TS 101 270-1 reference PSD is used because the reference UPBO PSD is for further study in ITU-T G.993.2 version of 2006/02).
- When spectral compatibility with VDSL systems in the same cables is needed, it shall be possible to limit downstream transmit PSD level in order not to exceed -61dBm/Hz in template value (or -57.5 in peak values as defined in G.993.2)

10.7. Remote VDSL2 from KVD

146. VDSL2 systems complying with recommendation ITU-T G.993.2 main body and annex B shall be allowed for use on local loop from KVD when KVD is present and the KVD is does not qualify for VDSL2 delivery from LEX or LDC.

147. VDSL2 systems complying with recommendation ITU-T G.993.2 main body and annex B shall be allowed for use on local loop from KVD (as defined in §9.3.2) under the condition it respects following rules:

- Respect of the deployment rules as defined in section 5.1.
- Spectrum usage below 12MHz shall respect at least one of the 998 Limit PSD Masks listed in Table B-3 of G.993.2 (all limit mask in table B-3 with maximum used frequency = 12MHz are allowed, spectrum usage above 12MHz is for later study).
- Upstream Power Back Off shall be applied for upstream bands U1 and U2.
- Noise D reference PSD described in table 13 of ETSI TS 101 270-1 shall be used for Upstream Power Back Off (ETSI TS 101 270-1 reference PSD is used because the reference UPBO PSD is for further study in ITU-T G.993.2 version of 2006/02).
- When spectral compatibility with ADSL or ADSL2+ systems in the same cables is needed, it shall be possible to apply Downstream Power Back Off (DPBO) as defined into ITU-T G.997.1 §7.3.1.2.13 and described further in this document.
- When spectral compatibility with VDSL systems in the same cables is needed, it shall be possible to limit downstream transmit PSD level in order not to exceed -61dBm/Hz in template value (or -57.5 in peak values as defined in G.993.2).

148. To perform Downstream Power Back Off, the VDSL2 systems shall limit the downstream power spectral density below the RESULTMASKs PSD mask defined in ITU-T G.997.1 §7.3.1.2.13 and Appendix II.

² Text inserted by BIPT by advice of 09.01.2003 and reinserted by Decision of 09.11.2005

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149. The parameters of the method described in ITU-T G.997.1 to compute RESULTDMASKds shall be as follows:
- Assumed VDSL2 PSD mask (DPBOPSDMASKds) shall fit under at least one of the 998 LIMIT Masks listed in Table B-3 of G.993.2
 - Assumed exchange PSD mask (DPBOEPSD) shall fit under the ADSL2+ Limit PSD mask defined in G.992.5 annex A.1.3.
 - E-side electrical length (DPBOESEL) shall be set to the attenuation value at 300 kHz of the path with minimal attenuation between the LEX, or LDC when present, and the KVD, or it shall be selected out of a set of discrete values depending of that attenuation. Below a table is provided defining discrete DPBOESEL values in function of KVD attenuation at 300kHz The KVD attenuation shall be provided by Belgacom when necessary.
 - E-side cable model (DPBOESCM) shall use following values
 - DPBOESCMA = 0,109375
 - DPBOESCMB = 1,48828125
 - DPBOESCMC = 0,24609375
 - Minimum usable signal (DPBOMUS) shall not exceed -95dBm/Hz.
 - It shall be possible to limit the Minimum Usable Frequency (MUF) to not go below 552 kHz.
 - DPBO span minimum frequency (DPBOFMIN) is set to 138kHz
 - DPBO span maximum frequency (DPBOFMAX) is set to 1104 kHz when spectral compatibility with ADSL or ADSL2 is needed or to 2208 kHz when spectral compatibility with ADSL2+ is needed.

Following table defines DPBOSEL in function of KVD attenuation at 300kHz:

KVD Attenuation @ 300kHz	DPBOSEL
[0..1[	no DPBO
[1 .. 3[	2
[3 .. 5[	4
[5 .. 7[	6
[7 .. 9[	8
[9 .. 11[	10
[11 .. 13[	12
[13 .. 16[	14
[16 .. 20[	18
[20 .. 24[	22
[24 .. 28[	26
[28 .. 32[	30
[32 .. 36[	34
[36 .. 40[	38
[40 .. 45[	42
[45 .. 51[	48
[51 .. 57[	54
[57 .. 63[	60
[63 .. Inf[	66

Table: DPBOSEL discrete values

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Annex D 1

Billing and Accounting document

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1. Preliminary

- 1.1. Parties are defined in the present document as Belgacom a telecommunication operator in Belgium and Beneficiary.
- 1.2. The Belgacom billing process is based on a number of steps in which the two Parties have specific responsibilities. In order to implement this process, both Parties need to put in place (a) system(s) that will be used for the purposes of accounting and billing.
- 1.3. For each ULL product, Belgacom will invoice Beneficiary accordingly
- 1.4. Belgacom shall record, store and process the Billing Data in accordance with Section 2 of this Document.
- 1.5. The “Billing Data” is the data that is necessary to ascertain the charges payable by Beneficiary under the General Terms and Conditions. The Billing Data is recorded via the Billing System as described in Section 2 of this Document.
- 1.6. All information related to the Billing procedures between Belgacom and Beneficiary is covered by the obligation of confidentiality set out in the General Terms and Conditions. Specifically, such information will be kept strictly confidential by the Parties and will only be used for the purposes of accounting, and invoicing between the Parties and will only be disclosed between the Parties, or as legally required or in the framework of formal dispute procedures. Belgacom will be under no obligation to provide to Beneficiary direct access to its Billing system nor to any other system or facility generating the Billing Data.
- 1.7. Belgacom reserves the right to modify the layout and the presentation of the invoice to Beneficiaries.

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2. Recording and storage of billing data

2.1. For each service chargeable under the General Terms and Conditions, Belgacom shall record via its Billing System at least the following Billing Data:

- Product/service ID;
- Type of request
- Subscription date;
- End of month of Subscription date;
- Beneficiary ID;
- Account ID.

The general list of billing data indicated above is not exhaustive. Pricing is set in the Annexes H of this offer.

2.2. Billing Data shall be stored for 60 days after the due date of the related invoice. In case of a dispute on the Billing Data, Belgacom will use all reasonable effort to keep the storage of the concerned Billing Data. The storage of these detailed Billing Data shall be limited to the disputed amount of Billing Data.

3. Confirmation of charging principles

3.1. All charges payable under the General Terms and Conditions shall be calculated in accordance with the rules set out in the relevant provisions of the General Terms and Conditions and its Annexes.

3.2. For internal purpose, Belgacom will use 6 decimals in Euro. The use of decimals is set as follows:

- Per line items up to 4 decimals can be used in Euro.
- The revenues, VAT and the totals use decimals in Euro.

3.3. All the non-recurring charges will be mentioned in the Invoice of the Billing Period covering the Bringing Into Service Date.

3.4. The recurring charges for the product fees will be mentioned in the Invoice of the Billing Period which the Bringing In Service Date encompasses. The Charges will be calculated on the proportion of the Billing Period in which the product and service fee were operational

3.5. Beneficiary amount of charges will be divided in the groups of one-time fees and recurring fees for the services described in the pricelist of this offer (Annexes H)

3.6. For Blocks, associated Cables, Cable Trays and Splitters, the Beneficiary will be requested to pay an upfront fee with the ordering of the equipment and the remaining part of the related cost after the delivery of this equipment. After discussion with and approval by BIPT, Belgacom will include the detailed conditions in this document. In the meantime, all orders submitted will be handled in line with the present conditions determined in Billing and Accounting.

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4. Invoices

- 4.1. Subject to the specific rules applying to specific types of Services as set out in Annex B of this offer, Belgacom shall submit to the Beneficiary, invoice(s) for the charges under the General Terms and Conditions during the applicable Billing Period.
- 4.2. For each Billing Period, Belgacom shall provide to Beneficiary the Invoice described hereafter. The Invoice will be established in accordance with the following rules:
- 4.2.1. Invoice Details: the Invoice will list all the services by product that are provided by Belgacom to the Beneficiary, including, but not limited to the services as described in the ULL price list of the concerned ULL products
- 4.2.2. The above-mentioned Invoice will be transmitted via ordinary mail to the representatives or departments of Beneficiary as listed in appendix A Contact persons.
- 4.3. Any invoice or credit note transmitted by Belgacom will contain the following information, in addition to any legally required mentions and information:
- (i) relevant Billing Period;
 - (ii) total net amount in Euro;
 - (iii) due VAT amount;
 - (iv) total amount due in Euro (including VAT);
 - (v) Due Date.
- 4.4. Belgacom shall use its best endeavors to issue invoices as of the start of the applicable Billing Period. Though, in respect of the development of billing systems by both Parties and the sending of invoices, Belgacom cannot ensure that the invoicing for the products and services provided will be performed within specific delays. Delays in the production of invoices can occur under these circumstances following notification by the Billing Party. Neither party may construe any late billing by the other party as a renunciation to its right to payment of the said bills.
- 4.5. Notwithstanding the foregoing, if an adjustment is required following a change in the referred Local Loop Unbundling Price List, a pending Dispute (for which the appropriate Dispute resolution mechanisms have been timely activated in accordance with the General Terms and Conditions) or the outcome of commercial negotiations having a retroactive effect, the amount of such adjustment shall be established and Belgacom shall issue an invoice or a credit note as the case may be, within 30 days from the date of the relevant adjustment.
- 4.6. All changes to amounts invoiced in accordance with this Section 4 will be effected through credit notes or additional invoices.

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5. Payment

- 5.1. All charges due by Beneficiary to Belgacom under the General Terms and Conditions shall be paid within 30 Calendar Days after issuance of the invoice (the “Due Date”).
- 5.2. If Beneficiary has sent to Belgacom a Notice of Dispute relate to an amount invoiced by Belgacom and if such Dispute has not been resolved by the Due Date the disputed amount may be withheld until the dispute is resolved provided that the remaining balance is payable on the Due Date.
- 5.3. Credit notes will be set off against any payments due of the next invoice and are refundable when there are no outstanding invoices.
- 5.4. If payment is not received by Belgacom on or before the Due Date, Belgacom will be entitled to an interest calculated on the basis of the legal interest rate + 2 percent points on the unpaid balance for late payment interests, administrative and recovery costs. For disputed amounts, this interest is only due if the dispute has been resolved in favour of Belgacom.
- 5.5. Value Added Tax as well as any other applicable taxes, if any, shall be added to all or any part of the charges due under the General Terms and Conditions and shall be paid by the Beneficiary responsible for making such payment.
- 5.6. Any payments under the General Terms and Conditions will be made in Euro and will be made by bank transfer on the bank accounts mentioned in the Invoice. Payment costs are born by the Beneficiary, costs of credit notes are born by Belgacom.

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Deleted: . This interest shall accrue from the Due Date until the date of payment in full of the amount to be paid. Such interest shall accrue day by day and shall not be compounded. In the event that a Dispute resolution procedure has been initiated by Belgacom as provided by the General Terms and Conditions (including Section 6 of this Document), this interest shall be limited to the legal interest rate.

6. Disputes

- 6.1. The Parties shall use their reasonable endeavors to resolve, pursuant to this Section 6 disputes related to the calculation and settlement of the charges invoiced or to be invoiced pursuant to this Document. Notwithstanding the foregoing, either Party will be allowed to trigger at any time the dispute resolution procedure provided under the main body of the General Terms and Conditions provided that such Party reasonably believes that the Dispute at stake involves aspects of the Parties' rights and obligations broader than the mere calculation and settlement of charges pursuant to this Document. The fact that a Dispute involves aspects broader than the mere calculation and settlement of charges pursuant to this Document will not release the Disputing Party from its obligation to pay any undisputed amount pursuant to Section 5.2.
- 6.2. Any Dispute under this Section 6 will be triggered by a Notice of Dispute sent by registered letter by the Beneficiary to Belgacom before the Due Date. Such Notice of Dispute will indicate the disputed amounts, as well as a summary of the grounds for the Dispute and the position of the Disputing Party. Any amount invoiced under the General Terms and Conditions will be deemed accepted unless a Notice of Dispute has been sent in accordance with above.
- 6.3. Upon receipt of the Notice of Dispute, the Parties shall exchange by ordinary mail any information necessary or useful for solving the Dispute.
- 6.4. Within 15 Working Days from the date of the Notice of Dispute, Belgacom will provide, by registered mail, an answer ("Notice of Reply") to the Beneficiary. If Belgacom does not accept some or all the arguments of the Beneficiary, the Notice of Reply will contain a justified reply to the arguments of the Beneficiary. If Belgacom accepts all or some arguments of the Beneficiary, Belgacom will, together with the Notice of Reply, issue a credit note for the relevant amount.
- 6.5. If, within 15 Working Days from the receipt of the Notice of Reply, the Beneficiary confirms its position in writing by registered letter, the Parties will escalate the Dispute within their respective organization as provided under Section 6.6. If the Beneficiary fails to confirm its position within 15 Working Days, from the date of the Notice of Reply, any outstanding amounts will be paid promptly and without delay and the Dispute will be deemed settled.
- 6.6. If the Parties have been unable to settle the Dispute as provided under the foregoing provisions, they will refer the matter to Implementation Committee, which, if deemed necessary by either Party, will be organized for this specific purpose. If after such meeting, the Dispute remains, the Parties will follow such additional steps in the escalation procedure as provided in the main body of the General Terms and Conditions, or, if requested by either Party, the Dispute will be submitted to a certified accountant to be either jointly appointed by the Parties, or, failing agreement between the Parties in this respect, to be appointed by "Belgisch Instituut voor Bedrijfsrevisoren"/"Institut Belge des Réviseurs d'Enterprise". This certified accountant will investigate and determine a solution for the Dispute, acting as an expert and not as an arbitrator. Unless there is evidence of a manifest error, decision of the certified accountant will be final in respect of those elements covered by the Dispute referred to him/her and will be binding on the Parties. The Parties will co-operate with this investigation. The costs of the certified accountant will be borne as determined by him/her in proportion to the outcome of the Dispute. Prior to undertaking his/her mission, the certified accountant will provide the Parties with an estimate of the relevant fees and costs. Upon final settlement of the Dispute, any necessary credit note will be issued and any outstanding amount will be paid promptly and without delay.

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Appendix A: Contact Persons

The Invoices will be sent to the under mentioned contact persons:

Contact person in Belgacom:

Name	
Division	National Wholesale
Address	Koning Albert II-laan 27, 1030 Brussels
Tel	+32 2 202
Fax	+32 2 202
Bank Account	

Contact persons Beneficiary

Name	
Division	
Room	
Address	
Tel	+32
Fax	+32
Bank Account	

Billing address Beneficiary

Name	
Division	
Room	
Address	
Tel	+32
Fax	+32

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Annex D 2

Billing and Accounting document

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1. Preliminary

- 1.1. Parties are defined in the present document as Belgacom a telecommunication operator in Belgium and Beneficiary.
- 1.2. The Belgacom billing process is based on a number of steps in which the two Parties have specific responsibilities. In order to implement this process, both Parties need to put in place (a) system(s) that will be used for the purposes of accounting and billing.
- 1.3. For each ULL product, Belgacom will invoice Beneficiary accordingly
- 1.4. Belgacom shall record, store and process the Billing Data in accordance with Section 2 of this Document.
- 1.5. The “Billing Data” is the data that is necessary to ascertain the charges payable by Beneficiary under the General Terms and Conditions. The Billing Data is recorded via the Billing System as described in Section 2 of this Document.
- 1.6. All information related to the Billing procedures between Belgacom and Beneficiary is covered by the obligation of confidentiality set out in the General Terms and Conditions. Specifically, such information will be kept strictly confidential by the Parties and will only be used for the purposes of accounting, and invoicing between the Parties and will only be disclosed between the Parties, or as legally required or in the framework of formal dispute procedures. Belgacom will be under no obligation to provide to Beneficiary direct access to its Billing system nor to any other system or facility generating the Billing Data.
- 1.7. Belgacom reserves the right to modify the layout and the presentation of the invoice to Beneficiaries.

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2. Recording and storage of billing data

2.1. For each service chargeable under the General Terms and Conditions, Belgacom shall record via its Billing System at least the following Billing Data:

- Product/service ID;
- Type of request
- Subscription date;
- End of month of Subscription date;
- Beneficiary ID;
- Account ID.

The general list of billing data indicated above is not exhaustive. Pricing is set in the Annexes H of this offer.

2.2. Billing Data shall be stored for 60 days after the due date of the related invoice. In case of a dispute on the Billing Data, Belgacom will use all reasonable effort to keep the storage of the concerned Billing Data. The storage of these detailed Billing Data shall be limited to the disputed amount of Billing Data.

3. Confirmation of charging principles

3.1. All charges payable under the General Terms and Conditions shall be calculated in accordance with the rules set out in the relevant provisions of the General Terms and Conditions and its Annexes.

3.2. For internal purpose, Belgacom will use 6 decimals in Euro. The use of decimals is set as follows:

- Per line items up to 4 decimals can be used in Euro.
- The revenues, VAT and the totals use 2 decimals in EURO.

3.3. All the non-recurring charges will be mentioned in the Invoice of the Billing Period covering the Bringing Into Service Date.

3.4. The recurring charges for the product fees will be mentioned in the Invoice of the Billing Period, which the Bringing In Service Date encompasses. The Charges will be calculated on the proportion of the Billing Period in which the product and service fee were operational

3.5. Beneficiary amount of charges will be divided in the groups of one-time fees and recurring fees for the services described in the pricelist of this offer (Annexes H)

3.6. For Blocks, associated Cables, Cable Trays and Splitters, the Beneficiary will be requested to pay an upfront fee with the ordering of the equipment and the remaining part of the related cost after the delivery of this equipment. After discussion with and approval by BIPT, Belgacom will include the detailed conditions in this document. In the meantime, all orders submitted will be handled in line with the present conditions determined in Billing and Accounting.

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4. Invoices

- 4.1. Subject to the specific rules applying to specific types of Services as set out in Annex B of this offer, Belgacom shall submit to the Beneficiary, invoice(s) for the charges under the General Terms and Conditions during the applicable Billing Period.
- 4.2. For each Billing Period, Belgacom shall provide to Beneficiary the Invoice described hereafter. The Invoice will be established in accordance with the following rules:
 - 4.2.1. Invoice Details: the Invoice will list all the services by product that are provided by Belgacom to the Beneficiary, including, but not limited to the services as described in the ULL price list of the concerned ULL products
 - 4.2.2. The above mentioned Invoice will be transmitted via ordinary mail to the representatives or departments of Beneficiary as listed in appendix A Contact persons.
- 4.3. Any invoice or credit note transmitted by Belgacom will contain the following information, in addition to any legally required mentions and information:
 - (i) relevant Billing Period;
 - (ii) total net amount in Euro;
 - (iii) due VAT amount;
 - (iv) total amount due in Euro (including VAT);
 - (v) Due Date.
- 4.4. Belgacom shall use its best endeavors to issue invoices as of the start of the applicable Billing Period. Though, in respect of the development of billing systems by both Parties and the sending of invoices, Belgacom cannot ensure that the invoicing for the products and services provided will be performed within specific delays. Delays in the production of invoices can occur under these circumstances following notification by the Billing Party. Neither party may construe any late billing by the other party as a renunciation to its right to payment of the said bills.
- 4.5. Notwithstanding the foregoing, if an adjustment is required following a change in the referred Local Loop Unbundling Price List, a pending Dispute (for which the appropriate Dispute resolution mechanisms have been timely activated in accordance with the General Terms and Conditions) or the outcome of commercial negotiations having a retroactive effect, the amount of such adjustment shall be established and Belgacom shall issue an invoice or a credit note as the case may be, within 30 days from the date of the relevant adjustment.
- 4.6. All changes to amounts invoiced in accordance with this Section 4 will be effected through credit notes or additional invoices.

5. Payment

- 5.1. All charges due by Beneficiary to Belgacom under the General Terms and Conditions shall be paid within 30 Calendar Days after issuance of the invoice (the “Due Date”).
- 5.2. If Beneficiary has sent to Belgacom a Notice of Dispute relate to an amount invoiced by Belgacom and if such Dispute has not been resolved by the Due Date the disputed amount may be withheld until the dispute is resolved provided that the remaining balance is payable on the Due Date.

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Credit notes will be set off against any payments due of the next invoice and are refundable when there are no outstanding invoices.

- 5.3. If payment is not received by Belgacom on or before the Due Date, Belgacom will be entitled to an interest calculated on the basis of the legal interest rate + 2 percent points on the unpaid balance for late payment interests, administrative and recovery costs. ~~This interest is only due if the dispute has been resolved in favour of Belgacom.~~ ▼
- 5.4. Value Added Tax as well as any other applicable taxes, if any, shall be added to all or any part of the charges due under the General Terms and Conditions and shall be paid by the Beneficiary responsible for making such payment.
- 5.5. Any payments under the General Terms and Conditions will be made in Euro and will be made by bank transfer on the bank accounts mentioned in the Invoice. Payment costs are born by the Beneficiary, costs of credit notes are born by Belgacom.

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6. Disputes

6.1. The Parties shall use their reasonable endeavors to resolve, pursuant to this Section 6 disputes related to the calculation and settlement of the charges invoiced or to be invoiced pursuant to this Document. Notwithstanding the foregoing, either Party will be allowed to trigger at any time the dispute resolution procedure provided under the main body of the General Terms and Conditions provided that such Party reasonably believes that the Dispute at stake involves aspects of the Parties' rights and obligations broader than the mere calculation and settlement of charges pursuant to this Document. The fact that a Dispute involves aspects broader than the mere calculation and settlement of charges pursuant to this Document will not release the Disputing Party from its obligation to pay any undisputed amount pursuant to Section ~~5.2~~.

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6.2. Any Dispute under this Section 6 will be triggered by a Notice of Dispute sent by registered letter by the Beneficiary to Belgacom before the Due Date. Such Notice of Dispute will indicate the disputed amounts, as well as a summary of the grounds for the Dispute and the position of the Disputing Party. Any amount invoiced under the General Terms and Conditions will be deemed accepted unless a Notice of Dispute has been sent in accordance with above.

6.3. Upon receipt of the Notice of Dispute, the Parties shall exchange by ordinary mail any information necessary or useful for solving the Dispute.

6.4. Within 15 Working Days from the date of the Notice of Dispute, Belgacom will provide, by registered mail, an answer ("Notice of Reply") to the Beneficiary. If Belgacom does not accept some or all the arguments of the Beneficiary, the Notice of Reply will contain a justified reply to the arguments of the Beneficiary. If Belgacom accepts all or some arguments of the Beneficiary, Belgacom will, together with the Notice of Reply, issue a credit note for the relevant amount.

6.5. If, within 15 Working Days from the receipt of the Notice of Reply, the Beneficiary confirms its position in writing by registered letter, the Parties will escalate the Dispute within their respective organization as provided under Section ~~6.6~~. If the Beneficiary fails to confirm its position within 15 Working Days, from the date of the Notice of Reply, any outstanding amounts will be paid promptly and without delay and the Dispute will be deemed settled.

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6.6. If the Parties have been unable to settle the Dispute as provided under the foregoing provisions, they will refer the matter to Implementation Committee, which, if deemed necessary by either Party, will be organized for this specific purpose. If after such meeting, the Dispute remains, the Parties will follow such additional steps in the escalation procedure as provided in the main body of the General Terms and Conditions, or, if requested by either Party, the Dispute will be submitted to a certified accountant to be either jointly appointed by the Parties, or, failing agreement between the Parties in this respect, to be appointed by "Belgisch Instituut voor Bedrijfsrevisoren"/"Institut Belge des Réviseurs d'Enterprise". This certified accountant will investigate and determine a solution for the Dispute, acting as an expert and not as an arbitrator. Unless there is evidence of a manifest error, decision of the certified accountant will be final in respect of those elements covered by the Dispute referred to him/her and will be binding on the Parties. The Parties will co-operate with this investigation. The costs of the certified accountant will be borne as determined by him/her in proportion to the outcome of the Dispute. Prior to undertaking his/her mission, the certified accountant will provide the Parties with an estimate of the relevant fees and costs. Upon final settlement of the Dispute, any necessary credit note will be issued and any outstanding amount will be paid promptly and without delay.

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Appendix A: Contact Persons

The invoices will be sent to the under mentioned contact persons:

Contact person in Belgacom:

Name	
Division	National Wholesale
Address	Koning Albert II-laan 27, 1030 Brussels
Tel	+32 2 202
Fax	+32 2 202
Bank Account	

Contact persons Beneficiary

Name	
Division	
Room	
Address	
Tel	+32
Fax	+32
Bank Account	

Billing address Beneficiary

Name	
Division	
Room	
Address	
Tel	+32
Fax	+32

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Annex E

Planning and Operations Manual

Raw Copper and Shared Pair

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1 Scope

1. This Annex describes the Planning and Operations principles, related to the provisioning and repair of Raw Copper and Shared Pair.

2 Acronyms

ACK	Acknowledged
ADSL	Asymmetric Digital Subscriber Line
AP	Access Point
ATLI	ADSL Transmission Loop over ISDN
ATLP	ADSL Transmission Loop over PSTN
BGC	Belgacom
CA	Certification Authority
CRD	Customer Requested Date
CSD	Customer Support Desk
DES	Data Encryption Standard
DN	Directory Number (Telephone Number)
FUT	Friendly User Testing
IPCE	Inter-Process Communication Environment
ISDN	Integrated Service Digital Network
LAP	Local Access Point
LEX	Local Exchange
LS	Loop Service
LSD	Loop Service Deactivation
LSI	Loop Service Inquiry
LSR	Loop Service Request
LSV	Loop Service reverse Migration
MDF	Main Distribution Frame
MIME	Multipurpose Internet Mail Extensions
MTM	Belgacom Multimedia Department
NACK	Not Acknowledged
NTP	Network Termination Point
OLO	Other Licensed Beneficiary
PSTN	Public Switched Telecommunications Network
RFS	Ready For Service
SOR	Statement Of Requirements
SPOC	Single Point Of Contact
ULL	Unbundling Local Loop

3 Exchange of information

2. This chapter includes some communication guidelines in order to ensure a good interchange of information and to define an effective communication channel that focuses on both improving the comprehension and execution of the processes.

3.1 Single Point Of contact

3. Both Parties will appoint a member of its staff as Single Point of Contact. This person, referred to as "SPOC", will be in charge of all matters regarding the day-to-day management of the performance of this offer. In particular, all forecasts (if any) and firm orders must be submitted by registered mail to the SPOC of Belgacom, unless noticed otherwise.

3.2 Preliminary Exchange of Information for the initial setting up (optional)

4. Without prejudice to what is stated above, it is recommended that Beneficiary provides a Statement of Requirements (SOR) to Belgacom as early as possible in any discussions between Beneficiary and Belgacom. The SOR is sent by registered mail to the SPOC of Belgacom. After the receipt of the SOR, Belgacom shall notify to Beneficiary its observations, if any, concerning the SOR. In particular, when appropriate, Belgacom may request additional information to complete the information contained in the SOR. Beneficiary may ask BIPT permission not to communicate the information requested by Belgacom. BIPT will decide on a case by case basis if this information is e.g. not useful or confidential.

3.3 Implementation Committee

5. The Implementation Committee is a meeting between both parties to supervise, discuss and examine at a general level technical and operational application of this offer, in particular, the implementation of the respective obligations of the Parties, as described in this offer.
6. The Implementation Committee will meet at least on a quarterly basis. Each Party will be entitled to call additional meetings within reasonable notice, as may be necessary. Each Party will be represented at the Implementation Committee by its SPOC accompanied by any staff as deemed necessary by the relevant Party.
7. In addition to the Implementation Committee, the Parties will be allowed to request for the set-up of any other bilateral working group in charge of discussing and agreeing on any technical or operational issues, including more specialised members on the specific topic.

4 Pre-Provisioning of infrastructure

4.1 Ordering

8. Orders are related to Beneficiary dedicated equipment at the Belgacom's LEX's, LDC's and KVD's. This equipment consists in Beneficiary Horizontal Blocks and associated Tie Cabling and Splitter Cards. The technical specifications of the ordered infrastructure are described in Annex C. All installations are done by the technicians of Belgacom or by the subcontractors of Belgacom. Forecasts and Ordering are done based on the order units as defined in Annex H.
9. The Beneficiary is recommended to provide Belgacom with reasonable and accurate forecasts on Beneficiary Blocks, Tie Cables and splitter cards in order to ensure that planning of resources can be done in the best interest of the Beneficiary. The submission of forecasts by the Beneficiary determines the conditions of delivery time: In case no forecasts are provided, Belgacom will deliver services on a best effort basis. Note that in case Colocation can not be delivered and therefore forecasting and implementation can not be implemented, the forecast system described below will not be applicable.
10. Forecasts if any and firm orders shall be done through the use of the specific templates provided in Appendix E of this document and on the Belgacom NWS secured website. Templates will be considered as valid only when they are properly completed. In case data is missing or is not correct, the forecast or order will be rejected. In the latter case, Belgacom will indicate the reasons of rejection on the template.
11. For the sake of clarity, it is confirmed that for all matters related to the forecasting process, an agreement between the Parties is only binding for Belgacom if it is confirmed in writing by the SPOC of Belgacom within 5 working days. If there is no reply of the SPOC within this period, the confirmation is considered given.
12. Irrespective of the terms and conditions stated below, Belgacom reserves the right to reject forecasts if the volumes requested by the Beneficiary are not in line with reasonable market demands, this is for example a nation wide ordering spread over several months instead of a one-shot ordering once a year. In the event of such a rejection, Belgacom will provide the Beneficiary with the reasons for the rejection and the Parties will need to enter into a good faith discussion for finding a solution to deal with the difficulty that has arisen.

4.2 Prerequisites

13. The Beneficiary can order its blocks through a firm order. A firm order for infrastructure is done for each LEX. The order form can be downloaded at the Belgacom National Wholesale secured website.
14. As long as a Beneficiary does not have approved Colocation facilities, no Beneficiary Horizontal Blocks orders and or Splitter cards can be submitted. A Colocation facility is approved according to the terms and conditions of the Colocation documents in Annex I of the present document Offer.
15. The Beneficiary can order its blocks through a firm order. A firm order consists of the requested number of order units (see Appendix E) and this for each LEX. Together with the firm order, the Beneficiary includes the date when he wants the Blocks and associated Tie Cabling to be ready.
16. The delivery delay of forecasted firm orders for Blocks and Tie Cabling and/or Splitter Cards is 15 working days in cases where sufficient place in the cable trays at the ordered site is available. When construction works are needed the delivery time is 40 working days. The Beneficiary indicates the date he wants the infrastructure to be ready.
17. The Beneficiary is notified that in very exceptional situations, the theoretic delays above may be escalated. Depending of the situation at the Local Exchange of Belgacom, an extension of the MDF may be of an enormous extent. This is in case of periods of large demands at once that could not be foreseen, in situations of lightning and any other natural disasters that cause damage to the Belgacom network.

18. In case of conflict between the Beneficiary's documentation and the Belgacom documentation regarding the position numbers on the Blocks, Beneficiary can request a reconciliation of his information with the actual situation on the Belgacom MDF. For this purpose Beneficiary can take contact with its SPOC. All costs incurred by Belgacom to answer to such request will be charged to the Beneficiary. The costs are only due by the Beneficiary if its documentation was incorrect, whereas the faults are not related to a prior incorrect communication of information by Belgacom.
19. Belgacom will confirm the receipt of every firm order. When the installation of the Blocks and Tie Cabling is complete, the Beneficiary will receive documentation on the position of his blocks on the MDF and on the references of the positions on the blocks. This information is mandatory to communicate together with each order for a specific loop.

4.3 Forecasting of orders for pre-provisioning of infrastructure

20. If Beneficiary subscribed to the forecasting procedure, forecasting of orders shall be ~~done as~~ described in Appendix B §5 General Principles and §6 Submission of Forecasts by Beneficiary. The table below includes the specific variables described in this procedure applicable to forecasting of equipment for pre-provisioning.

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Forecasting Specifications			
Forecasted period	6 months		
Submission Recurrence	Monthly		
Submission Content	Total order units per type (see order form)		
Granularity of unit	1		
Forecasted unit	Order units as further defined in Appendix E		
Installation fee “I”	Average activation fee for Raw Copper/Shared Pair		
Effective % charged “E”	100 %		
Deviations	Lower deviation limit	Upper deviation limit	Level of requested detail
$\delta_{\max} =$	-20%	20%	Sub area/Area

5 Ordering of End-user connections - Raw Copper or Shared Pair

5.1 Ordering via the Open Calendar Interface

21. The ordering process can be decomposed into 2 phases:

Phase 1: Negotiation phase

Negotiation is only possible by use of the Open Calendar interface. It allows the Beneficiary to introduce all parameters for the requested ordered product to:

- get an overview of the workorders needed to provision the line
- get the available time slot
- indicate whether the installation is to be executed by a Certified Technician or not
- select the suitable timeslot according to the requirement of the enduser and start the ordering process. The Beneficiary should not to send an additional order via the classical XML way (No BGCIN). The order is automatically generated in the Belgacom ordering systems by the Open Calendar interface.

Phase 2: Order confirmation

This phase starts by the sending by Belgacom of a validate XML message via the classical xml way ("validate" or "reject" xml). This XML contains the final confirmation of the information exchanged via the Open Calendar interface. If the information exchanged during phase 1 should be modified, this is notified to the OLO by this "Validate" or "Reject" XML.

22. The follow-up of the order is performed by use of the Hold, Cancel, Amend, Reject Done message exchanged via the classical XML interface as described in the chapter Ordering via XML.

23. Reference is also made to the Belgacom Wholesale secured website – Regulatory information – BRUO - Information on ordering, for more detailed information on the ordering process via the Open Calendar interface in the following documents:

- a. Process documentation on Open Calendar interface
- b. technical documentation on Open Calendar interface

5.2 Ordering via xml

5.2.1 Generals

24. All exchange of information between Belgacom and the Beneficiary will be done through an electronic system. In case of problems of the electronic system, reference is made to steps as described in the backup plan for ordering included in Appendix F.

25. Orders can be placed through the use of an electronic ordering system via xml directly or through the use of the Open Calendar interface as described above.

26. Reference is also made to the Belgacom Wholesale secured website – Regulatory information – BRUO - Information on ordering, for more detailed information on the ordering process via XML.

27. The communication process between Beneficiary and Belgacom is based on SMTP Mail for the transfer, an ACK/NACK protocol and a message file in attachment with a predefined format.

28. The messages that are exchanged between the Beneficiary and Belgacom are encrypted and signed by the sender. Each message contains one order form in attachment that is coded in XML. Technical Info and the order forms for XML ordering are included on the secured website.

29. The Beneficiary prepares the file in the predefined XML format, signs it, encrypts it, attaches it to a mail and sends it to the mailbox of Belgacom. The e-mail address for ULL is LSR@belgacom.be.

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<#>All exchange of information between Belgacom and the Beneficiary will be done through an electronic system. In case of problems of the electronic system, reference is made to steps as described in the backup plan for ordering included in Appendix

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<#>Orders can be placed through the use of an

Deleted: <#>More details on the

Deleted: <#>electronic ordering system via xml directly or through the use of the Open Calendar interface which offers the Beneficiary the possibility to negotiate and book an appointment. ¶

Deleted: <#> are described in Appendix C. ¶

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<#>The communication process between Beneficiary and Belgacom is based on SMTP Mail for the transfer, an ACK/NACK protocol and a message file in attachment with a predefined format. ¶

<#>The messages that are exchanged between the ... [1]

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30. [In the framework of Shared Pair an existing end-to-end PSTN or ISDN line with Belgacom is a prerequisite.](#)

5.2.2 Definitions

5.2.2.1 Type of Messages

1. Acknowledge Message
2. Order Message: message to initiate the creation of a new order
3. Action Message: message to ask for a precise action on an existing order
4. Answer Message: message sent to give an answer to an Order Message or Action Message

All possible messages are explained below and described in detail (on xml level) in the Content Description Manual, [which can be found on the Belgacom secured website - Regulatory Information – BRUO – Documentation on ordering](#).

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5.2.2.2 Message acknowledgement

31. For any message exchanged between Belgacom and Beneficiary, an acknowledge message (ACK/NACK) is sent to confirm
1. the message has been received
 2. the message has been decrypted
 3. the signature has been successfully validated.
32. NACK is sent if decryption or signature check does fail. NACK will contain the reason of rejection and signifies that the message is NOT processed on the side of the sender of the NACK.
33. If no ACK is received by the sender, the sender is supposed to send again the message. The order is not further processed by Belgacom.
34. If an ACK is received by the Beneficiary, this does not automatically mean that the order will be provisioned. The order could still be rejected

5.2.2.3 Order Messages

35. An Order can be:

INITIATED BY THE BENEFICIARY

- a) PROVIDE NEW: the activation of a complete new RAW COPPER or SHARED PAIR service
- b) PROVIDE MIGRATE: the activation of a RAW COPPER in combination with a NP order
- c) CEASE: the deactivation of a RAW COPPER or SHARED PAIR or SHARED PAIR WITHOUT VOICE service
- d) CONVERT – cease part and provide part: conversion of his own existing BRUO product towards another BRUO product, or another type of product and vice versa
- e) PROVIDE CHANGE OWNER: Transfer of an existing xDSL belonging to another Beneficiary (Belgacom end-user customer included) with or without conversion of the existing product
- f) CHANGE: Modification of the existing BRUO product e.g. change MDF position (on horizontal block for RC, splitter card position for SP)

INITIATED BY BELGACOM DUE TO AN ACTION OF ANOTHER BENEFICIARY OR FROM THE END-USER CUSTOMER ON HIS VOICE SERVICE

- 1) CEASE CHANGE OWNER : launched as a consequence of a validated PROVIDE CHANGE OWNER of another Beneficiary, or an action of the end-user-customer of Belgacom
- 2) MOVE – cease part and provide part: launched as a consequence of a MOVE of the voice of the end-user-customer; the BRUO Shared pair product will be moved along if technical possible.
- 3) CONVERT – cease part and provide part : launched as a consequence of
 - (a) Change of technology of the voice of the end-user-customer from PSTN to ISDN and vice versa
 - (b) A cease or an export of the voice; the BRUO shared pair with voice will be converted into a BRUO shared pair without voice
 - (c) A new connection or an import of the voice; the BRUO shared pair without voice will be converted into a BRUO shared pair with voice
- 4) CEASE (for technical reasons) : launched as a consequence of an action on the voice part - e.g. move/conversion of the voice – while the BRUO product can not be re-established in the new situation due to technical reasons

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5.2.2.4 Action Messages

36. An Action Message can be:

INITIATED BY THE BENEFICIARY

- 1) **AMEND** : this message can be sent by the Beneficiary to change the Due Date of an existing order
- 2) **CANCEL**: this message can be sent by The Beneficiary to cancel an existing order.

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INITIATED BY BELGACOM

37. HOLD: this message can be sent by Belgacom to inform The Beneficiary that Belgacom will not perform the service at Due Date. due to technical reasons; due to absence of the end-user-customer; a new Due Date is communicated to The Beneficiary in this message

Deleted: HOLD :

38. These action messages apply only on pending orders sent by the Beneficiary to Belgacom.

5.2.2.5 Answer Messages

39. An Answer Message can be:

- a) **REJECT** :after the ACK was sent by Belgacom for a certain message, this message may however show some problems that will prevent Belgacom to treat the request correctly:
 - i) The message contents (file attachment) does not respect predefined format
 - ii) The message does not contain predefined values
 - iii) The message does not respect precedence rules
 - iv) The message refers to a non existing order
 - v) The new order does not pass through administrative validations: pending order, unknown or non activated Directory Number, non PSTN/ISDN-BA installation, PSTN/ISDN bad payer, ...
 - vi) The new order does not pass through technical validations: no pair available, distribution pairs absent, wrong MDF position, MDF position not free ...

The rejection message contains at least one, if possible more, rejection codes to inform the Beneficiary of all reasons for rejection so that sender can send again the message and minimise the retry cycle. If rejected, the order does not exist anymore. If The Beneficiary wants to retry, he will have to issue again the same demand, but through a new order.

- b) **VALIDATE**: this message confirms that the order will be executed on the given due date; the message includes the circuit-id.

Deleted: VALIDATE :

- c) **DONE**: this message confirms the execution of the order, the field intervention for service activation is completed.

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- d) **FAIL**: this message is sent when it is not possible for Belgacom to succeed in providing the service with existing infrastructure; the order has not been executed. The message contains the appropriate codes to inform The Beneficiary about the reason(s) for failing. After this message the order is considered as not existent and is removed out of the ordering system.

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- e) **CANCELLED – AMENDED** : those messages confirm the action messages, CANCEL and AMEND

5.2.2.6 Description of specific ordering procedures

40. A working day for order purposes is considered as being from: 8h00 - 16h30, excluding Saturday, Sunday, Belgian and Belgacom holidays.

41. The timers mentioned in the other parts of the agreement and used in the order provisioning process are expressed in working days at the first working day after an acknowledgement has been sent. The number of days of delay starts at the first day after the day the timer limit was passed.

5.2.2.7 *Small Network Adaptations*

42. ~~Beneficiary has the possibility to indicate 'SNA not allowed' when ordering. If 'SNA not allowed' is flagged when ordering, Belgacom will send a reject of the order should the need for a SNA be established at any point in the provisioning phase.~~

Deleted: In case of Small Network Adaptations:

43. ~~In case the order is not flagged 'SNA not allowed', the process is as follows:~~

1. If a Small Network Adaptation need is detected during the order validation,

Belgacom will notify this into the XML VALIDATE message by communication in the remark type SmallNetworkAdaptations the word "NEEDED".

2. If a SNA need is detected during provisioning,

Belgacom will create a HOLD message where a new appointment date will be proposed and with in the remark type SmallNetworkAdaptations the word "NEEDED".

In both cases, the Beneficiary can then contact its End User for further negotiations.

5.2.2.8 *Raw Copper and the synchronisation with Number Portability*

44. In the case where the User of the Beneficiary wants to retain his dial number, a number portability request will be needed in addition to the Raw Copper order. It needs to be taken into account that the two separate orders are coherent. And no step in this synchronization has an impact on Number Portability principles and rules.

45. By following the steps described below, Belgacom can help to synchronize the execution of both orders so that the out-of-service period of the User of the Beneficiary is minimized.

- a) The Beneficiary sends a NP order with a LLU indicator in the coded id field and a reasonable due date; the coded id indicates that possible related DSL products towards the voice service, from the Beneficiary or from another owner will be ceased in stead of to be converted towards their without voice variants.
- b) After the NP-Accept, the Beneficiary sends a PROVIDE MIGRATE Raw Copper order. This LLU order includes
 - i) the NPR-ID to link the LLU order to the NP order
 - ii) the coherent due-date of the NP as the service requested date and
 - iii) the concerned directory number.

46. Belgacom will send the usual VALIDATE message on this LLU order with the due date of the raw copper order

47. Note that when one order is cancelled or the due-date is changed, the Beneficiary will ~~need~~ to maintain the LLU and NP coherence.

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48. At the due date of the LLU order, Belgacom will execute the LLU order and inform the Beneficiary immediately afterwards by a structured mail – later on with an intermediate DONE XML (i.e. max delay of 1 hour).

- The Beneficiary sends the NP-Exec right after the Belgacom DONE message and the normal NP process continues up till the NP RFS-Broadcast.
- In case the LLU execution must be postponed by Belgacom, Belgacom will send a Hold request with a new due-date.

5.2.2.9 *Rush provisioning*

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- 49. Rush Provisioning is the delivery of the implementation of a new line in minimum 3 working days and maximum 5 working days (subject to the conditions of the point below).
- 50. The rush provisioning is subject to all conditions of regular provisioning, including the presence of the required connectivity to the Belgacom network before ordering. An order is considered as a Rush Provisioning Service when the Beneficiary asks this explicitly to Belgacom.
- 51. Rush Provisioning will be always during working hours.
- 52. Rush Provisioning is offered as a service when resources can be found to perform the necessary tasks. In case Belgacom cannot perform the works in the delay requested, Belgacom will continue the provisioning as a default order. Belgacom will inform in that case the Beneficiary
- 53. Any delay for a Rush Provisioning Process put in place by Belgacom, for instance absence of User on the Customer Requested date, will entitle Belgacom to charge the Beneficiary with 50% of the Rush Provisioning Fee. In any case the process will continue and a new Customer requested Date will be settled following default procedures (Hold & Change Date)
- 54. The standard order will be submitted by XML, possibly by the means of the Open Calendar interface. The Beneficiary will in a first phase call (phone) Belgacom to prioritize this order and confirm by e-mail to Car LLU. The Beneficiary is requested to specify the exact date requested for the provisioning: the Service Required Date (SRD). If the rush order has been accepted, Belgacom will provide the Beneficiary with the committed RFS date and the data service identifier (Circuit ID), by using the default validation service through XML.
- 55. Per line for which rush provisioning is requested, the installation fee is doubled.

5.2.2.10 *Escalations*

- 56. An escalation can be requested in case of Belgacom Fault (e.g. Missed Appointment)
- 57. The Beneficiary will in a first phase call (phone) Belgacom to prioritize the order and confirm by e-mail to Car LLU. Belgacom will verify this request, and handle it in a manual escalation mode if the request for escalation is justified.
- 58. An escalation order has no additional cost.

Comment [i2]: deleted by addendum 13 dd 22 Feb 2007
+ added to annex H.

Deleted: ¶

3.12 Rush Provisioning ¶
¶
<#>Per line when rush provisioning effectively applied: standard installation fee is doubled.¶
¶
<#>In case the rush provisioning has not been executed on the negotiated date, the order for installation will always continue and no installation fee at all will be charged. In that cases the Beneficiary will be informed.¶
¶

5.3 Forecasting of orders

- 59. Forecasting of orders shall be done by the procedure as described in Appendix B.

6 Fault Reporting and Repair

6.1 Fault Reporting and repair for Raw Copper Services

6.1.1 Point of Entry for Complaint

- | [60.](#) In case of repair, the ULL Customer Support Desk (also referred to as ULL CSD) will be the sole contact between the Beneficiary and Belgacom.

6.1.2 Fault reporting on Raw Copper

- | [61.](#) It is always the Beneficiary that
 - 1) reports faults in the raw copper loop, including Tie Cabling;
 - 2) receives own Users' fault reports before reporting faults to Belgacom. Belgacom will not take calls directly coming from Users of the Beneficiary raw copper loops;
 - 3) handles own Users' fault reports before reporting faults to Belgacom.

6.1.3 Beneficiary's liabilities in connection with fault reporting

- | [62.](#) For fault reporting, Beneficiary will contact the ULL CSD by phone or via a web-tool. A confirmation of this request must be sent by fax to the ULL CSD (not relevant if web-tool is used).
- | [63.](#) The Beneficiary is responsible for transmitting all necessary information requested by Belgacom. The Beneficiary will therefore transmit to Belgacom the following data:
 - a) Contact point and phone number of the User
 - b) Contact point and phone number of the Beneficiary
- | [64.](#) The Beneficiary is required to perform first its own measurements on the line. The measurement parameters from tests the Beneficiary has performed on that raw copper loop may be included in the repair request. These measurement reports may include:
 - a) Resistance measurements
 - b) Capacity measurements
 - c) If the Beneficiary has more elaborate measurement equipment (e.g. Teradyne) a full reporting of the type of fault and localization given by that equipment
- | [65.](#) If necessary, the Beneficiary is required to disconnect the terminal equipment at the User site upon Belgacom's request to do its proper measurements. Belgacom can also request to the Beneficiary a timeframe for disconnecting the raw copper pair at the MDF to the Beneficiary Colocation facilities to do the necessary measurements. Refusal from the Beneficiary to do so will not allow Belgacom to verify the lines and can be considered as wrongful repair request.
- | [66.](#) A wrongful repair request is where Belgacom has done all necessary and relevant measurements on the line and test results prove that the quality of the raw copper loop is not the cause of the service interruption or service degradation.

6.1.4 Belgacom's liability in connection with fault reporting

- | [67.](#) Belgacom starts the fault localization and continues Repair continuously during working hours.
- | [68.](#) Belgacom reports the result of the Repair to the Beneficiary immediately upon Repair.
- | [69.](#) Belgacom reserves the right to contact and make in urgent occurrences only an appointment with the User of the Beneficiary for repair of the raw copper loop.
- | [70.](#) In any case of planned maintenance and repair, Belgacom shall inform the Beneficiary.
- | [71.](#) In case the Beneficiary contacts Belgacom by phone about an ongoing repair action, Belgacom will inform the Beneficiary of the current repair status.

6.1.5 Special conditions in connection with Repair

- | [72.](#) When the Beneficiary connects equipment that is not compliant with the requirements given in Annex C or equipment that causes disturbances for other Beneficiaries in the cables, Belgacom will first request the Beneficiary to disconnect this equipment. In case of no action taken by the Beneficiary, Belgacom will disconnect the connection to the cable network, after informing the Beneficiary SPOC to this action and confirm the completion of this action to the same contact.
- | [73.](#) In fault situations where the responsibility for the fault cannot immediately be placed, and where Belgacom makes co-ordinated efforts with one or more Beneficiaries, settlement is made or arranged after conclusion of the Repair. Service interruptions due to modifications and maintenance are not included in the SLA on service availability, at the condition that it is done on a non-discriminatory basis and for the normal management of the network and at the condition that the Beneficiary has been informed about a possible interruption of service at least 5 working days beforehand in case the maintenance has a precautionary character.

6.1.6 Repair Request and Feedback

- | [74.](#) The Beneficiary's requests for Repair will be answered by the ULL Customer Support Desk. The Beneficiary is informed that all calls should be directed to CSD. Communication in repair will be through phone. The ULL Customer Support Desk representatives will however not accept direct calls from the User.
- | [75.](#) In the same line, any follow-up feedback given to the Beneficiary, either during the repair period, after additional tests and rejection or acceptance of the repair action, or once the trouble is fixed, will be through CSD, again insuring continuity and consistency.
- | [76.](#) The Beneficiary needs to provide the circuit ID that was provided in the Raw Copper provisioning process. The Beneficiary repair request must relate to the type of service for which this loop has been ordered. If the reported problem does not match the service ordered by the Beneficiary as documented, the repair request will be rejected after the Beneficiary has properly been informed by the CSD. During the repair process the Beneficiary may also submit additional information for a specific complaint, cancel a complaint or change a complaint.
- | [77.](#) It may during repair appear necessary for the Belgacom representative (ULL Customer Support Desk, technician) to contact the User of the raw copper loop (e.g. to access his premises, switch of his equipment during testing, ...). The Beneficiary will therefore transmit to Belgacom the contact point of the User and his phone number together with the repair request. In case contact with the User is necessary for repair and the Beneficiary failed to give this information Belgacom will ask the Beneficiary for the correct information.

6.2 Fault Reporting and repair for Shared Pair Services

- | [78.](#) This chapter describes the responsibilities of Belgacom and the Beneficiary in fault reporting and repair. Belgacom will be responsible for the repair of the low bandwidth services offered to the User. The Beneficiary is responsible for the repair of the high bandwidth services. Belgacom's responsibility with

respect to the repair of the high bandwidth service is limited to the equipment on the side of Belgacom's facilities, i.e. splitters and cabling and to the good working of the low bandwidth services.

6.2.1 Fault reporting to Belgacom by the Beneficiary

6.2.1.1 Point of Entry for fault reports:

- | [79.](#) For fault reporting, the Beneficiary will contact the ULL CSD (Customer Support Desk) by phone or via web-tool. A confirmation of this request must be sent by fax to the ULL CSD (not relevant if web-tool is used).

6.2.1.2 The Beneficiary reports:

- | [80.](#) High bandwidth fault reporting: it is the Beneficiary's responsibility to demonstrate that the fault in the high bandwidth service can be allocated to Belgacom. It is always the Beneficiary that receives own users' fault reports regarding the high bandwidth services before reporting faults to Belgacom.
- | [81.](#) In case the problem cannot be univocally allocated to one of the parties, Belgacom and Beneficiary will proceed to an escalation of the problem whereby both parties delegate a technical representative who will use all reasonable endeavours to solve the problem.
- | [82.](#) The Beneficiary is required to perform first its own measurements on the line. The measurement parameters from tests the Beneficiary has performed on that raw copper loop may be included in the repair request. These measurement reports may include:
 - a. fault reporting information that includes the problem description and all relevant technical details;
 - b. if available, measurements from equipment on the Beneficiary's side that can help in solving the fault;
 - c. Circuit ID that was provided in the Shared Pair provisioning process;
 - d. contact point and phone number of the User;
 - e. contact point and phone number of the Beneficiary.

6.2.2 Fault Reporting to Belgacom by User

- | [83.](#) Point of Entry for fault report:

For fault reporting, Belgacom will receive direct calls from the User of the Beneficiary through the same channels as readily existing for User support in Belgacom's PSTN/ISDN fault reporting.

- | [84.](#) According to the content of the user's fault report, the following scenarios will occur:
 - a. Low bandwidth problem: Belgacom will start the repair process for PSTN/ISDN.
 - b. High bandwidth problem: Belgacom will refer the User to the Beneficiary.

6.2.3 Repair Request

- | [85.](#) Belgacom starts the fault localization and performs repair activities during working hours.
- | [86.](#) The Beneficiary recognises that:
 - a. if necessary, the Beneficiary is required to disconnect the terminal equipment at the User site upon Belgacom's request to carry out its proper measurements;
 - b. Belgacom can request to the Beneficiary a timeframe for disconnecting the Shared Pair Service at the MDF to the Beneficiary Colocation facilities so as to be able to carry out the necessary measurements. Refusal from the Beneficiary to do so will imply that Belgacom is not in a position to verify the lines and can be considered as wrongful repair request;

- c. the Beneficiary's repair request must relate to the type of service for which the Shared Pair Service has been ordered;
- d. during the repair process the Beneficiary may submit additional information in respect of a specific repair request, cancel a repair request or change a repair request.

6.2.4 Repair Feedback

- | [87.](#) During or after the repair process, the communication regarding a repair request includes the following elements:
 - a. Belgacom reports the result of the repair activities to the Beneficiary immediately upon repair;
 - b. any follow-up feedback requested by the Beneficiary, either during the repair period, after additional tests and rejection or acceptance of the repair action, or once the fault is fixed, will be taken care of through the CSD;
 - c. in case the Beneficiary contacts Belgacom by phone about an ongoing repair action, Belgacom will inform the Beneficiary of the current repair status.

6.2.5 Special conditions in connection with Repair

- | [88.](#) When the repair activity establishes that the Beneficiary connects equipment that is not compliant with the requirements set out in the Technical Specifications or equipment that causes disturbances for Belgacom and/or for other Beneficiaries in the cables, Belgacom is entitled to disconnect the Shared Pair Service after prior notification of the Beneficiary.
- | [89.](#) In any case of planned maintenance and repair that can affect the Shared Pair Services, Belgacom shall inform the Beneficiary. Service interruptions due to modifications and maintenance are not included in the SLA on service availability, at the condition that it is done on a non-discriminatory basis and for the normal management of the network. and at the condition that the Beneficiary has been informed about a possible interruption of service
 - a. at least 5 working days beforehand in case the maintenance has a precautionary character.
 - b. as soon as possible in case of repair.
- | [90.](#) If the Beneficiary requests repair and Belgacom concludes that equipment of the Beneficiary has caused the fault, the Beneficiary will be billed for the work done by Belgacom.

6.3 Wrongful repair request

- | [91.](#) In case of a repair request where the fault was not caused by Belgacom and Belgacom has performed work for that repair request, useless costs are made by Belgacom. To encourage the Beneficiary to perform a check first on the loop and on the connected equipment, Belgacom reserves the right to charge the Beneficiary a fee in case of a wrongful repair request (according to the pricing set in Annex H) and after approval of BIPT. Belgacom will provide for these cases the relevant observations done by the technicians.

7 Friendly User Test

7.1 General

- | [92.](#) The Friendly user test is a phase that Belgacom strongly recommends the Beneficiary to follow, in order to let the Beneficiary get acquainted with the processes and systems used for ordering the services in this offer. Belgacom advises to follow the procedure below, as it is a professional and effective way for both parties and as only this method allows Belgacom to deliver support to the Beneficiary in the inter-working between the Belgacom network and the Beneficiary equipment.
- | [93.](#) If Beneficiary chooses to do a FUT test, Belgacom provides support by a special trained FUT manager that will guide Beneficiary through the electronic ordering process with its first orders.
- | [94.](#) The Friendly User Test is not mandatory.

7.2 Procedure

- | [95.](#) After contract signature a FUT handbook will be submitted to the Beneficiary, describing the FUT modalities (possible tests, special Belgacom helpdesk and support,...). Together with the FUT handbook, detailed information will be provided on the electronic messaging system, a list of rejection codes and the Raw Copper order templates. This test phase will start with the interchange of electronic messages for ordering. By the end of the phase both parties need to feel confident that all processes and systems for order provisioning are guaranteeing full service satisfaction. The FUT will take at least two months.
- | [96.](#) In the FUT each OLO can connect to exactly one LEX out of a list of possible LEX's, provided in the table below or another, at motivated choice made by Beneficiary. At this LEX he can obtain a maximum of 1 incremental unit of each type of Beneficiary Blocks. The number of 'friendly user' Users (to be provided by the Beneficiary) is limited to 25 per Beneficiary.
- | [97.](#) LEX's for the FUT phase are in the table below:

LEX	Area	SubArea	Citycode	City	Address
56KORo	1	1	8500	KORTRIJK	Doorniksestraat 61/63/65 - Tuinstraat 6 - Spoorweglaan 5
02MARo	3	N	1000	BRUXELLES/ BRUSSEL	Rue du Marais 72-74 - Broekstraat 72-74
41LGEo	4	E	4000	LIEGE (centre)	Rue de l'Université, 30

8 Contact list

| [98.](#) The contact list will be filled out by parties signing the contract. The contacts to be specified should include at both sides at least:

- a) Overall Single Point of Contact: for high level problems, questions about the offer, etc.
- b) Technical Single Point of Contact: for specific problems related to the provisioning in the field
- c) Customer Service Point of Contact: contact for issues in the day to day provisioning of loops

Appendix A: Statement of Requirements, template for the Beneficiary

1 General

1. This appendix includes a non-exhaustive list of items that should be included in the Statements of Requirements (SOR). This template is only a non-mandatory guideline. It is the freedom of both parties to discuss the content of the SOR.

2 Basic information

2.1 Registered name and address of Beneficiary

2. Beneficiary name :
Address :
Postal code and city :
Country :
Telephone number :
Fax number :
VAT registration number :
Trade register (*) :

2.2 Confidentiality agreement

3. The Parties can choose to sign a confidentiality agreement as part of the SOR. The statements included in this agreement are to be determined by the parties

2.3 Key Contacts list

3 Key project dates

	Date required by Beneficiary	Indicative dates from Belgacom
Requested date to start Friendly User Test		
Requested bringing into service date of ULL ordering		

4 ULL Products and Services Beneficiary wishes to obtain from Belgacom

4. Please indicate what services you wish to obtain from Belgacom in scope of Raw Copper. Note that some services mentioned below are still under development and will be available soon.
5. (SD = Service Description)

SD	Name	Interest
SD2010	Raw copper, existing single pair	Yes/no
SD2020	Small Network adaptations	Yes/no
SD2030	Connection to physical collocation	Yes/no

SD2035	Connection to distant collocation	Yes/no
SD2040	Existing single pairs at LDC, subloop	Yes/no
SD2050	Small network adaptations at LDC, subloop	Yes/no
SD2060	Existing single pairs at street cabinet	Yes/no
SD2070	Small network adaptations at street cabinet	Yes/no

SD	Name	Interest
SD3010	Shared Pair over existing single pairs	Yes/no
SD3030	Connection to physical Colocation	Yes/no
SD3035	Connection to distant Colocation	Yes/no

Appendix B: Description of the Forecasting Process

1 General Principles

1. This chapter describes the forecast process. The forecasts are prerequisites for the respect of SLA on Slot Availability by Belgacom. Forecasts are needed to help Belgacom to plan a reasonable capacity to fulfil customer's demand.
2. Beneficiaries are guaranteed that Belgacom will set-up the necessary resources for the period concerned to meet its market needs, independent.
3. For the orders exceeding the forecasts (orders in 'overrun') no guarantee on Slot Availability will be offered and they will be carried out, as soon as possible, according to the remaining capacity available.

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Deleted: re mandatory to guarantee to respond to orders placed during the provisioning period and to respect the repair timers.

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Deleted: of the needs of other Beneficiaries. In addition, the forecast entitles the Beneficiary to the conditions for delays determined in the Service Level Agreement.

2 Confirmation of Forecasts by Beneficiary

4. Belgacom will propose an individual forecast to each Beneficiary exceeding order volumes of 50 orders per month, based on actual ordered volumes of the last 6 months. This forecast will be elaborated per month, per customer visit / no customer visit (all products BRUO, BROBA and WBA combined) and per subarea. The Beneficiary is requested to confirm or modify this forecast, at the latest one month prior to the first forecasted period in time. If no confirmation or modification is received by that time, Belgacom will consider the proposed forecasted volumes as confirmed. The Beneficiary is responsible for the accuracy of the forecast. Orders for which the installation will be executed by a Certified Technician are not taken into account.
5. Forecast modifications or confirmations must be sent to the SPOC of Belgacom as indicated in this offer. Forecasting shall be done through the use of the templates provided by Belgacom. These templates will only be considered as valid when they are properly completed. In case data is missing or is not correct, the forecast will be rejected (within 5 working days following its reception). In the latter case, the reasons of rejection will be indicated on the template by Belgacom.
6. For the first three series of forecasts, both Parties will enter into good faith discussions about the submitted forecasts and the feasibility to implement the forecasts concerned.

Deleted: If the forecasted volumes cannot be installed, Beneficiary will be informed within 30 working days and parties will cooperate to find the most acceptable solution.

Deleted: Submission

Deleted: The Beneficiary shall submit on a monthly basis to Belgacom a rolling forecast as specified below (cf. infra) for the service concerned, at the requested level of detail. Forecasted volumes will be provided by month.

Deleted: s

Deleted: The submission of the forecasts will be done one month prior the start of first forecasted period in time (on the second (2nd) working day of the month before the first month of the forecasted period).

Deleted: submitted by the Beneficiary

3 Processing of Forecasts

7. The forecasting system in scope of this offer is to cover the specific needs of “Customer Operations” for the provisioning of the Raw Copper and the Shared Pair Services. The volumes (new lines, change owner and convert included), are established by sub-area/area zone and ventilated per customer visit / no customer visit (all products BRUO, BROBA and WBA combined). Orders for which the installation will be executed by a Certified Technician are not taken into account in the forecast.

	Geographic name	Telephone zone
Sub-area 1.1	“West” Vlaanderen	050, 051, 056, 057, 058, 059
Sub-area 1.2	“Oost” Vlaanderen	09, 052, 053, 054, 055
Sub-area 2.1	“Antwerpen”	03, 015
Sub-area 2.2	“Vlaams-Brabant” & Limburg	011, 012, 013, 014, 016, 089
Area 3	Brussels	02
Area 4	Hainaut & Brabant wallon	010, 060, 064, 065, 067, 068, 069, 071, 081
Area 5	Liège, Namur & Luxembourg	04, 019, 061, 063, 080, 082, 083, 084, 085, 086, 087

8. Once modified or confirmed (possibly by default) by all concerned Beneficiaries at the first working day of each month, the forecasted volumes are globalized by Belgacom into one basket. Capacity reservation, and calendar dimensioning, is done accordingly to fit the needs of the entire market.

4 Deviations between successive forecasts

9. The forecasted volume for month M will be compared with the forecast for month M-1. The maximum deviation is - 30 % and + 30 %, as compared to the forecast of the previous month for the same period.

5 Deviations between forecasted volumes and actual volumes

5.1 Underrun

10. Underrun occurs when actual ordered volumes are below forecasted volumes. Any underrun mechanism applies to the entire globalized volume of orders of the entire market.
11. A reasonable underrun of the forecasted volumes can be absorbed by Belgacom and has no direct consequences for the Beneficiary. A reasonable underrun is considered to be no more than a 20% deviation of the forecasted volume, considered on a monthly basis. In case of severe underrun (i.e. more than 20%) and in case this underrun was caused by a single Beneficiary who excessively increased the volume proposed by Belgacom, Belgacom reserves the right to limit the allowed modification for the forecast of the following 3 months for that Beneficiary to a level deemed necessary by Belgacom.

5.2 Overrun

12. Overrun occurs when actual ordered volumes are above forecasted volumes. Any overrun mechanism applies to the entire globalized volume of orders of the entire market.

Deleted: “Planning & Field Operations” for the pre-provisioning of infrastructure and

Deleted: The first consists of a rolling forecast for 6 months, with monthly submissions and must be established by sub-area/area zone. The second, in the framework of the provisioning of the Services, consists of a rolling forecast for 12 months. The months 1 to 6 are binding. The months 7 to 12 are indicative.

Deleted: (new lines, change owner & convert included) must be

Deleted: by type of product (with or without

Deleted: oice). After a 4 month learning curve following the start of the new NTP process, a split per installation type (with or without customer visit), instead of per product type (with or without voice) will be required. ¶

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Deleted: on the 1st month will be

Deleted: (or 10 lines for “Planning & Field Operations” and 50 lines for “Customer Operations”)

Deleted: <#>The table below shows the allowed deviations between 5 months of 2 consecutive forecasts (the 6 last months must be filled in only for the “Customer Operations” forecast, and are indicative.)¶

... [11]

13. As from the first order exceeding the globalized forecasted volume, independently of which Beneficiary might be the cause of this overrun, all orders of all Beneficiaries for the remainder of the month will be considered 'in overrun', and will receive timeslots from the general Belgacom calendar.

Appendix C: Forecasting templates for BRXX End User Line orders

- Remarks:
 - M₁ refers to the month in which the forecasting templates are submitted.
 - All quantities (M₁ to M₁₂) are incremental values.

1 “Customer Operations” Forecast

Forecasting Template for BRXX Orders

Customer reference:

Edition:

~~Split, With or Without customer visit~~

Reception date:

Telephone Zone	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	...	M ₁₂
Sub-area 1.1										
Sub-area 1.2										
Sub-area 2.1										
Sub-area 2.2										
Area 3										
Area 4										
Area 5										

Deleted: Appendix C: Setting up of the electronic messaging system¶

¶
<#>**Provisioning of order templates**¶

<#>The order form XML templates are provided in advance to the Beneficiary.¶

¶
<#>**Provisioning of encryption keys**¶

<#>As soon as the Beneficiary and Belgacom reach an agreement on the start date for Raw Copper/Shared Pair ordering, the Belgacom encryption key will be provided to the Beneficiary but it is the responsibility of the Beneficiary to get its own certificate from a Certification Authority and to provide it to Belgacom. All messages that are sent to the LLU e-mail address before the start date for Raw Copper/Shared Pair ordering for that Beneficiary will be ignored.¶

¶
<#>**General Concept of the electronic messaging system**¶

<#>The communication process for LLU between Beneficiary and Belgacom is based on SMTP Mail for the transfer, a simple Ack–Nack protocol and attachment files with a predefined XML format.¶

<sp><sp>¶

. Fig. 7¶

¶

<#>The sender prepares the attachment file in the predefined XML format, signs it, encrypts it, attaches it to an e-mail and sends it to the other Beneficiary’s mailbox (agreed e-mail address).¶

¶

<#>At the other side the attachment is extracted, decrypted and the signa... [12]

Deleted: D

Deleted: Raw Copper/Shared Pair

Deleted: <#>Each template will contain a heading with an identification field. This identification will be filled out by the Beneficiary and will contain info on the Beneficiary’s reference and the edition of the template. ... [13]

Deleted: UO

Deleted: Service

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Deleted: Raw Copper or Shared Pair

Appendix D: Forecasting and Firm Order template for pre-provisioning of infrastructure

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1 Pre-requisite equipment forecasting template

Reference is made to the order templates put available on the secured website for LLU.

Forecast Form for Pre-Provisioning of Infrastructure Orders									
FROM Customer references	Firm Name	mandatory							
	Address	mandatory							
	City	mandatory							
	Commercial Contact	mandatory			Technical Contact		mandatory		
	Phone	mandatory			Phone :		mandatory		
	Fax	mandatory			Fax :		mandatory		
	Mobile	mandatory			Mobile:		mandatory		
	e-mail	mandatory			e-mail		mandatory		
	Signature	mandatory							
TO Belgacom Contacts	Account Manager Belgacom NWS/NSC	mandatory			Technical Contact Belgacom NWS/SDI		mandatory		
	Phone	mandatory			Phone :		mandatory		
	Fax	mandatory			Fax :		mandatory		
	Mobile	mandatory			Mobile:		mandatory		
	e-mail	mandatory			e-mail		technical.support.cbu.nws@belgacom.be		
Area Reference	Area/Sub-Area Name	FC Month:		mm/yy					
NET	product	type	colo type	users	m cables 100p	m cables 96p	m cables 24p	# splitters (*)	
AGE	Raw Copper	1	Physical/Co-mingling	400	360				0
AGE	Raw Copper	1	Physical/Co-mingling	300	270				0
AGE	Raw Copper	1	Physical/Co-mingling	200	180				0
AGE	Raw Copper	1	Physical/Co-mingling	100	90				0
AGE	Raw Copper	2	Physical/Co-mingling	384		360			0
AGE	Raw Copper	2	Physical/Co-mingling	288		270			0
AGE	Raw Copper	2	Physical/Co-mingling	192		180			0
AGE	Raw Copper	2	Physical/Co-mingling	96		90			0
AGE	Raw Copper	2	Physical/Co-mingling	48			180		0
AGE	Raw Copper	2	Physical/Co-mingling	24			90		0
LEX	Raw Copper	1	Physical/Co-mingling	400	200				0
LEX	Raw Copper	1	Physical/Co-mingling	300	150				0
LEX	Raw Copper	1	Physical/Co-mingling	200	100				0
LEX	Raw Copper	1	Physical/Co-mingling	100	50				0
LEX	Raw Copper	2	Physical/Co-mingling	384		200			0
LEX	Raw Copper	2	Physical/Co-mingling	288		150			0
LEX	Raw Copper	2	Physical/Co-mingling	192		100			0
LEX	Raw Copper	2	Physical/Co-mingling	96		50			0
LEX	Raw Copper	2	Physical/Co-mingling	48			100		0
LEX	Raw Copper	2	Physical/Co-mingling	24			50		0
LDC	Raw Copper	2	Physical/Co-mingling	48			30		0
AGE	Shared Pair	PSTN	Physical/Co-mingling	384		520			384
AGE	Shared Pair	PSTN	Physical/Co-mingling	288		390			288
AGE	Shared Pair	PSTN	Physical/Co-mingling	192		260			192
AGE	Shared Pair	PSTN	Physical/Co-mingling	96		130			96
AGE	Shared Pair	PSTN	Physical/Co-mingling	48			260		48
AGE	Shared Pair	PSTN	Physical/Co-mingling	24			130		24
AGE	Shared Pair	ISDN	Physical/Co-mingling	384		520			384
AGE	Shared Pair	ISDN	Physical/Co-mingling	288		390			288
AGE	Shared Pair	ISDN	Physical/Co-mingling	192		260			192
AGE	Shared Pair	ISDN	Physical/Co-mingling	96		130			96
AGE	Shared Pair	ISDN	Physical/Co-mingling	48			260		48
AGE	Shared Pair	ISDN	Physical/Co-mingling	24			130		24
LEX	Shared Pair	PSTN	Physical/Co-mingling	384		320			384
LEX	Shared Pair	PSTN	Physical/Co-mingling	288		240			288
LEX	Shared Pair	PSTN	Physical/Co-mingling	192		160			192
LEX	Shared Pair	PSTN	Physical/Co-mingling	96		80			96
LEX	Shared Pair	PSTN	Physical/Co-mingling	48			160		48
LEX	Shared Pair	PSTN	Physical/Co-mingling	24			80		24
LEX	Shared Pair	ISDN	Physical/Co-mingling	384		320			384
LEX	Shared Pair	ISDN	Physical/Co-mingling	288		240			288
LEX	Shared Pair	ISDN	Physical/Co-mingling	192		160			192
LEX	Shared Pair	ISDN	Physical/Co-mingling	96		80			96
LEX	Shared Pair	ISDN	Physical/Co-mingling	48			160		48
LEX	Shared Pair	ISDN	Physical/Co-mingling	24			80		24
LDC	Shared Pair	ISDN	Physical/Co-mingling	24			35		24
LDC	Shared Pair	ISDN	Physical/Co-mingling	24			35		24
AGE	Raw Copper	1	Distant	400	360				0
AGE	Raw Copper	1	Distant	300	270				0
AGE	Raw Copper	1	Distant	200	180				0
AGE	Raw Copper	1	Distant	100	90				0
AGE	Raw Copper	2	Distant	384		360			0
AGE	Raw Copper	2	Distant	288		270			0
AGE	Raw Copper	2	Distant	192		180			0
AGE	Raw Copper	2	Distant	96		90			0
AGE	Raw Copper	2	Distant	48			180		0
AGE	Raw Copper	2	Distant	24			90		0
LEX	Raw Copper	1	Distant	400	200				0
LEX	Raw Copper	1	Distant	300	150				0

2 Ordering templates

Reference is made to the order templates available on the Belgacom secured website - Regulatory Information – BRUQ.

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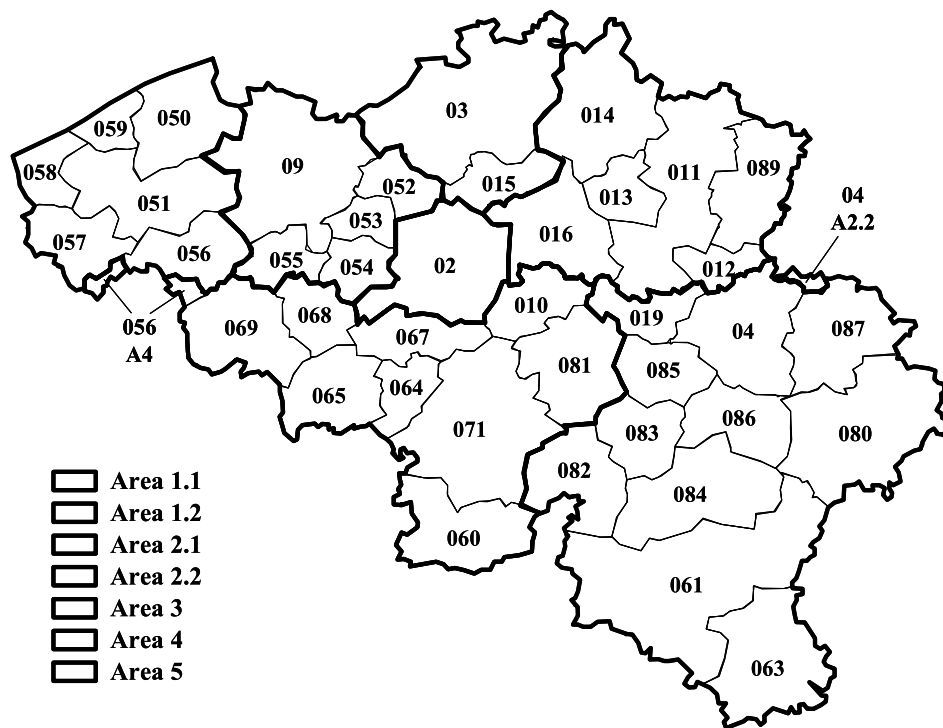


Fig. 8

1 General

1. The back-up plan should be seen as an a-normal operational mode, which will cause extra costs, resources and processes for order handling, both at Belgacom and Beneficiary side.
2. In the interest of both parties, back-up operational mode will always be an exception and should be as short as possible. If unavoidable and in a spirit of good partnership:
 - First focus of both parties will be to solve the problem and return ASAP to the normal operational mode (standard encrypted XML procedure). Both parties will closely co-operate together to achieve this goal. SPOC's will be assigned at Beneficiary and Belgacom side to this purpose and facilitate the communication during the back-up procedure.
 - Both parties to continue service will do best effort. However volumes and lead times of the 'normal operational mode' can't be guaranteed.
 - The back-up operations mode won't be subject to any cost recuperation by one party from another, but focus will be instead on 'make things work'.

[61.](#) The back-up procedure consist out of different steps:

2 Phase 1: Assignment of Beneficiary and Belgacom SPOC for back-up procedure

3. Together with the signing of a contract, parties will exchange the names and co-ordinates of their SPOC for this back-up procedure.

3 Phase 2: Fault detection

4. A 'general system error' is detected in the normal operational mode by at least one of the parties. This can be:
 - **At the level of the XML transfer:**
 - One of the parties is unable to create/send/receive/decrypt/... XML files
 - **At the level of the message transfer:**
 - One of the parties doesn't receive Ack/Nack messages, which leads to the suspicion that the other party receives none of his messages.
5. An Ack/Nack message should be received within 4 hours after sending of a message to the other party. However accidentally an Ack/Nack message may be lost, e.g. on the Internet or in the IT-systems of the receiving party. Care should therefore be taken to jump to the conclusion the Message Transfer System is not working properly because of a 'general system error', based on the loss of only one or a limited number of Ack/Nack message.
6. General remark: Problems, which don't assume a general system error, will always be solved on a case-by-case basis, without triggering a back-up procedure. An example of such problem, which doesn't assume a general system error, may e.g. be the sporadic loss of Ack/Nack messages by one Beneficiary, while the system is working properly for all other Beneficiary's.
7. The SPOC's will commonly assess the nature of the problem (general system error or not). In either case, the communication channel between the assigned SPOC's will also be used to solve 'non general system' kind of problems on a case-by-case.

4 Phase 3: problem solving

8. The SPOC's will get in contact in order to inform each other of the problem. They will assess the impact of the problem and set up an action plan to solve it. In this phase they will try to get a solution without proceeding to the a-normal back-up operational mode. They will agree on timing, within which the fault should be resolved and normal operational mode can be resumed. Standard this timing will be 4 hours to give the (IT) teams the chance to solve the problem. Another timing may be convened between the SPOC's, depending on the nature of the fault and the impact.
9. During trouble resolution both SPOC's will closely stay in contact with each other to follow up progress of solution.
10. If the fault is resolved within the agreed timing, normal operational mode will be resumed after the needed testing (see point 6.).
11. If the fault is not solved within the agreed timing, SPOCS will get in contact in order to start up the next phase (see point 4.) or will agree to stay in phase 3 for an additional timing.

5 Phase 4: message exchange by e-mail with non encrypted order in XML format

12. After expiration of the agreed time during phase 3 without trouble resolution, SPOC's will get in contact to start up phase 4, i.e.:
13. Start-up the a-normal 'back-up' operational mode for message exchange, based on e-mail with non encrypted order in XML format.
14. SPOC's will agree previously on:
 - The nature of the e-mail exchange: bi-directional or uni-directional. Although bi-directional will be the most commonly mode, uni-directional e-mail exchange may be a pragmatic (temporarily) solution.
 - e-mail addresses to be used to exchange message
 - the number of messages (per day) that will be transmitted in this mode. This operational mode will limit the volumes, capable to be treated by the existing resources. To assure a minimum service and smooth return to normal mode (with minimal 'manual' orders left) this is an essential part of the procedure.
15. SPOC's will closely stay in contact during this phase in order to follow up operational performance, action plan and trouble solving.
16. As soon the problem is solved, normal operational mode will be resumed after the needed testing (see point 6.).

6 Phase 5: message exchange by fax in XML format

17. This phase is to be avoided as much as possible, as it will demand re-typing of all data (with the need of extra resources, fully manual processes and the generation of data quality issues). It will only be accepted in case the e-mail procedure does not work (e.g. public Internet network down) and return to phase 2 will be done as soon as possible.
18. This phase will therefore be exceptional and previous agreement between SPOC's is needed. The fax, exchanged between the parties, will be the non encrypted XML, that otherwise would be sent by e-mail.
19. The fax number is +32 2 202 70 28.

7 Phase 6: test and resume normal operation

20. As soon as the problem is solved some test will be done, i.e.:
 - When the problem is solved, the concerned party will firstly test his systems. E.g. If the fault was at Belgacom side, Belgacom will perform an end to end test with test messages of a dummy Beneficiary (or the real Beneficiary if agreed upon).

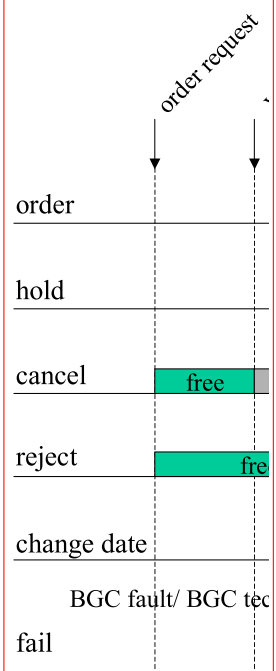
- A first message will be processed between the two parties and proper transfer will be checked.
After confirmation by both parties everything is up and running properly again, no e-mail or fax messages will be accepted and return to the standard encrypted XML procedure will be done at once.

Important note:

21. As the Beneficiary may not yet have his XML system in place immediately at the start of the contract, Belgacom can accept to start the service based on the back-up transfer system of phase 4 (e-mail with non encrypted order in XML format). This starting phase is however limited in time (max. 1 month) and volume, unless otherwise agreed upon between parties. Intention will always be to go ASAP to the normal operational mode, i.e. the standard encrypted XML procedure.

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Appendix H: Order progress¶

¶
¶
The figure below describes the actions that can occur during the order completion period. If none of these options occur, the default installation cost is charged with the options requested. In case an action occurs or the process ends before, the relevant fees are indicated at each moment in the process.¶
¶



¶
*if applicable¶

¶
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An order for Raw Copper includes in general following steps if applicable.¶

¶
First intervention of Customer Services:¶
1 Administrative validation¶
1 Technical validation¶
Plan necessary actions¶
Start documentation¶

¶
Intervention of technician:¶
Jumping at LEX, LDC, KVD¶
1 intervention to the User Premises¶
1 Pair selection/qualification¶

¶
Intervention of network specialist:¶

... [15]

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The communication process between Beneficiary and Belgacom is based on SMTP Mail for the transfer, an ACK/NACK protocol and a message file in attachment with a predefined format.

The messages that are exchanged between the Beneficiary and Belgacom are encrypted and signed by the sender. Each message contains one order form in attachment that is coded in XML. Technical Info and the order forms for XML ordering are included on the secured website

Page 9: [2] Deleted	André Paermentier	04/03/2010 17:44:00

The Beneficiary prepares the file in the predefined XML format, signs it, encrypts it, attaches it to a mail and sends it to the mailbox of Belgacom. The e-mail address for ULL is LSR@belgacom.be.

In the framework of Shared Pair an existing end-to-end PSTN or ISDN line with Belgacom is a prerequisite.

Page 9: [3] Deleted	id084314	04/03/2010 18:44:00

by using the Open calendar Calendar interface

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Page 9: [4] Deleted	id084314	04/03/2010 18:52:00

Page 9: [4] Deleted	id084314	04/03/2010 18:46:00

or the

Page 9: [4] Deleted	id084314	04/03/2010 18:52:00

n

Page 9: [5] Deleted	id084314	04/03/2010 18:47:00

happens

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Page 9: [5] Deleted	id084314	04/03/2010 18:47:00

This phase

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OLO

Page 9: [5] Deleted	id084314	04/03/2010 18:48:00

ed

Page 9: [5] Deleted	id084314	04/03/2010 18:57:00

get

Page 9: [6] Deleted	id084314	04/03/2010 18:48:00

ion

Page 9: [6] Deleted	id084314	04/03/2010 18:57:00

his customer

Page 9: [6] Deleted	id084314	04/03/2010 18:48:00

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Page 9: [6] Deleted	id084314	04/03/2010 18:48:00

OLO

Page 9: [6] Deleted	id084314	04/03/2010 18:49:00

do not

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send an order

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Page 9: [6] Deleted	id084314	04/03/2010 18:49:00

Page 9: [6] Deleted	id084314	04/03/2010 18:50:00

WEB interface (Open Calendar interface)

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or o

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ing

Page 9: [8] Deleted	id084314	04/03/2010 18:51:00

and follow up

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this Validate (or reject XML) XML

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i

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is changed

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in

Page 9: [8] Deleted	id084314	04/03/2010 18:54:00

by a

Page 9: [9] Comment [AP1]	André Paermentier	04/03/2010 18:21:00

To be replaced by the former paragraphe

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which offers the Beneficiary the possibility to negotiate and book an appointment.

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Page 24: [11] Deleted	id084314	23/02/2010 18:30:00

The table below shows the allowed deviations between 5 months of 2 consecutive forecasts (the 6 last months must be filled in only for the “Customer Operations” forecast, and are indicative.)

Month							Indicative					
	1	2	3	4	5	6	7	8	9	10	11	12
Month 0	A ₀	B ₀	C ₀	D ₀	E ₀	F ₀	G ₀	H ₀	I ₀	...	...	...
Month 1	B ₁	C ₁	D ₁	E ₁	F ₁	G ₁	H ₁	I ₁	...	...	...	...
Month 2	C ₂	D ₂	E ₂	F ₂	G ₂	H ₂	I ₂	...	...	...	...	...

with for month 1:

- B_1 between $B_0 - 30\%$ and $B_0 + 30\%$
- C_1 between $C_0 - 30\%$ and $C_0 + 30\%$
- D_1 between $D_0 - 30\%$ and $D_0 + 30\%$
- E_1 between $E_0 - 30\%$ and $E_0 + 30\%$
- F_1 between $F_0 - 30\%$ and $F_0 + 30\%$
- G_1 new entry value (reference for subsequent deviation)

If the Beneficiary submits forecasts which are higher than the effective number of orders placed, the difference between forecasted volumes and effective orders will be used as reference to lower the volume for which the SLA will be applicable in the subsequent month. Moreover, in case of repeated over forecasting, Belgacom reserves the right to invoice the Beneficiary in proportion to the estimated unused operational resources.

Appendix C: Setting up of the electronic messaging system

Provisioning of order templates

The order form XML templates are provided in advance to the Beneficiary.

Provisioning of encryption keys

As soon as the Beneficiary and Belgacom reach an agreement on the start date for Raw Copper/Shared Pair ordering, the Belgacom encryption key will be provided to the Beneficiary but it is the responsibility of the Beneficiary to get its own certificate from a Certification Authority and to provide it to Belgacom. All messages that are sent to the LLU e-mail address before the start date for Raw Copper/Shared Pair ordering for that Beneficiary will be ignored.

General Concept of the electronic messaging system

The communication process for LLU between Beneficiary and Belgacom is based on SMTP Mail for the transfer, a simple Ack-Nack protocol and attachment files with a predefined XML format.

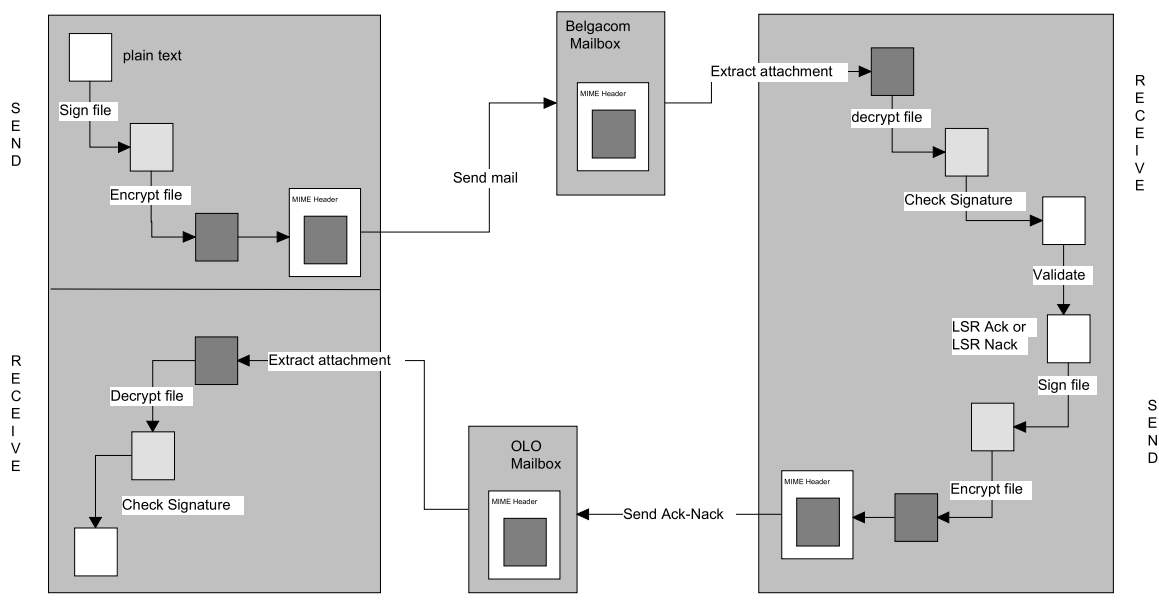


Fig. 7

The sender prepares the attachment file in the predefined XML format, signs it, encrypts it, attaches it to an e-mail and sends it to the other Beneficiary's mailbox (agreed e-mail address).

At the other side the attachment is extracted, decrypted and the signature is verified. After successful reception of the attachment file, an LSR Ack message is sent back to the originator of the e-mail. In case of non-conformity of the attachment, a LSR Nack message is sent back to the originator of the e-mail.

All information exchanged must be encrypted and signed. The reason for the encryption is that since the information travels over the Internet it must be made sure that others than the addressee will not be allowed to read or modify the attachment file. The information in the attachment file is considered to be confidential. The reason for the electronic signature is that we must be sure that the sender can be authenticated and can act in the name of the Beneficiary. All these steps will be discussed in further detail in the next chapters.

Mail Format

General

All e-mails sent must be compliant with the MIME 1.0 standards and use following character set: us-ascii.

The content of the subject field is "LSR", "LSR Ack" or "LSR Nack".

Each e-mail must contain one and only one attachment (the actual data file in XML format and the triple DES key are incorporated into one file).

Only two e-mail layouts are accepted:

1) Multipart mixed:

Content-Type: multipart/mixed;

Followed by the body part:

Content-Type: text/plain; charset=us-ascii

Content-Transfer-Encoding: **base64**

And the attachment:

Content-Type: application/octet-stream;

name=LLU_ID999999999_yyyymmdd_nnnnnn.xml

Content-Transfer-Encoding: **base64**

Content-Disposition: attachment; name=

LLU_ID999999999_yyyymmdd_nnnnnn.xml

The body part of the e-mail is not used, but the format is accepted, since some e-mail tools always generate a body part, even though no body text is supplied.

2) Only the attachment:

Content-Type: application/octet-

stream;name=LLU_ID999999999_yyyymmdd_nnnnnn.xml

Content-Transfer-Encoding: **base64**

Content-Disposition: attachment; name=

LLU_ID999999999_yyyymmdd_nnnnnn.xml

Important Note: As shown in the example above, the value for Content-Transfer-Encoding must be base64

Belgacom e-mail addresses

The e-mail address to be used by Beneficiary for the sending of all LLU related e-mails is LSR@belgacom.be

Identification of the sender will be based on the certificate and not on the 'from:' field.

It is however advised to fill in the 'from' address with a proper value.

Only ONE e-mail address and ONE certificate per Beneficiary is allowed. In a similar way the e-mails to the Beneficiary will be sent to ONE and only ONE e-mail address. This e-mail address must be communicated to Belgacom together with the certificates.

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Mail attachment naming

The name of the attachment file is constructed as follows:

LLU_ID999999999_yyyymmdd_nnnnnn.xml

Where:

LLU:	Start identifier for all LLU messages
ID999999999:	Belgacom Customer ID of the Customer.
yyymmdd:	Date of the request
nnnnnn:	Unique sequence number of the request

Incorrect named attachment file will be rejected.

Example:

LLU_ID000573521_20001207_001532.xml

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Electronic encryption and signature

Technical implementation

Sign attachment

The first step is to sign the attachment file with the sender's private key (PKCS #12 format). The result is the signed data. It is stored in a PKCS #7 file, which includes:

- the attachment file
- the signature of the sender
- the sender's certificate
- the CA's primary certificate
- the CA's root certificate

The CA (Certifying Authority) is responsible for delivering the certificate and the accompanying keys.

The PKCS #12 file contains both the private keys of the client and the clients certificate.

Encrypt attachment

According to the PKCS #7 standard, the file is encrypted with a secret session key. It results in an encrypted-signed data file. The secret session key is encrypted with

the public key of the receiving server. Both the encrypted-signed data PKCS #7 file and the encrypted secret key are incorporated into one file and are sent to the receiver.

Decrypt attachment

Each Encrypted file includes:
the encrypted secret key
the encrypted signed data object

The receiver decrypts the secret key file with its private key. The result is a file containing the secret key generated by the sender. With this decrypted secret key, the receiver can decrypt the encrypted (Triple-DES) signed data (PKCS #7) object. It results in a decrypted signed data (PKCS #7) object.

Check Signature

The decrypted signed data (PKCS #7) object contains:
the attachment file
the signature of the sender
the sender's certificate
the CA's primary certificate
the CA's root certificate

Once the decryption phase is ended, the check of the signature and of all the certificates of the signature of the sender can start. The receiver checks the signature contained in the PKCS #7 file thanks to the public key of the sender. The receiver also checks the certification chain of the signature.

The receiver directly fetches the CA's root certificate of the sender from the CA.

This certificate is introduced in the certification chain contained into the PKCS #7 file. The client's certificate of the sender must match with the CA's primary certificate of the sender, which one in its turn must match, with the CA's root certificate of the sender fetched by the receiver.

If the certification chain is kept, the signature is removed from the PKCS #7 file. The result is a plain text file.

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Belgacom E-Trust concepts

The main principles of Belgacom E-Trust are:

By issuing a digital certificate, the Certifying Authority, a third party acting as a confidant, checks and certifies the link between information relating to the holder of the certificate and his electronic public key. This public key, certified as such, can be used to code confidential information destined for the holder, to check the digital signatures generated by the holder of the certificate, or to authenticate the holder of the certificate to grant him access to protected information or services. For a detailed explanation of the digital certificates see "Belgacom E-Trust Services Certification Practice Statement".

A digital signature is computed from the message and the private key of the signer. It is a small size coded file appended to the signed message. Verification of a digital signature involves the certified public key of the signer. If the check succeeds, the recipient is convinced about its origin and has the guarantee that nothing has been modified in the message since the signature process.

Encryption coding of up to 128 bits of messages and attachments.
Confidentiality is obtained from the ciphering of the message with the certified public key of the recipient. The only way to decrypt a ciphered message is to use the corresponding private key that is supposed to be known only to the certificate owner.

S/MIME compatibility allowing communication with other S/MIME products.

For a full detailed explanation on E-Trust see: <http://www.e-trust.belgacom.be>

Software

Belgacom will deliver to the Beneficiary a certificate and software for the encryption and signature. This software is composed of Java classes in order to encrypt/decrypt, sign/verify signature and to send files. Also Belgacom delivers the documentation on the usage and installation of the provided software. Belgacom does NOT deliver packages like JAVAMail or the Java Activation Framework. They should be retrieved from the SUN Microsystems website, because the Beneficiary must agree with the linked copyrights. The software will be delivered in such a form that the Beneficiary can install it and use it. Further integration in the own IT system is the responsibility of the Beneficiary.

Certificate

Each involved party must ask a Certificate. The Certificate binds the identity (for example Name and E-mail address) to a Public Key. The proof of binding is contained within the Certificate so that anyone in possession of a Certificate can satisfy himself or herself that the identity with in the Certificate is indeed bound to the accompanying Public Key.

The proposal is to use the Belgacom E-Trust High Grade Server Certificate. The Beneficiaries are free to choose a high grade server certificate or similar from any vendor but it must fulfil the same conditions as above. If another certificate than E-Trust one is used, Belgacom must approve it in advance.

Every Beneficiary must transit its certificate to Belgacom. The Beneficiary must also inform Belgacom regarding the Certification Authority used.

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Message overview

Summary of messages

Message name	From	To
Attachment handling messages		
LSR Ack	Beneficiary	BGC
LSR Nack	Beneficiary	BGC
LSR Ack	BGC	Beneficiary
LSR Nack	BGC	Beneficiary

Attachment handling messages¹

LSR Ack

The LSR Ack message sent by the receiver is the proof for the sender that the attachment file was received and validated according to the encryption and digital signature definition, without any errors. It does NOT give any information on the contents nor the format of the attachment file (individual requests). It is the responsibility of the sender to make sure a LSR Ack is received for each sent e-mail.

LSR Nack

The LSR Nack message is sent if the received attachment file can not be validated according to the encryption and digital signature definition. If the sender receives this LSR Nack message he knows the receiver did NOT handle the attachment file. It is up to the sender to find out the problem, correct it and if necessary resend it. In case of a LSR Nack, a manual intervention is needed to solve the problem. In case of reception of non-signed attachment files no LSR Nack message is sent since the identity of the sender can not be guaranteed. These e-mails and attached files are removed from the system.

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Communication Standards

SMTP Standard

The objective of Simple Mail Transfer Protocol (SMTP) is to transfer e-mail reliably and efficiently.

SMTP is independent of the particular transmission subsystem and requires only a reliable ordered data stream channel.

An important feature of SMTP is its capability to relay e-mail across transport service environments. A transport service provides an inter-process communication environment (IPCE). An IPCE may cover one network, several networks, or a subset of a network. It is important to realise that transport systems (or IPCEs) are not one-to-one with networks. A process can communicate directly with another process through any mutually known IPCE. Mail is an application or use of inter-process communication. Mail can be communicated between processes in different IPCEs by relaying through a process connected to two (or more) IPCEs. More specifically, mail can be relayed between hosts on different transport systems by a host on both transport systems.

See RFC 821, SIMPLE MAIL TRANSFER PROTOCOL, Jonathan B. Postel, August 1982 for a detailed description of SMTP.

MIME standard

Multipurpose Internet Mail Extensions defines a message representation protocol specifying considerable detail about US-ASCII message headers, and leaves the message content, or message body, as flat US-ASCII text. This set of documents, collectively called the Multipurpose Internet Mail Extensions, or MIME, redefines the format of messages to allow for:

- (1) textual message bodies in character sets other than US-ASCII;

¹ Considering that there is no obligation for the Beneficiary to use ACK/NACK at their side, a NACK file sent to Belgacom will not result in the automatic resending of files to the Beneficiary. These files will however be treated as a normal MTS file and will be forwarded to LLU ordering system.

- (2) an extensible set of different formats for non-textual message bodies;
- (3) multi-part message bodies;
- (4) textual header information in character sets other than US-ASCII.

Related Documents:

RFC 2045 : Multipurpose Internet Mail Extensions Part One: Format Of Internet Message Bodies Freed & Borenstein, November 1996

This document specifies the various headers used to describe the structure of MIME messages.

RFC 2046 : Multipurpose Internet Mail Extensions Part Two: Media Types, Freed & Borenstein, November 1996

This document defines the general structure of the MIME media typing system and defines an initial set of media types.

RFC 2047 : Multipurpose Internet Mail Extensions Part Three:

This document describes extensions to RFC 822 to allow non-US-ASCII text data in Internet mail header fields.

RFC 2048 :

This document specifies various IANA registration procedures for MIME-related facilities.

RFC 2049 :

The fifth and final document, RFC 2049, describes MIME conformance criteria as well as providing some illustrative examples of MIME message formats, acknowledgements, and the bibliography.

See <http://www.rfc-editor.org/>

DES (Data Encryption Standard)

The Data Encryption Standard specifies a cryptographic algorithm that converts plaintext to ciphertext using a key, a process called encryption. The same algorithm is used with the same key to convert ciphertext back to plaintext, a process called decryption. The DES consists of 16 "rounds" of operations that mix the data and key together in a prescribed manner using the fundamental operations of permutation and substitution. The goal is to completely scramble the data and key so that every bit of the ciphertext depends on every bit of the data and every bit of the key (a 56-bit quantity for the DES). After sufficient "rounds" with a good algorithm, there should be no correlation between the ciphertext and either the original data or key.

The DES uses 16 rounds for several reasons. First, a minimum of 12 rounds was needed to sufficiently scramble the key and data together; the others provided a margin of safety. Second, the operation of 16 rounds would return the key back to its original position in an electronic device for the next use when used in accordance with the published algorithm. Third, numerous "rounds" were needed to keep an analyst or adversary from working simultaneously forward and backward and "meeting in the middle" with a solution.

See <http://security.isu.edu/isl/des.html> for more information.

PKCS #7: Cryptographic Message Syntax Standard

This standard describes a general syntax for data that may have cryptography applied to it, such as digital signatures and digital envelopes.

See <http://www.rsasecurity.com/rsalabs/pkcs/pkcs-7/> for a detailed description of the standard.

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Each template will contain a heading with an identification field. This identification will be filled out by the Beneficiary and will contain info on the Beneficiary's reference and the edition of the template.

The reception date will be filled out by Belgacom.

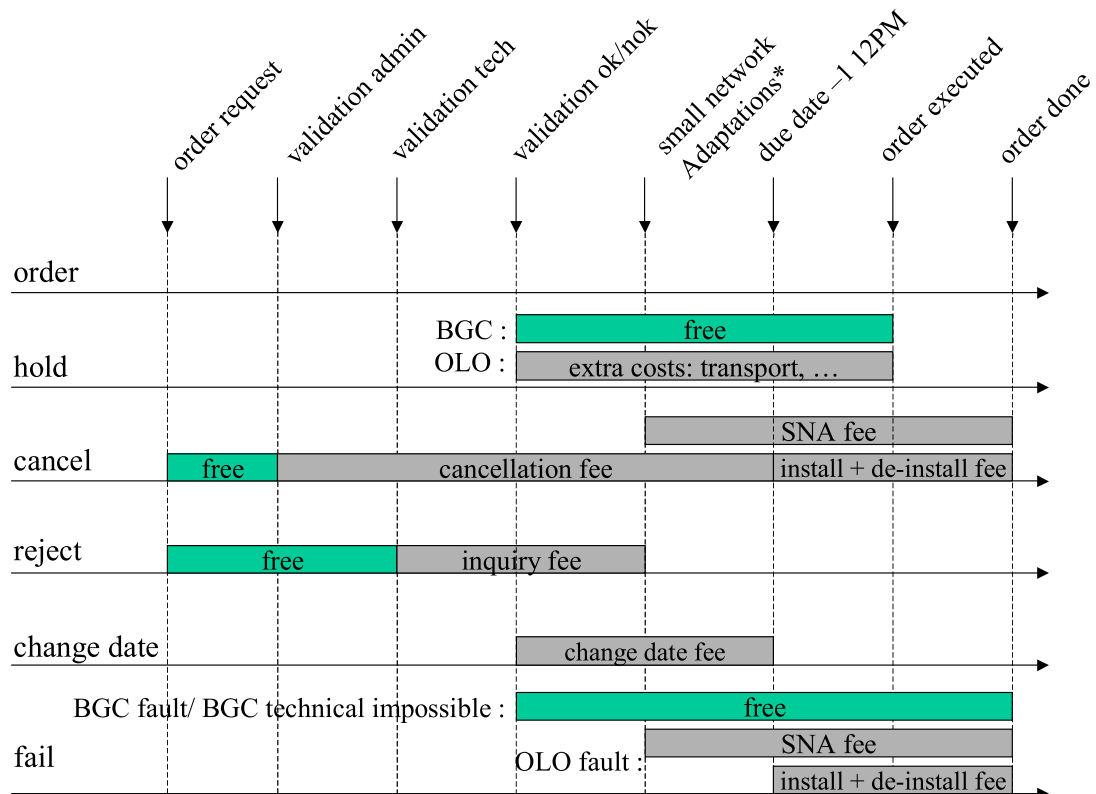
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Appendix H: Order progress

The figure below describes the actions that can occur during the order completion period. If none of these options occur, the default installation cost is charged with the options requested. In case an action occurs or the process ends before, the relevant fees are indicated at each moment in the process.



*if applicable

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An order for Raw Copper includes in general following steps if applicable:

First intervention of Customer Services:

1 Administrative validation

1 Technical validation

Plan necessary actions

Start documentation

Intervention of technician:

Jumpering at LEX, LDC, KVD

1 intervention to the User Premises

1 Pair selection/qualification

Intervention of network specialist:

1 Pair selection/qualification

1 documentation system, billing, repair, etc.

1 Testing

Second intervention of Customer Services:

Update databases

Documentation

To be foreseen by Beneficiary on beforehand:

access to user premises on the agreed installation date

vertical cabling if needed

duct or trench in case of small network adaptations

technical/customer Beneficiary service phone contact stand by

Annex F

OPERATIONAL SOFTWARE SYSTEMS (OSS)

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1 Introduction

- 1 This document describes in what way access to Operational Software Systems, later referred to as OSS, are put available for Customers in scope of Local Loop Unbundling. The prices charged if any related to these OSS's are set out in Annex H. The manual to this tool is available on the secured web site.

2 Order provisioning

- 2 All exchange of information between Belgacom and the Customer will be done through an electronic ordering system.
- 3 Orders can be placed through the use of an electronic ordering system via xml directly or through the use of the Open Calendar interface which offers the Beneficiary the possibility to negotiate and book an appointment.
- 4 For elements where no electronic procedure is available, exchange will be done by e-mail, fax or mail. In case of failure of the XML application, a back-up procedure will be applicable according to the terms and conditions as described in Appendix G of the Annex Planning & Operations.
- 5 The communication process between Customer and Belgacom is based on SMTP Mail for the transfer, a ACK/NACK protocol and a message file in attachment with a predefined format.
- 6 Reference is made to the Belgacom Wholesale secured website - Regulatory offers – BRUO – documentation on ordering for detailed information on ordering via xml or via the Open Calendar interface.

Deleted: <#>All exchange of information between Belgacom and the Customer will be done through an electronic system. For elements where no XML is available, exchange will be done by e-mail, fax or mail. In case of failure of the XML application, a back-up procedure will be applicable according to the terms and conditions as described in Appendix G of the Annex E1 or E2.¶

¶<#>The communication process between Customer and Belgacom is based on SMTP Mail for the transfer, a ACK/NACK protocol and a message file in attachment with a predefined format.¶

¶<#>The messages that are exchanged between the Customer and Belgacom are encrypted and signed by the sender. Each message contains one order form in attachment that is coded in XML. Technical Info and the order forms for XML ordering are included on the secured website for LLU.¶

¶<#>The Customer prepares the file in the predefined XML format, signs it, encrypts it, attaches it to a mail and sends it to the mailbox of Belgacom. The e-mail address for ULL is LSR@belgacom.be.¶

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3 Fault Reporting request and follow up

3.1 General

- 7 Belgacom has developed a web site that enables the Customer to enter data and to access status information on a repair request. This webtool uses the same repair tracking system as for Belgacom Users. Beneficiary has the possibility to give data and receive status on a repair request via fax or phone (which may be used when web tool is out of service or badly functioning).

3.2 Procedure

- 8 The main functionalities of this webtool are:
 - Creating a new repair request on a circuit id
 - Consult repair request status: rejected, open, dispatched, cleared, closed
 - Add comments on an existing repair request that will be taken directly to the BackOffice
 - Consult the textual result of the repair request

4 LLU Inquiry Tool

4.1 General

- 9 Belgacom provides a direct access to its cabling inventory via the LLU Inquiry Tool. This tool is available in a web version and in a full direct access via XML.

10 Belgacom's LLU Inquiry Tool (web and XML) which will provide the following information:

- Pair availability
- Attenuation value and distance of loop
- Pair qualification
- Net code, LDC, KVD
- Pair measurement results (only Shared Pair)

Deployment Rules:

Deployment rules based on attenuation are set out in Section 8 of Annex C (Technical Specifications – Belgacom Raw Copper and Shared Pair Products)

11 The LLU Inquiry Tool consists of 3 modules:

- Active Technical Situation: This module checks for a given dial number the technical situation of this dial number. Information on network codes, Attenuation values, distance and qualification are given.
- Non Active Technical Situation: This module checks for a given address the technical situation of this address. Information on network codes, Attenuation values, distance and free pair status are returned. The search can be started by giving in a dial number or a National Registry Street Code that looks up the address and checks on free pair(s) on that address. The number of end to end free and qualified pairs or the shortest free pair is provided.
- Circuit Measurement: With this module a line measurement for shared pair lines in BRUO can be done. This measurement returns technical values of the Teradyne measurement system.

4.2 Terms of usage

12 One or more contact persons in the Beneficiary organization should always be available on a 8/5 basis. One or more contact persons within the Beneficiary organization must be available on a 24/7 basis if the implementation of the Beneficiary application on the Inquiry Tool is connected 24/7.

13 The LLU Inquiry Tool is a real-time service. Therefore buffering of inquiries should be avoided to ensure optimal service availability for all parties.

14 The standard Internet Security Policy is accepted when using the LLU Inquiry Tool

This policy can be found at:

http://www.belgacom.be/web/cor/e_services/en/isp.pdf

15 An appropriate network segregation must be implemented by the Beneficiary to shield off servers hosting Belgacom data from other systems and networks. The systems and software will be patched with all available security patches. Workarounds or other mitigating measures have to be implemented for moderately critical or higher vulnerabilities, for which no patch is available yet.

16 All cryptographic modules must be based on Industry Standards (e.g. SSL, IPSEC, WSSE, S/MIME ...).

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4.3 Access to the Web version

17 The web version can be accessed via the Belgacom National Wholesale Personal website. An access to these personal pages can be obtained via car.channel@belgacom.be after signing a Non Disclosure Agreement (Annex Jb).

In your personal page, go to Regulatory Information > BRUO > Inquiry Tools

The manual to the inquiry Tool can be downloaded at the bottom of every page of this tool.

4.4 XML version

18 The XML interface incorporates all functions of the web version of the LLU Inquiry Tool. The access is done via an e-certificate that allows the direct connection for the tools of the Beneficiary. For XML access, one certificate link will be provided per Beneficiary.

19 The XML LLU Inquiry Tool supports full XML in/out for:

- Active Technical Situation
- Non Active Technical Situation
- Circuit Measurement

20 On the Personal pages, the XML Starter Package can be downloaded, including:

- XML Specifications
- Detailed Setup Procedure
- A fully operational XML in/out test script developed by Belgacom

21 Belgacom provides a test script. This is one example out of many possible technologies of how an end to end implementation of automation can be done. Belgacom will deliver no further support on this test script. The Beneficiary is however allowed to use this script in its own application.

4.5 Platform specifications

22 The Inquiry tool is 24/7 available with an 8/5 support. Note that since the Inquiry Tool depends on several of Belgacom OSS, outages during maintenance or system backup slots. For the sake of clarity: these maintenance slots are usually scheduled outside extended business hours, basically during the night.

23 The response time of the (XML) LLU Inquiry Tool is less than 1 minute. The hardware is configured to perform 600 inquiries per hour.

24 The (XML) LLU Inquiry Tool is automatically monitored every hour. A hardware failover solution has been implemented.

5 Street information

25 On request the streets that depend on a KVD can be obtained per KVD reference. A report will be delivered including the relationship KVD – streets. This information will be charged an operational fee and a fee for the information itself, this per KVD.

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- | 26 The Beneficiary can buy the Network Street Relation Database that contains all streets with the related LEX, LDC, KVD. The contract for the Network Street Relation Database can be requested to your account manager.
- | 27 The Network Street Relation Database and the LLU Inquiry Tool support as an input method the street code. This street code is the official code of the National Registry.

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Annex G1

RAW COPPER & SHARED PAIR
BASIC SERVICE LEVEL AGREEMENT

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1. Object

- 1 The present document defines the Terms and Conditions upon which Belgacom will deliver installation and maintenance of basic services for the Local Loop Unbundling: Raw Copper & Shared Pair. For the sake of clarity, Multiple Pairs of Raw Copper Loops Type 2 are also in scope of this document. For all operational aspects, reference is made to the Annex E - Planning and Operations Manual for Raw Copper & Shared Pair.
- 2 The terms and conditions of the SLA on Slot Availability are applicable within the limits of the forecasted volumes submitted by Belgacom to the Beneficiary and confirmed/corrected by the latter in line with the forecasting mechanism and deviations described in the Annex E (Planning and Operations).

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2. Scope

- 3 The scope of this document is to set a framework for operational collaboration between Belgacom and Beneficiary that ensures the respect of the fixed deadlines and an acceptable quality of the provided services.
- 4 The intention is to minimize the risk of shortcomings and to motivate all parties to respect the thresholds set in this SLA and to provide an incentive to enhance the performance of both parties.
- 5 Both parties agree that the objective of this document is to optimize operational collaboration and all efforts should be taken to avoid compensations or penalty fees.
- 6 Given the introduction of new SLA measurements and values for provisioning, combined with the introduction of a new ordering system Open Calendar, the working of this Service Level Agreement is subject to a learning curve. The current values included for provisioning are target values that will be evaluated and possibly reviewed after a transition period. This transition period is to be determined in function of the order inflow via the new Open Calendar system. The SLA and its associated compensations (when relevant) will only enter into force after the mentioned transition period has passed.
- 7 A detailed explanation on the exact calculation of all SLA measurements mentioned in this document is available on the Belgacom Wholesale website – Regulatory offers.
- 8 This document is an evolving document that may be adapted and revised regularly after approval of the BIPT.
- 9 In the scope of the present Service Level Agreement, specific timers and actions related to number portability are handled as described in the terms and conditions of number portability. In scope of the present reference offer, reference is made to the terms and conditions in the Main Body and Annex E.

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3. Prerequisites

- 10 Both parties agree to respect the content of this document and to offer services as described in this document.
- 11 This Service Level agreement is signed between two parties being Belgacom and Beneficiary concerned.

- 12 When specific follow up or support needs to be performed, both parties are obliged to provide a SPOC with its respective name, telephone number or e-mail. An escalation procedure is foreseen and details are described in the escalation procedure document published on the Belgacom Wholesale ~~website – Regulatory information~~. The version on the web site is to be considered as the most up-to-date version of the procedure and any modification in the escalation procedure will be notified to the BRUO Beneficiaries and the BIPT and will be subject to the approval of the BIPT. Escalation is only relevant after ~~the defined timer has been passed~~.
- 13 The document reflects only the service indicated. Any future interference due to synchronization with any other product could lead to a revision as indicated in paragraph 9.
- 14 Timers in this document expressed in days are always working days unless specified otherwise. For a timer of x days, the action must be completed before end of working day x after reception of the order or other Beneficiary message, unless specified otherwise. Timers expressed in months consist of 21 working days. They are applicable as Belgacom receives order requests on a normal distributed basis, meaning that in specific circumstances that cannot be qualified as reasonably normal the timers are not applicable. Under the present document, a working day for order purposes is considered as being from 8h00 to 16h30 excluding Saturday, Sunday, Belgian and Belgacom holidays. Belgacom holidays are 2 January and 26 December.
- 15 In case of massive ordering or a sudden significant increase of orders occur while this has not been forecasted, Beneficiary must immediately inform Belgacom. In that case, although SLA will not apply, Belgacom will manage, as far as possible, this increase of orders according to its best effort.
- 16 In order to ensure reasonable operational work load, the Beneficiary should see to a reasonable spread of his orders during the month. For the execution of the present Contract a reasonable spread, the maximum daily volume intake for the concerned month is defined as 10% of the volumes projected in the forecast for this month (such maximum daily volume does not allow the Beneficiary to exceed the total forecasted volume for the concerned month). The orders exceeding on a daily basis the maximum daily volume intake are exempted from the SLA conditions. Belgacom will execute these orders on a best effort basis.
- 17 Timer violations outside the working hours are not logged as such and shall not be used to claim service shortage.
- 18 The Service Level Agreement is not valid in situations of "Force Majeure" as defined in the "General Terms of Conditions".
- 19 The Basic Service Level Agreement is not applicable for timers that are delayed due to the Beneficiary's responsibility.

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4. Timers

- 20 This paragraph includes the most relevant timers in the operational processes framework.
- 21 The Timers included below are binding and may be reviewed periodically based on experience after approval of BIPT.

4.1. Pre-provisioning: Ordering of Tie Cabling, Splitters and Blocks

- 22 Individual firm orders are to be submitted by Beneficiary to Belgacom in respect of the following infrastructure elements: Tie Cabling, Splitters, Vertical and Horizontal OLO Blocks , based on the order units defined in Annex H.
- 23 Orders are accepted for as long as space is available at the LEX concerned, being floor space, cable trays and sufficient place available on the MDF. In all other cases, special construction works will be needed and the installation delay will be done on a case-by-case basis. Depending of the situation at the Local Exchange of Belgacom, an extension of the MDF may be of an enormous extent. In case of periods of large demands at once that could not be foreseen. In situations of lightning and any other natural disasters that causes damage to the Belgacom network.
- 24 Subject to the condition that no building adaptations are needed in the considered Belgacom Local Exchange; the installation delay for equipment starts as from the date of submission by Beneficiary of the firm order; following the site survey feedback provided by Belgacom.

	Default Timer
Implementation timer equipment (to be respected by Belgacom)	• 15 working days (all conditions fulfilled, i.e. availability floor space, cable trays and sufficient place at MDF) • 40 working days (in case no cable trays or place available at MDF) • Construction work for building adaptations: on quotation (e.g. in case of saturation of the MDF, extensive extension works may be needed)

4.2. Provisioning

- 25 The provisioning is the activation of the Local Loop Unbundling for an User.
- 26 All needed infrastructure (Blocks & Tie Cables) needs to be in place before ordering enduser lines.
- 27 In scope of provisioning, 5 indicators to measure the Belgacom performance are identified:
- Validation xml Timer
 - Done xml Timer
 - Slot Availability
 - Appointment Kept
 - Due Date Respected
- 28 Vocabulary
- a. Order : assembly of all workorders needed to deliver an ordered product.
 - b. Work order : one of the different actions assigned to a technician to perform the delivery of an ordered product.
 - c. Ordered product : the line ordered by the Beneficiary

4.2.1. Validation xml Timer

- 29 As soon as an order to activate the Local Loop Unbundling for an End-User is submitted to Belgacom through the secured electronic e-mail system (XML), via the Open Calendar ordering interface or by fax as a backup procedure as described in the Annex E, the order will be processed for validation. The validation xml timer will start on the receipt of the order. This receipt is the automated acknowledge message that is sent to the Beneficiary.

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- 30 The validation or rejection process consists of an administrative and technical validation. The validation will be sent as soon as all validations have passed successfully. In case of not acceptance of the order, the reasons will be communicated with the respective message.

- 31 Based on the current experience on similar data products, the validation timer is set at 5 working days for 99% of the orders.

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- 32 Monthly computation is as follows:

$$\% \text{ XML Validate} = \frac{\text{Number of orders for which the Validate (or reject) XML is sent within timer}}{\text{Total Number of orders}}$$

4.2.2. Done xml Timer

- 33 As soon as the implementation is done, Belgacom will notify Beneficiary of the completion of the order. This confirmation is done by sending a message through the secured electronic e-mail system or by fax as a backup procedure as described in the Annex E. This timer includes the number of days the requested Ready for Service Date was passed.

- 34 The Done xml timer is set at 1 working day for 98% of the orders.

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- 35 Monthly computation is as follows:

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$$\% \text{ XML Done} = \frac{\text{Number of orders for which the Done (reject) XML is sent within timer}}{\text{Total Number orders}}$$

4.2.3. Slot Availability

- 36 Slot availability is a globalized measure, applicable to the entire market as a whole, aligned with the globalized system of Forecasting (see Annex E – Planning & Operations)

- 37 If a SNA is required, then it will be planned between Belgacom and Beneficiary within 20 working days as from its detection if no further delay because of public domain obligations. These cases fall out of the application of SLAs.

4.2.3.1. ***For ordered products introduced via the Open Calendar interface***

- 38 This indicator will not apply for all lines installed by a certified technician.
- 39 Slot availability will be measured for ordered products not exceeding and ordered products exceeding the volume forecast. Only the ordered products within the forecasted volumes are subject to SLA.
- 40 For each work order of an ordered product, the first timeslot proposed must be within the following timer.

Ordered Product	timer(working days)
With customer visit	15
Without customer visit	10

If a due date outside the above-mentioned timer is requested, the first proposed timeslot must be at the latest on the requested SRD date.

- 41 Monthly computation is as follows:

Number of confirmed ordered products for which the first timeslot proposed is within timer (or at latest on SRD if SRD>timer) for all work orders

$$\% \text{ Slot availability} = \frac{\text{Number of confirmed ordered products for which the first timeslot proposed is within timer (or at latest on SRD if SRD>timer) for all work orders}}{\text{Total Number of confirmed ordered products}}$$

The monthly target percentage is set at 95%.

4.2.3.2. ***For ordered products introduced directly with an xml***

- 42 Slot availability will be measured for ordered products not exceeding and ordered products exceeding the volume forecast. Only the ordered products within the forecasted volumes are subject to SLA.
- 43 For each ordered product, the appointment date proposed must be within the following timer.

Ordered Product	timer(working days)
With customer visit	15
Without customer visit	10

If a due date outside the above-mentioned timer is requested, the proposed appointment date must be at the latest on the requested SRD date.

- 44 Monthly computation is as follows:

Number of confirmed orders which received an appointment date within timer (or at latest on SRD if SRD>timer)

$$\% \text{ Slot availability} = \frac{\text{Number of confirmed orders which received an appointment date within timer (or at latest on SRD if SRD>timer)}}{\text{Total Number of confirmed ordered products}}$$

The monthly target percentage is set at 95%.

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(to be respected by Belgacom)

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<#>If a technical problem impedes the RFS, the Beneficiary and Belgacom need to agree on a possible approach: either continue the trouble-shooting or work out an intermediate solution. In case of an intermediate solution, this needs to be evaluated on a case-by-case basis and is not automatically possible.¶

<#>Total Provisioning Timer¶

¶
<#>The "Total Provisioning Timer" is the minimum time frame to be respected from the order date of the Beneficiary to the date of the "Done" message. The "Total Provisioning Timer" includes the validation of an order, the implementation and the "Done" notification. The "Total Provisioning Timer" consists of a timer range wherein the Beneficiary can determine its "Ready for Service Date". Beneficiary provides the implementation day (also referred to as "CRD - Customer Requested Date", "Due Date" or "Ready for Service Date") taken into account the minimum and maximum total provisioning timer. The minimum implementation timer is indicated below. The maximum implementation timer is set at 42 working days (corresponding to the maximum "CRD").¶

¶
<#>The timers are valid in case all needed infrastructure is in place (Ordering of Tie Cabling, Splitters and Blocks). If it is not the case, timers of Ordering of Tie Cabling, Splitters and Blocks as defined in section 4.1 have to be added to this timer. If a SNA is required, then it will be planned between Belg [1]

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4.2.4. Appointment Kept

- 45 This indicator will not apply for all lines installed by a certified technician.
- 46 Appointment Kept is measured per Beneficiary. It measures the number of orders with Customer Visit that have respected all their Customer Visit appointments.
If one Customer Visit appointment has not been respected, the full order is considered out of SLA.
- 47 Monthly computation is as follows:

$$\% \text{ Appointment kept} = \frac{\text{Number of orders for which all Customer Visit appointments are kept}}{\text{Number of orders having at least one Customer Visit}}$$

- 48 The monthly target percentage is set at 90 %.
- 49 Belgacom reserves the right to adapt this target value at the level of the performance reached by its own retail broadband services.

4.2.5. Due Date Respected

- 50 This indicator will not apply for all lines installed by a certified technician.
- 51 Due Date Respected is measured per Beneficiary. It measures the number of orders for which the last Due Date was respected by Belgacom.
- 52 An order has respected the Due Date if the closure date (xml actual completion date) is on the same day as the last Due Date communicated to the Beneficiary for this order.
- 53 Monthly computation is as follows:

$$\% \text{ Due date respected} = \frac{\text{Number of orders for which the last due date was respected}}{\text{Total Number of orders}}$$

- 54 The monthly target percentage is set at 90 %.
- 55 Belgacom reserves the right to adapt this target value at the level of the performance reached by its own retail broadband services.

4.3. Repair - Trouble Ticket Resolution Timer

- 56 The “Trouble Ticket Resolution Timer” starts when Belgacom receives a trouble mention based on the issue description communicated by Beneficiary and ends at the closure of this Trouble Ticket. If an appointment is needed at the End-User address and the problem resides at the high bandwidth part, it is Beneficiary that arranges an appointment at the End-User premises.
- 57 a. This timer is not subject to this Service Level Agreement in the following cases:
- An appointment (if absolutely needed) is not accepted at the proposed date, in case of absence of the End-User at appointment date, in any case of incomplete or incorrect information to be provided by the Beneficiary with relevance for the repair process.
 - Limitation/degradation of service due to spectrum management if Belgacom applied the correct rules all cases listed below in point b

b. When the provisioning process – as described in Appendix A: “NTP process for Provide New Raw Copper orders” of the BRUO Main Body - allowed to determine that the installation of a NTP by a Belgacom technician was not required, in case the trouble covered by the Trouble Ticket was due to the absence of the Network Termination Point, the repair timer for a newly installed Raw Copper line will be equal to the difference between the slot availability timers for orders with and without customer visit as defined in the section 4.2.3. “Slot Availability” of this document.

c. If an appointment is needed at the end-user address, the repair timers will only apply if the Beneficiary specifies in the Trouble Ticket its end-user availability.

58 For a newly installed Raw Copper line installed by certified technician, in case the trouble covered by the Trouble Ticket was due to an incorrect installation performed by the certified technician, the repair timer will be equal to the slot availability timer relevant to the needed installation method (with or without customer visit) as defined in the section “Slot Availability” of this document.

59 Note that the “Trouble Ticket Resolution Timer” is not applicable in case appointment is scheduled with client on day later than d+1 or d+2. In this case, the timers will be applicable as from that date.

	Timer
Trouble Ticket Resolution timer (to be respected by Belgacom)	Day of trouble ticket opening + 1 (before end of the following second working day)

5. Wrongful Repair Requests

60 Belgacom will charge the Beneficiary with the fee related to SLA Wrongful Repair Requests (see Annex H– Price List) if the fault is not attributable to Belgacom or if the fault results from the abnormal use of the line or any other Beneficiary - or end user of the Beneficiary - fault.

61 In case during the repair process, Belgacom performed useless actions further to Beneficiary’s request, i.e. in case of absence of end-user at the appointment, incorrect information provided, Belgacom will charge the Beneficiary with the costs of those actions.

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all cases listed below in point

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b. When the provisioning process – as described in Appendix A: “NTP process for Provide New Raw Copper orders” of the BRUO Main Body - allowed to determine that the installation of a NTP by a Belgacom technician was not required, the repair timer for a newly installed Raw Copper line will be equal to:¶
¶
<#>the difference between the Raw Copper and Shared pair provisioning timer as defined in the section 4.2.3. “Total provisioning timer” of this document, for the 4 months following the start of the NTP process.¶
<#>the difference between the with and without customer visit provisioning timer as defined in the section 4.2.3. “total provisioning timer” of this document, 4 months after the start of the NTP process.¶
¶
c

6. Terms and Conditions for Compensations

6.1. General

62 Compensations are applicable in the cases that Belgacom has not respected the delay(s) or the date(s) agreed with Beneficiary, excluding the cases in which Beneficiary or its User is responsible for the delay or in the case of "Force Majeure".

63 This SLA guarantees 100 % of timers. However all troubles can not be solved within these timeframes.

- For repair, the percentage of non wrongful repair tickets for which a Beneficiary may request compensations for a specific month varies in function of the percentage of wrongful repair of the same Beneficiary and of the same month, according to the following table:

% wrongful repair	% repair for which compensations are applicable
$X \leq 10\%$	99%
$10\% < x \leq 20\%$	95%
$X > 20\%$	90%

- ~~For provisioning, compensations~~ will never be applicable to the 1% of the ~~orders~~ representing the worst cases.

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These percentages are identified on basis of the cases over one calendar month.

64 Compensations will be settled through a Beneficiary's invoice without VAT.

65 Compensations are only applicable if the volumes per month are below the defined limits in the forecasting process as ~~described~~ in the Annex E.

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66 The Beneficiary needs to provide Belgacom with the necessary information in case of a delayed repair or any shortage of Belgacom that give cause for the compensations described in this Service Level Agreement. Belgacom will upon receipt verify this information. When this verification appears that the information of the Beneficiary shows a shortcoming of Belgacom that gives cause for paying compensation, this payment will be done immediately and automatically.

67 The Beneficiary will submit a detailed request for compensation to Belgacom including for every repair requested at least date and hour notified/resolved, circuit id, problem on line and product type. The validity of each request for compensation will be examined by Belgacom and motivated in case of rejection for one or more repair records of this compensation request.

68 In case of timer escalations, the consequences as described further in this paragraph shall be applicable to Belgacom.

6.2. Pre-provisioning timer escalations

Pre-provisioning Timer Escalations (to be respected by Belgacom)	• In case of 15 working days to be respected by Belgacom: compensation of 200 € per working day delay. • In case of 40 working days to be respected by Belgacom : compensation of: 300 € per working day delay • In case of quotation to be respected by Belgacom : compensation of: 400 € per working day delay

6.3. Provisioning Escalations

6.3.1. Compensations Appointment Kept

69 In cases that Belgacom has not respected the committed percentage as indicated in the definition of the SLA, the Beneficiary will be entitled to a compensation per Appointment not kept in the relating month.

Compensation due by Belgacom per Appointment not kept = 20€

6.3.2. Compensations Due Date Respected

70 In cases that Belgacom has not respected the committed percentage as indicated in the definition of the SLA, the Beneficiary will be entitled to a compensation per Due Date not respected in the relating month.

Compensation due by Belgacom per Due Date not Respected = 5€

6.4. Repair Timer Escalations

71 Interruptions of service which last longer than the timers described above and are not the fault of Beneficiary shall entitle Beneficiary to a reimbursement of the rental fee corresponding to the duration of the interruption. In these cases, Belgacom shall notify Beneficiary of the timeframe in which his request will probably be carried out. The timeframe taken into consideration for calculating the reimbursement amount goes from the day that the interruption is reported up to and including the day that service is restored.

	Default Compensation
Repair Timer Escalations (to be respected by Belgacom)	150% of daily rental fee per calendar day

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<#>Timer escalations occur when provisioning was not completed on the agreed Due Date. Except in the event of other deadlines being agreed with Beneficiary, Belgacom takes all steps to establish a new connection based on timers as described above. If this deadline cannot be respected, Belgacom will inform Beneficiary of the reasons for the delay and also to communicate the new deadline to meet Beneficiary's request.¶
¶

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Deleted: delay or on

Deleted: date agreed with the Beneficiary

Deleted: end-user line and per calendar day, according to

Deleted: rules presented in the following table

Deleted: Type of provisioning timer¶
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7. ESCALATION PROCEDURE

72 By default Internal Escalations are performed automatically. The target of departments is to limit the number of external escalations by launching pro-actively internal escalations as soon as timers are exceeded.

73 For repair, escalation is possible when a trouble ticket has been created.

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74 External Escalation is done to level 1 after the defined timer has been passed. Further escalation can be requested to level 2 at day of first external escalation submitted +1 day. Escalation to level 3 can be requested at day of first external escalation submitted + 2 days.

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75 Immediately External Escalation to Level 2 and Level 3 is accepted from persons at the same level in the Beneficiaries Organization in case the Level 1 escalation is done before and the level 1 escalation shows structural problems or unavailability. Level 2 and 3 will first check whether lower escalation steps have been taken, before proceeding.

76 The escalation matrix is available on the Belgacom Wholesale website.

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If a technical problem impedes the RFS, the Beneficiary and Belgacom need to agree on a possible approach: either continue the trouble-shooting or work out an intermediate solution. In case of an intermediate solution, this needs to be evaluated on a case-by-case basis and is not automatically possible.

Total Provisioning Timer

The “**Total Provisioning Timer**” is the minimum time frame to be respected from the order date of the Beneficiary to the date of the “Done” message. The “**Total Provisioning Timer**” includes the validation of an order, the implementation and the “Done” notification. The “**Total Provisioning Timer**” consists of a timer range wherein the Beneficiary can determine its “Ready for Service Date”. Beneficiary provides the implementation day (also referred to as “CRD - Customer Requested Date”, “Due Date” or “Ready for Service Date”) taken into account the minimum and maximum total provisioning timer. The minimum implementation timer is indicated below. The maximum implementation timer is set at 42 working days (corresponding to the maximum “CRD”).

The timers are valid in case all needed infrastructure is in place (Ordering of Tie Cabling, Splitters and Blocks). If it is not the case, timers of Ordering of Tie Cabling, Splitters and Blocks as defined in section 4.1 have to be added to this timer. If a SNA is required, then it will be planned between Belgacom and Beneficiary within 20 working days as from its detection if no further delay because of public domain obligations. These cases fall out of the application of SLAs.

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Total provisioning timers to be respected by Belgacom:

	2007	March 1, 2008	June 1, 2008	Sept 1, 2008
Shared Pair	10wd 95% incl “done”	10wd 95% incl “done”	9wd 95% incl “done”	8wd 95% incl “done”
Shared Pair with telecom installation	16wd 95% incl “done”	14wd 95% incl “done”	12wd 95% incl “done”	10wd 95% incl “done”
Raw Copper	16wd 95% incl “done”	14wd 95% incl “done”	12wd 95% incl “done”	10wd 95% incl “done”

	March 1, 2008	June 1, 2008	Sept 1, 2008
Shared Pair	20wd 99% incl “done”	19wd 99% incl “done”	18wd 99% incl “done”
Shared Pair with telecom installation	24wd 99% incl “done”	22wd 99% incl “done”	20wd 99% incl “done”
Raw Copper	24wd 99% incl “done”	22wd 99% incl “done”	20wd 99% incl “done”

4 months after the start of the new NTP-process, the above-mentioned provisioning timers will be transformed into “With or Without customer visit” timers instead of “With or Without voice” timers, according to the following rules:

With customer visit timers : above-mentioned “Without voice” timers or “With voice with Telecom installation” timers

Without customer visit timers : above-mentioned “With voice” timers

The total provisioning timer will be the basis for the	10

calculation of compensations. Compensations are only due in case orders areWithout customer visit	

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Type of provisioning timer	Compensation
95% timer	10 € per calendar day (until the 10 working day timer has been reached)
99% timer	5 € per calendar day (after the 10 working day timer)

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	Customer Service	Product Management	Account Management	Repair Mar
Topics	Operational: Provisioning and Pre-Provisioning	Reference offer including all related documents and publications	Contracts and other general problems, complaints handling	Repair Troub
Level 1	Administrators llu.car@belgacom.be +32 2 202 70 28 Account Telecom Consultant Depends on customer	Account Manager Depends on customer	Account Manager Depends on customer	Customer Support des 0800/91 480 or e-mail llu-escalations@belga Fax (only for confirmation request , if needed): +
Level 2	Back-end Manager gilbert.marechal@belgacom.be Tel: +32 2 202 18 36 Fax: +32 2 201 19 07	Product Manager Erna.del.turco@belgacom.be Tel: +32 2 202 61 79 Fax: +32 2 202 79 94	Account Line Manager Depends on customer	Customer Support des 0800/91 480, option or e-mail llu-escalations@belga Ask to start an internal escalation procedure Fax (only for confirmation request , if needed): +

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	Customer Service	Product Management	Account Management	Repair Mana
Level 3	Director frederic.lhostte@belgacom.be Tel: +32 2 202 18 36 Fax: +32 2 201 19 07	Product Line Manager Peter.vandermaesen@belgacom.beTel: +32 2 202 27 57 Fax: +32 2 202 79 94	Sales Director Patrick.bakowski@belgacom.be Tel: +32 2 202 53 61 Fax: +32 2 201 19 07	Customer Support des 0800/91 480, option or e-mail llu-escalations@belga Ask to start an internal escalation procedure In case personal contact frederic.lhostte@belga Tel: +32 2 202 18 36 Fax: +32 2 201 19 07 Fax (only for confirmation if needed):+32 2 512 7

Annex G2

Raw copper and shared pair

Improved service level agreement

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1. Object

- 1 The present document defines the Terms and Conditions upon which Belgacom will deliver repair services in the framework of Raw Copper and Shared Pair.. The elements included in this document replace those in the basic service level agreement, unless stated otherwise. These repair services are limited to a number of 3.000 unbundled lines per Beneficiary and to a number of 12.000 unbundled lines in total. When these numbers (minus 20%) are reached, Belgacom will inform BIPT. In case of absence of this information given to BIPT by Belgacom, these numbers are not valid anymore and cease to exist.

2. Prerequisites

- 2 This Service Level agreement is signed between two parties being Belgacom and Beneficiary concerned.
- 3 Belgacom will provide a SPOC with its respective name, telephone number or e-mail. for the purpose of follow up or support. An escalation procedure is foreseen as described in the escalation procedure document that Belgacom has published and kept up to date on its secured website as an annex to the basic SLA's.
- 4 The document reflects only the service indicated. Any future interference due to synchronization with any other product is out of scope.
- 5 The Service Level Agreement is not valid in situations of force majeure. The term "Force Majeure" as used in this SLA shall include, without limitation, earthquake, fire, flood, epidemic, act of war, strikes, whether declared or undeclared, blockade, insurrection, riot or other cause(s) beyond the reasonable control of either of the parties, these other causes being duly agreed as such by the other party.

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3. Conditions

- 6 The services offered in virtue of this Improved SLA are to be described as follows:
 - Improved timers for repair
 - Improved availability level
 - Higher compensations in case of default (compared to basic SLA)
- 7 Belgacom is committed to achieve for the Raw Copper and Shared Pair services the best possible quality standards, as such the timers indicated in this document are maximum time intervals..

3.1. Terminology

- Trouble Ticket: The file created in Belgacom's computer system by a front-end helpdesk officer or an e-tool when a Beneficiary reports a problem. This file contains the information already available in the computer systems, the information provided by the Beneficiary and the information added by technicians during the repair process.
- Trouble Intake: The creation of the Trouble Ticket in the computer systems for the repair of Belgacom services.
- Gross Repair Time: Time needed to restore the service to the Beneficiary. This runs from the Trouble Intake to the close of the Trouble Ticket - i.e., the time when the service is reestablished after feedback (including detailed description of the issue or the issue intervention) has been given by Belgacom to the Beneficiary and after Beneficiary has agreed on the closure of the ticket.
- Stop-Clock Time: Time during which the timer is stopped during repair activities for reasons not attributable to Belgacom or one of its subcontractors or suppliers, e.g., inability to access certain sites, delay by third parties in carrying out work to be performed before Belgacom can act.
- Net Repair Time: Difference between the Gross Repair Time and the Stop-Clock Time.
- Time to First Intervention: Interval between the trouble being reported by the Beneficiary and the first action taken by a Belgacom technician to repair the service via either a remote operation or on-site intervention.
- Clock Hours: Target Repair Time, expressed in Clock Hours, i.e. where the service is available 24 hours per day, 7 days a week.
- Working Hours: Target Repair Time expressed in Working Hours, i.e., where the service is available during Working Days from 8 a.m. to 5:30 p.m., excluding Saturday, Sunday, Belgian holidays and 26 December of each calendar year.

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3.2. Introduction

8 This SLA is valid if for every trouble tickets the following conditions are fulfilled:

- In opening a trouble ticket, test results may be included by the Beneficiary. If test results are provided the timer mentioned in point 4. of present document is valid without limitation. If no test results, or invalid or incomplete ones, are provided the timer mentioned in point 4. of present document is increased by one hour. The increasing time of one hour, if any, is only valid for Raw Copper lines, as for Shared Pair, Belgacom has its own measurements available.
- The Beneficiary reports by phone (0800 93 122), fax (02 540 46 69) or e-mail (080093122@belgacom.be) to a unique point of entry : the BRUO ISLA Desk.
- The repair timer will start after the validation of the information provided. Validation will consist of a check of the completeness of the Trouble Ticket which will be considered complete when the information according to administrative info and diagnosis is given. A complete ticket is a valid ticket.
- If beneficiary intends to give test results when opening a Trouble Ticket a form of standardization of these test results must be obtained bilaterally between Belgacom and beneficiary. For this purpose, a review of the repair process of Beneficiary and Belgacom must be done so both parties agree on the relevance of the test results the beneficiary intends to provide. This consists of a high level informative description of steps taken by beneficiary before forwarding a trouble ticket to Belgacom, and a description of the effective usage, or impossibility of usage, of these test results by Belgacom in the repair process. These reviews and these standardizations will never prevent the signing of the Raw copper improved Service level agreement and the putting it into effect as from date of signature. In any case, every Trouble Ticket submitted by the beneficiary will provide Belgacom with information (not necessarily test results) that shows that beneficiary has taken the necessary steps to ensure that this trouble ticket is submitted in good faith to Belgacom.
- Delivery of forecasts on a range of active lines subject to improved SLA is desirable but not mandatory. This delivery of forecasts will never prevent the putting into effect of the signed Improved Service Level Agreement as from date of signature. In any case, at the latest at the signing of the Improved Service Level Agreement, Beneficiary will provide Belgacom with list of lines to start the improved Service Level Agreement. In case forecasts are given by Beneficiary for new lines (or change SLA type), the forecasting method must be agreed upon by Beneficiary and Belgacom. In case no forecast is given by Beneficiary for new lines (or change SLA type), the maximum increase per month of the number of active lines In the improved Service Level agreement is fixed by BIPT at 30% per month, calculated on the number of active lines in the improved Service Level agreement in the preceding month.
- Overall authorization from Beneficiary to access User premises without negotiation if needed for repair. A prior notification is to be given for any particular case. The overall authorization is considered to be not applicable if there is no prior notification. This is needed to give the Beneficiary the opportunity to inform the user prior to the access by Belgacom. Belgacom has to be informed when the user will be available on site.
- Test and repair are actions authorized without negotiation or warning.

9 In case Beneficiary intends to give test results when opening a Trouble Ticket, a form of standardization of these test results must be obtained bilaterally between Belgacom and beneficiary. The applicable test methods are proposed by Belgacom but are not mandatory as Beneficiary may provide alternative test methods which Belgacom may prove to be inadequate to identify the probable nature of the trouble:

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- for line "down" or "open" :
 - Measurement of the length of the line (as from the colocation).
 - Cable capacitance.
 - Mutual capacitance.
 - Margin of susceptance between a and b wires.
- for "bad line quality suspicion" :
 - Measurement of the length of the line (as from the colocation).
 - Cable capacitance.
 - Mutual capacitance.
 - Measurement of the insulation between wires (a/b & b/a) and wire/earth (a/e & b/e).
 - Margin of susceptance between a and b wires.
- for "transmission faults" :
 - Measurement of the length of the line (as from the colocation).
 - Cable capacitance.
 - Mutual capacitance.
 - Measurement of the insulation between wires (a/b & b/a) and wire/earth (a/e & b/e).
 - Margin of susceptance between (a/e & b/e)
 - Margin of conductance between (a/e & b/e) and between (a/b & b/a)
 - Noise : a/e , b/e

10 Nomenclature :

x/e: Wire a or wire b compared to the earth.

a/b, b/a: Wire a measured in comparison with wire b, wire b measured in comparison with wire a

x/c: Wire a or wire b measured in comparison with the battery.

Noise: Noise level measured on wire a and wire b (measured with a Micro Ammeter in comparison with the earth).

Capacitance: Capacitance measured on the wire of the line.

Cable Capacitance: Capacitance of the cable (without termination point) calculated between a and b.

Mutual Capacitance: Total capacitance calculated between wire a and wire b (User CPE connected to the line).

Susceptance: the ease with which alternating current (AC) passes through a capacitance or inductance

Conductance: the ease with which electric current flows through a substance

11 To summarise, the Beneficiary is given the choice:

- no test results are provided: connection trouble timers are increased with 1 hour;
- correct and complete test results are provided in a standardized formatⁱ : connection trouble timers remain as determined in point 4.1;
- test results are provided but are obviously not complete or not correctⁱⁱ or have not been submitted in a standardized form although this had been agreed with Belgacom: connection trouble timers are increased with 1 hour;
- correct and complete test results are provided but have not been submitted in a standardized form although this had been agreed with Belgacom: connection trouble timers are increased with 1 hour;

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The following administrative info has to be included in the complaint template :

ⁱ To be agreed bilaterally between Belgacom and Beneficiary

ⁱⁱ at the moment the Beneficiary performed these measurement(s), as measurement results can vary depending on the point in time or the type of measuring device used

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- Circuit identity number
- Installation address of the line (optional)
- Dial number (if Shared Pair) (optional)
- User contact person and contact phone number in case of field intervention
- Single user affected or several users affected (optional)

Diagnose info to be included by the Beneficiary for Shared Pair lines:

- Is service fully interrupted or degraded
- Is User ADSL line synchro present or not
- Confirm if ADSL modem or router is powered on
-
- Confirm if splitter(s) is(are) connected and checked
- Confirm if User internal cabling is checked

Diagnose info to be included by the Beneficiary for Raw Copper lines:

- Is service fully interrupted or degraded
- Is User xDSL line synchro present or not
- Confirm if xDSL modem or router is powered on
- Confirm if User internal cabling is checked

3.3. *Set-up of service*

- 12 Activation of the improved SLA per line can be done at ordering, the process to activate the SLA will start immediately after the implementation of the Raw Copper or Shared Pair service. The request will be included in the remarks field of the XML when ordering. At first, no change is possible through XML. Changing users already connected will be treated on a case by case basis within maximum two working days. In any case, every request can also be sent by fax if XML is not available including changing users already connected. Beneficiary will provide Belgacom with a list of lines at the latest two working days before the bringing into service of the Improved Service Level Agreement.

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3.4. Nature of the service disruption

When reporting a disruption, it is essential that the Beneficiary clearly identifies the nature of the problem, i.e., to distinguish disruptions that have an impact on traffic from those that do not.

- Impact on traffic: A problem is presumed to have an impact on the traffic when it requires immediate action by Belgacom to effect a repair, i.e., in case of a complete line disruption.
- No impact on traffic: A problem is not considered to impact on traffic when it does not require immediate action by Belgacom to effect a repair, e.g., recurrent temporary disruption, quality problems, etc.

Service disruptions that do not impact on traffic are reported in the same manner as those that do. However, since long-term analysis is generally required to resolve such problems, Belgacom shall not be able to guarantee the Repair Time as for problems resulting in full line disruption. In the case of quality problems and recurrent temporary disruption, the decision as to whether it has an impact on traffic lies with the Beneficiary. Where such a decision is taken, the Beneficiary shall authorize Belgacom to cut the troubled line where necessary to effect immediate repairs within the requisite deadline.

In case of quality problems and recurrent temporary disruption, when Beneficiary mention, for the time that mention is still confirmed by Beneficiary there is no impact on traffic, Belgacom shall in good faith cooperate with Beneficiary to find the cause of the problem. Every day, at least, a report of the findings and results of research about the causes are to be given by Belgacom. The Beneficiary mentions, in good faith, to Belgacom if a particular problem is related to “impact on traffic” or “no impact on traffic”. Belgacom acts in accordance with that mention, with respect to the timers in case of “impact on traffic”.

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3.5. Stop-Clock or freeze rules

The clock for repair starts when the complaint ticket is valid, i.e. in line with the conditions described in chapter ~~3, above~~.

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There are three scenarios in which Belgacom may use the stop-clock procedure:

1. The Beneficiary asks for the repair to be postponed or an appointment if applicable to be rescheduled;
2. A Trouble Ticket is opened; The Beneficiary does not want Belgacom to cut the line in order to perform tests.
3. Awaiting feedback, input or confirmation of the Beneficiary that prevents Belgacom to proceed the repair process

If the stop-clock procedure is used, this shall be fully documented in the System, which will set out the:

- Reason for stop-clock
- Action to be undertaken;
- Timing;
- Name of contact person in the Beneficiary's organization who agrees to the stop-clock
- Every stop-clock has to be mentioned to and agreed in good faith by Beneficiary, ex ante or ex post. Every stop-clock may be checked by the Beneficiary; in this respect he may require the documentation he needs from Belgacom.

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4. Timers

- 13 Timers: All repair timers in present document are net repair timers. Delays due to Beneficiary are not taken into account and lead to stop clock. Net time is gross time minus stop clock times.
- 14 General Feedback Timer: Belgacom will give feedback on the nature of the problem and on the estimated delay of repair to the Beneficiary within one hour after trouble ticket validation. In any case, a trouble is only to be considered as being closed after feedback (including detailed description of the issue or the issue intervention) has been given by Belgacom to the Beneficiary and after Beneficiary has agreed in good faith about the closure of the ticket.

4.1. Repair

Trouble Ticket Resolution timer

- 15 The Trouble Ticket Resolution timer starts when Belgacom receives a trouble mention based on the issue description communicated by Beneficiary and ends at the closure of this Trouble Ticket. If an appointment is needed at the User address access is authorized without negotiation. It is the responsibility of the Beneficiary to inform its User in those cases. This timer will be frozen in case an appointment if needed is not accepted by Beneficiary at the proposed date, in case of absence of the User at appointment date, and in any case of incomplete or manifest incorrect information as indicated in point 3 provided by Beneficiary with relevance for the repair process. The timer will be unfrozen after Beneficiary has provided the necessary information. In all cases, Belgacom undertakes to do its best efforts to resolve all issues within the fixed resolution timer.

	Repair Timer
Repair timer for end user line (to be respected by Belgacom)	<u>4 hours (60% of the trouble tickets resolved)</u> <u>6 hours (80% of the trouble tickets resolved)</u> <u>8 hours (95% of the trouble tickets resolved)</u>

These percentage relate to the total number of trouble tickets opened by the Beneficiary per month for Raw Copper and Shared Pair lines, wrongful repair requests excluded.

	Trouble Ticket Creation
Trouble Ticket Handling (to be respected by Belgacom)	24/24 hours, 7/7 days

	Intervention Window
Intervention Window (to be respected by Belgacom)	24/24 hours, 7/7 days

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- 16 A first feedback will be available within 1 hour after trouble ticket start resolution timer.
- 17 Another feedback will be available within 2 hours after trouble ticket start resolution timer. Successive feedback will be available on demand of the Beneficiary every 1 hours for every trouble ticket.
- 18 Note that the Repair Timer will be frozen in case appointment needed for the intervention proposed by Belgacom is scheduled later on demand of the Beneficiary. The repair timer will be unfrozen and continued at the time of the appointment.
- 19 Third parties duly mandated by Beneficiary (suppliers, contractors, clients, resellers) and with which the Beneficiary has a contractual relationship, to be proven to Belgacom by the Beneficiary before the issuing of the first trouble ticket, have the right to open trouble tickets directly with Belgacom, under the responsibility of the Beneficiary, who would have to pay wrongful repair requests under the conditions foreseen in BRUO.

5. Availability

- 20 Availability is equal to $((Tc-Ti)/Tc)$ where Tc is the total time of availability committed to user (24/24 7/7) and Ti the total time of interruption per year from the date of signing the agreement of the Raw Copper or Shared Pair service, taking into account the total number of lines BRUO / BROBA subject to an ISLA. The time of interruption is defined as from the trouble ticket start resolution timer for a trouble that has been sorted out as being a Belgacom fault, excluding conditions of force majeure and wrongfully repair requests up to the moment of the ticket closure, mentioned to the Beneficiary with information about the reason of outage.

	Average yearly availability
Availability	99,94% for $n \leq 1500$ lines in improved SLA 99,95% for $1500 < n \leq 2500$ lines in improved SLA 99,96% for $2500 < n \leq 5000$ lines in improved SLA 99,97% % for $n > 5000$ lines Where n = number of lines inter-beneficiary in ISLA (BRUO or BROBA)

6. Beneficiary's obligations

6.1. Contact persons

- A technical contact with the Beneficiary will be available 24/24, 7/7
- Beneficiary will provide a SPOC with its respective name, telephone number or e-mail. for the purpose of follow up or support.

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6.2. Site access

- When calling the Belgacom Helpdesk, the Beneficiary will communicate the site access procedure.
- If an appointment is needed at user address, access is authorized without negotiation. It is the responsibility of the Beneficiary to inform its user about it.
- The appointment date and time proposed by Belgacom will be accepted by the Beneficiary except when the latter is objectively impeded, in which case Belgacom will suggest a new date and time for appointment.
- The user or site contact person communicated is present at the proposed date and/or hour

Any failure to comply with these procedures shall result in a stop-clock / freeze rule (see point 3.5).

6.3. Required Information

Beneficiary will provide correct information with relevance for the repair process.

In case of incomplete information (see chapter 3.2) in ticket creation by Beneficiary, the stop-clock : freeze rule is applicable and the timer will be unfrozen after Beneficiary has provided the necessary information.

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7. Prices

7.1. Repair

- 21 One-time fee for configuration of systems and resources. The setup fee is to be paid one time only, for the first Improved SLA being BRUO or BROBA if they are requested at the same time.

	One-time fee
Setup fee	€2000,47

- 22 One-time fee per line for setup of Improved SLA in case of a new line.

	One-time fee
Activation fee	€8,23

- 23 One-time fee per line for change of the SLA from Basic to Improved (or reverse) in case of an existing line.

	Per local loop
Change SLA type fee	€8,23

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24 Rental fee per local loop with the Improved SLA type in addition to the monthly fee.

	Monthly Rental
Extra Rental Fee	€7,11

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8. Compensations

8.1. General

- 25 Compensations are applicable in the cases that Belgacom has not respected its commitment within the delay (net time) or on the date agreed with Beneficiary, excluding the cases in which Beneficiary or its User is responsible for the delay or in the case of force majeure.
- 26 Payment will in principle be expressed in a discount on next provisioning and rental bill(s) for the respective service.
- 27 The Beneficiary needs to provide Belgacom with the necessary information in case of a delayed repair or any shortage of Belgacom that give cause for the compensations described in this Improved Service Level Agreement. Belgacom will upon receipt verify this information. When this verification appears that the information of the Beneficiary shows a shortcoming of Belgacom that gives cause for paying a compensation, this payment will be done immediately and automatically.
- 28 The Beneficiary will submit a detailed request for compensation to Belgacom including for every repair requested at least date and hour notified/resolved, circuit id, problem on line and product type. The validity of each request for compensation will be examined by Belgacom and motivated in case of rejection for one or more repair records of this compensation request within a delay of maximum 20 working days, if this is related to repair cases of the preceding three months, outside this delay the request is automatically considered as approved by Belgacom.
- 29 In case of repair timer escalations, the consequences as described further in this paragraph shall be applicable to Belgacom. The compensations are calculated on a cumulative basis according to the rules detailed in following tables.

8.2. Repair Timer Escalations

- 30 Troubles which last more than the net timer described in points 4.1.1 and are the fault of Belgacom, shall entitle Beneficiary to receive payment of compensation by Belgacom. Troubles concerning the conditions as determined in Annex C Technical Specifications and which last more than the timer described in paragraph 4.1 and are not the fault of Beneficiary shall entitle Beneficiary to receive payment of compensation by Belgacom, i.e. basic rental fee + extra rental fee, provided he cannot claim compensation due to a case of force majeure where Belgacom is unable to establish the connection or repair the breakdown within the agreed timeframe. In these cases, Belgacom shall notify Beneficiary of the timeframe in which his request will probably be carried out. The time of interruption is defined as from the trouble ticket start resolution timer for a trouble that has been sorted out as being Belgacom's responsibility, excluding conditions of force majeure and wrongfully repair requests, up to the moment of the ticket closure, mentioned to the Beneficiary with information about the reason of outage. The compensations are cumulative. Every extra day started, is considered as a full day.

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<u>Type of repair timer</u>	<u>Compensation</u>
<u>< 60% in 4 hours</u>	<u>50% of the line monthly rental fee per trouble ticket closed in more than 4 hours</u>
<u>Between 60% and <80% in 6 hours</u>	<u>100% of the line monthly rental fee per trouble ticket closed in more than 6 hours</u>
<u>Between 80% and <95% in 8 hours</u>	<u>150% of the line monthly rental fee per trouble ticket closed in more than 8 hours</u>

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8.3. Availability

- 31 In case the guaranteed minimum yearly availability of the line is not respected due to a cause which is not external to Belgacom, the Beneficiary is entitled to a compensation as described in the table hereunder. The definition of the availability is given at the section 5.

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Availability Compensation	
Number of related pairs	Compensation (in EUR)
< 100 or < 2 LEX/LDC concerned	0
> 100 and > 1 LEX/LDC concerned	5% of yearly extra rental fee *number of lines of Beneficiary subject to ISLA, with a minimum of 6500€ with Improved SLA

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Amendment to the Raw Copper/Shared Pair Agreement between .../... and Belgacom

9. Between

.../... a limited liability company incorporated under the laws of .../... , having its registered office at .../...

(hereafter referred to as “.../...”)

9.1.1.1.1.1. and

Belgacom N.V./S.A., a Belgian autonomous public enterprise organized under the Law of March 21, 1991 and the Royal Decree of August 19, 1992, with registered office and place of business at 1030 Brussels, 27 Boulevard du Roi Albert II, registered with the Register of Commerce of Brussels under number 587 163 (hereafter referred to as "Belgacom")

Whereas .../... and Belgacom (jointly referred to as the “Parties”) have entered into Agreement for the Provisioning of ...Raw Copper..., ...Shared Pair... in the Local Loops of Belgacom on ...Date... (hereafter referred to as the “ULL Agreement”);

Whereas the Parties have agreed to define improved service levels guarantees in the frame of the Service;

Now, therefore, it is hereby agreed as follows:

9.1.1.1.1.1.1. Article 1 - Adjunction of the Improved Service Level Agreement

By the present Amendment, the Parties agree to add the Improved Service Level Agreement as enclosed to the present Amendment.

Article 2 - General provisions

The provisions of a general nature of the Raw Copper/Shared Pair Agreement including, in particular but without limitation, those on liability, confidentiality, choice of law and dispute resolution are incorporated by reference into and are fully applicable to the present Amendment to the Raw Copper/Shared Pair Agreement.

The present amendment constitutes, at the time of signature of this amendment, the only changes to the existing Raw Copper/Shared Pair Agreement.

In witness whereof, .../... and Belgacom have caused this Amendment to the Raw Copper/Shared Pair Agreement to be executed in two original copies, each Party acknowledging having received one original copy, by the hands of their duly authorized officers, on the date and year written below.

Brussels, _____ .

For Belgacom:

For .../...

By :
Title :
Date :

By :
Title:
Date :

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	Repair Timer		
Repair timer	100%: 4 hours		

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	Compensation		
Repair Timer Escalation	>4 hours: 20 € >8 hours: 40 € >end next calender day after trouble ticket creation: 100 € +every day: 100 € With a maximum of 460 €.		

	Compensation
No feedback given**	20 EUR

**In case the feedback required in the improved Service Level Agreement was not provided.

	Compensation
No Trouble Ticket Creation possible***	120 EUR

***In case it was not possible for the Beneficiary to open a trouble ticket.

Annex G3

Raw copper and shared pair

**Improved service level agreement for
Provisioning**

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1. Object

- 1 The present document defines the specific Terms and Conditions upon which Belgacom will provision Raw Copper and Shared Pair lines in case ISLA on provisioning for those lines was requested. The elements included in this document replace those in the basic service level agreement, unless stated otherwise.

2. Prerequisites

- 2 This Service Level agreement is signed between two parties being Belgacom and Beneficiary concerned.
- 3 Belgacom will provide a SPOC with telephone number and e-mail (CAR_LLUI), for the purpose of follow up or support.
- 4 The document reflects only the service indicated. Any future interference due to synchronization with any other product is out of scope.
- 5 The Service Level Agreement is not valid in situations of force majeure. The term “Force Majeure” as used in this ISLA shall include, without limitation, earthquake, fire, flood, epidemic, act of war, strikes, whether declared or undeclared, blockade, insurrection, riot or other cause(s) beyond the reasonable control of either of the parties, these other causes being duly agreed as such by the other party.

3. Conditions

- 6 The services offered in virtue of this Improved SLA on Provisioning are to be described as follows:
 - Improved percentages compared to basic SLA on Appointment Kept
 - Higher compensations in case of default (compared to basic SLA on Appointment Kept)
- 7 The ISLA on provisioning applies only for lines installed by Belgacom, and does not apply to any line installed by a certified technician.

3.1. Terminology

- Order : assembly of all workorders needed to deliver an ordered product .
- Work order : one of the different actions assigned to a Belgacom technician to perform the delivery of an ordered product.
- Ordered product : the line ordered by the Beneficiary
- Appointment: Date for the customer visit which was communicated by Belgacom to the Beneficiary by means of XML.

3.2. Description

- 8 For an order for which ISLA for Provisioning has been requested by the Beneficiary via the electronic ordering system, Belgacom will take all necessary actions to follow-up this order in the provisioning chain and ensure the appointment on which Belgacom has committed via xml is kept.

- 9 The ISLA for Provisioning target is defined as follows:

$$\% \text{ Appointment kept} = \frac{\text{Number of ISLA orders for which all Customer Visit appointments are kept}}{\text{Number of ISLA orders having at least one Customer Visit}}$$

- 10 An appointment is considered as “kept” if the technician is “on site” on the day of the appointment as it was communicated to the Beneficiary.
- 11 If multiple customer visits are scheduled on the same date for installation of a line, the appointment is considered as kept if at least 1 intervention has started on the scheduled date. E.g. Splicer intervention followed by a standard installation
- 12 Notwithstanding the provisions of points 9 and 10 above, if the Belgacom technician was present on the appointment date but the enduser was not present (“customer absent”), refused or asks to postpone the installation, the appointment is considered as kept and the applicable fee will be charged. For the necessary second intervention the applicable fee will also be charged.

3.3. Set-up of service

- 13 Activation of the improved SLA per line can be done at ordering via the electronic ordering system.

4. Values

	Monthly target value
% ISLA appointment kept	99%

5. Beneficiary's obligations

5.1. Contact persons

- 14 A contact person who will be present on site at the date of the appointment and whose contact number needs to be communicated in the xml.

5.2. Required Information

- 15 Beneficiary will provide in the order correct contact information with relevance for the provisioning process: Contact person who will be present on site at the day of the appointment, contact number, address.
- 16 In case of incomplete or incorrect information given in the order by Beneficiary, the ISLA on provisioning target can not be guaranteed.

6. Prices

- 17 For application of the ISLA, a one-time fee for follow-up and coordination will be applicable per customer visit.

	One-time fee
Per customer visit	€10

7. Compensations

- 18 Compensations are applicable in the cases that Belgacom has not respected its commitment on the date agreed with Beneficiary, excluding the cases in which Beneficiary or its Enduser is responsible (e.g. customer absent) or in the case of force majeure.
- 19 Payment will be made via a creditnote on next provisioning and rental bill(s) for the respective service.
- 20 The Beneficiary needs to provide Belgacom with the necessary information in case of any shortage of Belgacom that might give cause for the compensations described in this Improved Service Level Agreement. Belgacom will upon receipt verify this information. When at this verification appears that the information of the Beneficiary shows a shortcoming of Belgacom that gives cause for paying a compensation, this payment will be done immediately and automatically on the next invoice relevant to the service concerned.
- 21 The Beneficiary will submit a detailed request for compensation to Belgacom. The validity of each request for compensation will be examined by Belgacom and motivated in case of rejection within a delay of maximum 20 working days, if the request is related to orders submitted during the 3 months preceding the request. If Belgacom has not rejected the request within the delay of 20 working days, the request will automatically be considered as approved by Belgacom. If the request is related to orders submitted before the 3 months preceding the request, the delay of 20 working days does not apply.

	Compensation
Per appointment missed	€40

Amendment to the Raw Copper/Shared Pair Agreement between .../... and Belgacom

Between

.../... a limited liability company incorporated under the laws of .../... , having its registered office at .../...

(hereafter referred to as “.../...”)

and

Belgacom N.V./S.A., a Belgian autonomous public enterprise organized under the Law of March 21, 1991 and the Royal Decree of August 19, 1992, with registered office and place of business at 1030 Brussels, 27 Boulevard du Roi Albert II, registered with the Brussels Register of Legal Entities under number VAT BE 0202 239 951 (hereafter referred to as "Belgacom")

Whereas .../... and Belgacom (jointly referred to as the “Parties”) have entered into Agreement for the Provisioning of ...Raw Copper..., ...Shared Pair... in the Local Loops of Belgacom on ...Date... (hereafter referred to as the “ULL Agreement”);

Whereas the Parties have agreed to define improved service levels guarantees in the frame of the Service;

Now, therefore, it is hereby agreed as follows:

Article 1 - Adjunction of the Improved Service Level Agreement

By the present Amendment, the Parties agree to add the Improved Service Level Agreement foer Provisioning as enclosed to the present Amendment.

Article 2 - General provisions

The provisions of a general nature of the Raw Copper/Shared Pair Agreement including, in particular but without limitation, those on liability, confidentiality, choice of law and dispute resolution are incorporated by reference into and are fully applicable to the present Amendment to the Raw Copper/Shared Pair Agreement.

The present amendment constitutes, at the time of signature of this amendment, the only changes to the existing Raw Copper/Shared Pair Agreement.

In witness whereof, .../... and Belgacom have caused this Amendment to the Raw Copper/Shared Pair Agreement to be executed in two original copies, each Party acknowledging having received one original copy, by the hands of their duly authorized officers, on the date and year written below.

Brussels, _____ .

For Belgacom:

For .../...

By :
Title :
Date :

By :
Title:
Date :

Annex H

Price List

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1. Introduction

- 1 By its decision of June 11th 2008 on the BRUO-BROBA addendum NTP process, the BIPT imposes on Belgacom to modify its BRUO offer. This modification has been carried out by means of a new addendum and this new Annex H. Raw Copper and Shared pair activation fees as listed in this Annex are valid as of July 17th 2008.
- 2 By its decision of July 2nd 2008 on Blocks & Tie-cabling pricing, the BIPT imposes on Belgacom to modify the Annex H of its BRUO offer. The price list below reflects the changes imposed by this decision and the Blocks & Tie cable prices are valid as of July 14th 2008.
- 3 The prices presented in this Price List are expressed in Euro and are VAT exclusive.
- 4 The different fees mentioned in the present document are defined in the BRUO documents.
- 5 The prices apply to both Raw Copper and Shared Pair, except when indicated otherwise.

2. Startup fee

- 6 The start-up fee is charged to Beneficiary, operator, consultant or other that requires explanations by Belgacom BRUO specialists (Product Management and/or Customer service) on the offer content (e.g. this fee is not charged for negotiation meetings). This fee is due until the first installation of a collocation of the Beneficiary for BRUO usage.

Information on BRUO	Price
Rate per hour per Belgacom person	€ 99,49

3. Inquiry fees

3.1. XML Inquiry

- 7 The inquiry fee will only be invoiced for all the xml that received a 'Done' Message with the requested information.

Inquiry Fee	Price
Per xml Done	€ 9,94

3.2. LLU Inquiry Tool

Inquiry Fee	Price

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Per inquiry done	0 €

4. Pre-provisioning of Infrastructure Pricing

8 As far as the links established between the MDF and the Beneficiary's collocated rack are concerned, the Beneficiary has the advantage of user rights which implies that a transfer of these rights is possible between Beneficiaries within the same site, provided that Belgacom is informed. Belgacom will charge to the Beneficiary the relevant costs incurred in the execution of this transfer of user rights.

9 The table below includes the prices for the installation of Blocks, Tie Cabling and Splitter Cards in the Colocation Area.

Legend of the table:

- type
 - In case of Raw Copper : loop type:
 - o Type 1 = Low bandwidth PSTN/ISDN
 - o Type 2= High Bandwidth ADSL/SDSL
 - In case of Shared pair : switch service type: PSTN or ISDN

10 The annual MDF cost, applicable on all existing tie cables, will be invoiced annually within the first quarter of each year.

The first year following an new order (year X+1), this invoice will not consist of a full year billing, but the remaining part of year X, in which the order was placed (reference period being installation date till December 31st of year X).

In case of Distant colocation, additional connector LSA blocks are needed.

NET	product	type	colo type	# users	m cables 100p	m cables 96p	m cables 24p	# splitters	Unit Price €	annual MDF cost €
AGE	Raw Copper	1	Physical/Co-mingling	400	360			0	6.121,77	423,37
AGE	Raw Copper	1	Physical/Co-mingling	300	270			0	4.791,32	317,53
AGE	Raw Copper	1	Physical/Co-mingling	200	180			0	3.221,17	211,69
AGE	Raw Copper	1	Physical/Co-mingling	100	90			0	1.890,72	105,84
AGE	Raw Copper	2	Physical/Co-mingling	384		360		0	6.811,67	398,76
AGE	Raw Copper	2	Physical/Co-mingling	288		270		0	5.308,74	299,07
AGE	Raw Copper	2	Physical/Co-mingling	192		180		0	3.566,12	199,38
AGE	Raw Copper	2	Physical/Co-mingling	96		90		0	2.063,20	99,69
AGE	Raw Copper	2	Physical/Co-mingling	48			180	0	1.883,45	49,84
AGE	Raw Copper	2	Physical/Co-mingling	24			90	0	1.281,28	49,84
LEX	Raw Copper	1	Physical/Co-mingling	400	200			0	4.077,27	423,37
LEX	Raw Copper	1	Physical/Co-mingling	300	150			0	3.198,02	317,53
LEX	Raw Copper	1	Physical/Co-mingling	200	100			0	2.318,77	211,69
LEX	Raw Copper	1	Physical/Co-mingling	100	50			0	1.439,52	105,84
LEX	Raw Copper	2	Physical/Co-mingling	384		200		0	4.511,17	398,76

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NET	product	type	colo type	# users	m cables 100p	m cables 96p	m cables 24p	# splitters	Unit Price €	annual MDF cost €
LEX	Raw Copper	2	Physical/Comingling	288		150		0	3.523,44	299,07
LEX	Raw Copper	2	Physical/Comingling	192		100		0	2.535,72	199,38
LEX	Raw Copper	2	Physical/Comingling	96		50		0	1.548,00	99,69
LEX	Raw Copper	2	Physical/Comingling	48			100	0	1.420,25	49,84
LEX	Raw Copper	2	Physical/Comingling	24			50	0	1.049,68	49,84
LDC	Raw Copper	2	Physical/Comingling	48			30	0	1.014,95	49,84
AGE	Shared Pair	PSTN	Physical/Comingling	384		520		384	13.568,61	797,52
AGE	Shared Pair	PSTN	Physical/Comingling	288		390		288	10.206,37	598,14
AGE	Shared Pair	PSTN	Physical/Comingling	192		260		192	7.076,38	398,76
AGE	Shared Pair	PSTN	Physical/Comingling	96		130		96	3.712,28	199,38
AGE	Shared Pair	PSTN	Physical/Comingling	48			260	48	2.991,95	99,69
AGE	Shared Pair	PSTN	Physical/Comingling	24			130	24	1.804,49	49,84
AGE	Shared Pair	ISDN	Physical/Comingling	384		520		384	13.568,61	797,52
AGE	Shared Pair	ISDN	Physical/Comingling	288		390		288	10.206,37	598,14
AGE	Shared Pair	ISDN	Physical/Comingling	192		260		192	7.076,38	398,76
AGE	Shared Pair	ISDN	Physical/Comingling	96		130		96	3.712,28	199,38
AGE	Shared Pair	ISDN	Physical/Comingling	48			260	48	2.991,95	99,69
AGE	Shared Pair	ISDN	Physical/Comingling	24			130	24	1.804,49	49,84
LEX	Shared Pair	PSTN	Physical/Comingling	384		320		384	10.752,91	797,52
LEX	Shared Pair	PSTN	Physical/Comingling	288		240		288	8.034,67	598,14
LEX	Shared Pair	PSTN	Physical/Comingling	192		160		192	5.548,68	398,76
LEX	Shared Pair	PSTN	Physical/Comingling	96		80		96	3.068,28	199,38
LEX	Shared Pair	PSTN	Physical/Comingling	48			160	48	2.412,95	99,69
LEX	Shared Pair	PSTN	Physical/Comingling	24			80	24	1.514,99	49,84
LEX	Shared Pair	ISDN	Physical/Comingling	384		320		384	10.752,91	797,52
LEX	Shared Pair	ISDN	Physical/Comingling	288		240		288	8.034,67	598,14
LEX	Shared Pair	ISDN	Physical/Comingling	192		160		192	5.548,68	398,76
LEX	Shared Pair	ISDN	Physical/Comingling	96		80		96	3.068,28	199,38
LEX	Shared Pair	ISDN	Physical/Comingling	48			160	48	2.412,95	99,69
LEX	Shared Pair	ISDN	Physical/Comingling	24			80	24	1.514,99	49,84
LDC	Shared Pair	PSTN	Physical/Comingling	24			35	24	1.254,44	49,84
LDC	Shared Pair	ISDN	Physical/Comingling	24			35	24	1.254,44	49,84
AGE	Raw Copper	1	Distant	400	360			0	6.958,54	423,37
AGE	Raw Copper	1	Distant	300	270			0	5.418,89	317,53
AGE	Raw Copper	1	Distant	200	180			0	3.639,55	211,69
AGE	Raw Copper	1	Distant	100	90			0	2.099,91	105,84
AGE	Raw Copper	2	Distant	384		360		0	7.762,34	398,76
AGE	Raw Copper	2	Distant	288		270		0	6.021,74	299,07
AGE	Raw Copper	2	Distant	192		180		0	4.041,45	199,38
AGE	Raw Copper	2	Distant	96		90		0	2.300,87	99,69
AGE	Raw Copper	2	Distant	48			180	0	2.002,28	49,84
AGE	Raw Copper	2	Distant	24			90	0	1.400,11	49,84

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NET	product	type	colo type	# users	m cables 100p	m cables 96p	m cables 24p	# splitters	Unit Price €	annual MDF cost €
LEX	Raw Copper	1	Distant	400	200			0	4.914,04	423,37
LEX	Raw Copper	1	Distant	300	150			0	3.825,59	317,53
LEX	Raw Copper	1	Distant	200	100			0	2.737,15	211,69
LEX	Raw Copper	1	Distant	100	50			0	1.648,71	105,84
LEX	Raw Copper	2	Distant	384		200		0	5.461,84	398,76
LEX	Raw Copper	2	Distant	288		150		0	4.236,44	299,07
LEX	Raw Copper	2	Distant	192		100		0	3.011,05	199,38
LEX	Raw Copper	2	Distant	96		50		0	1.785,67	99,69
LEX	Raw Copper	2	Distant	48			100	0	1.539,08	49,84
LEX	Raw Copper	2	Distant	24			50	0	1.168,51	49,84
LDC	Raw Copper	2	Distant	48			30	0	1.133,78	49,84
AGE	Shared Pair	PSTN	Distant	384		520		384	14.519,28	797,52
AGE	Shared Pair	PSTN	Distant	288		390		288	10.919,37	598,14
AGE	Shared Pair	PSTN	Distant	192		260		192	7.551,71	398,76
AGE	Shared Pair	PSTN	Distant	96		130		96	3.949,95	199,38
AGE	Shared Pair	PSTN	Distant	48			260	48	3.110,78	99,69
AGE	Shared Pair	PSTN	Distant	24			130	24	1.923,32	49,84
AGE	Shared Pair	ISDN	Distant	384		520		384	14.519,28	797,52
AGE	Shared Pair	ISDN	Distant	288		390		288	10.919,37	598,14
AGE	Shared Pair	ISDN	Distant	192		260		192	7.551,71	398,76
AGE	Shared Pair	ISDN	Distant	96		130		96	3.949,95	199,38
AGE	Shared Pair	ISDN	Distant	48			260	48	3.110,78	99,69
AGE	Shared Pair	ISDN	Distant	24			130	24	1.923,32	49,84
LEX	Shared Pair	PSTN	Distant	384		320		384	11.703,58	797,52
LEX	Shared Pair	PSTN	Distant	288		240		288	8.747,67	598,14
LEX	Shared Pair	PSTN	Distant	192		160		192	6.024,01	398,76
LEX	Shared Pair	PSTN	Distant	96		80		96	3.305,95	199,38
LEX	Shared Pair	PSTN	Distant	48			160	48	2.531,78	99,69
LEX	Shared Pair	PSTN	Distant	24			80	24	1.633,82	49,84
LEX	Shared Pair	ISDN	Distant	384		320		384	11.703,58	797,52
LEX	Shared Pair	ISDN	Distant	288		240		288	8.747,67	598,14
LEX	Shared Pair	ISDN	Distant	192		160		192	6.024,01	398,76
LEX	Shared Pair	ISDN	Distant	96		80		96	3.305,95	199,38
LEX	Shared Pair	ISDN	Distant	48			160	48	2.531,78	99,69
LEX	Shared Pair	ISDN	Distant	24			80	24	1.633,82	49,84
LDC	Shared Pair	PSTN	Distant	24			35	24	1.373,27	49,84
LDC	Shared Pair	ISDN	Distant	24			35	24	1.373,27	49,84

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5. Installation fees

5.1. Activation Fee

12. This is the activation fee for the Service on a single line. No difference will be made between the active and the non active loops.

Activation fee without Customer Visit	Price
Raw Copper, <u>installed by Belgacom</u>	€ 25,44
<u>Raw Copper, installed by a certified technician</u>	<u>€ 8,65</u>
Shared Pair	€ 35,31

Additional fee for Telecom installation	Price
Raw Copper, <u>installed by Belgacom</u>	€ 66.49
<u>Raw Copper, installed by a certified technician</u>	<u>€ 0,00</u>
Shared Pair	€ 38,88

Additional fee for customer visit detected during repair	Price
Raw Copper, <u>installed by Belgacom</u>	€ 101.27

13. If an activation without customer visit of a Raw Copper line is ordered, and during the activation process of the line Belgacom finds that a customer visit is required – according to the process as described in the Appendix A: “NTP process for provide new Raw Copper orders” of the BRUO Main Body – the additional fee for Telecom Installation will be added to the Activation fee without Customer Visit, independently of the request of the Beneficiary.
14. The Additional fee for Telecom Installation will also be due after a repair action performed by Belgacom on the newly installed Raw Copper line, when the provisioning process – as described in the Appendix A: “NTP process for provide new Raw Copper orders” of the BRUO Main Body – allowed to determine that the installation of a NTP by a Belgacom technician was not necessary, and that the trouble covered by the Trouble Ticket was due to the absence of the NTP.
15. In case of request by the Beneficiary of a Telecom Installation together with the Activation, the Additional fee for Telecom Installation is added to the Activation Fee without Customer Visit.
16. The Additional fee for Telecom Installation Shared Pair includes the Splitter installation, travel to the end-user and hardware costs.
- The Additional fee for Telecom Installation Raw Copper, installed by Belgacom includes the installation of the Network Termination Point, travel to the end-user and hardware cost.

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17. If during the activation process of a Shared Pair Belgacom finds that the installation of a splitter is required, Belgacom reserves the right to invoice the 'additional fee for Telecom installation', independent of the initial request of the Beneficiary.

18. If during a repair action performed by Belgacom on a newly installed Raw Copper line installed by a certified technician, in case the trouble covered by the Trouble Ticket was due to an incorrect installation performed by the certified technician, an additional fee for repair will be due. This fee will be invoiced on top of the Activation fee for Raw Copper, installed by certified technician.

<u>Additional fee for repair due to incorrect installation by certified technician</u>	<u>Price</u>
<u>Raw Copper installed by certified technician</u>	<u>€ 118,06</u>

5.2. Rush Order

19. When Rush order has been requested the standard activation fee will be doubled.

5.3. SNA

20. In case Belgacom needs to perform additional work, also called Small Network Adaptation, both the SNA and the installation of the line will in any case be performed by Belgacom according to the terms and definitions as defined in this Offer, the following fee will apply in surplus of the activation fee, relevant to an installation by Belgacom.

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Small Network Adaptation Fee	€ 441,66

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6. Rental fees

6.1. Raw Copper

Monthly Rental Fee per loop	Price/Monthly
Raw Copper	€ 9,29

21. The rental of raw copper multiple pair orders will be applicable by User line.

6.2. Shared Pair & Raw Copper Plus

Monthly Rental Fee per loop	Price/Monthly
Shared Pair	€ 0,52
Raw Copper Plus (also called Shared Pair wov)	€ 9,29

Monthly splitter Maintenance Fee per loop	Price/Monthly
Splitter maintenance fee per Shared Pair or Raw Copper Plus line	€ 0,33

22. The rental fee and the maintenance fee will be summarized on the invoice as follows:

Monthly Rental Fee per loop	Price/Monthly
Raw Copper Plus incl Maintenance Splitter card	€ 9,62
Shared Pair incl Maintenance Splitter card	€ 0,85

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7. One time fees

7.1. Cancellation fee

23. The cancellation fee is the fee that the Beneficiary has to pay in case the beneficiary wants to stop an order in progress. Depending on the timing of the cancellation the following fees are due:

Cancellation Fee	Price
Cancel before Due Date – 1 (12 pm)	€ 6,99
Cancel after Due Date – 1 (12 pm)	Installation fees + Deactivation fee

7.2. Change date fee

24. When a Beneficiary request to change the date of implementation, Belgacom will invoice this Beneficiary the following Change date fee:

Change Date Fee	Price
Change before DD – 1 (12pm)	€ 6,59
Change after DD – 1 (12pm)	Activation + Deactivation fee

25. In case such change is requested after due date – 1 (12 pm), the related installation fee and deactivation fee will have to be paid by the Beneficiary

7.3. Deactivation fee

26. This is the fee that the beneficiary has to pay in case the beneficiary wants to stop an already activated service.

Deactivation Fee	Price
Raw Copper	€ 12,01
Shared Pair	€ 23,12

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7.4. Order pending due to useless End User visit

- 27.** The useless End User visit fee is due when an End User of the Beneficiary is not present at his premises on the appointment date.

Useless End User visit	Price
Per intervention	€ 20,04

7.5. Wrongful repair request

- 28.** In case of wrongful repair request by a Beneficiary, Belgacom will invoice to Beneficiary an administrative fee of 104.61 EUR.
- 29.** If Belgacom has performed specific work due to this wrongful repair request made by Beneficiary, Belgacom will invoice these additional costs to Beneficiary.

7.6. Conversion PSTN/ISDN

- 30.** Conversion is the change from Shared pair over PSTN toward Shared Pair over ISDN and vice versa.

Conversion Fee	Price
Shared Pair	€ 38,97

7.7. Coordinated Move

Coordinated Move Fee	Price
Move of the Shared Pair service from location A to location B in coordination with PSTN move	€ 58,43

- 31.** This fee remunerates the coordination of the move of the Beneficiary's data service together with the Belgacom Voice service, in the framework of a Shared Pair. The coordinated move fee includes both the activation and the deactivation part.

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8. Migration fees

8.1. Physical Migration fees

32. The Physical Migration fee includes both the activation and the deactivation part of the migration, and will be entirely invoiced to the destination Beneficiary.

33. This document only refers to migrations towards a BRUO service. The tariffs for migrations towards a BROBA service are set in the Annex 6 'Pricing and Billing' of BROBA II.

34. The Physical Migration fee is applicable in the following cases:

- a. Change ownership: transfer of a line from Beneficiary 1 to Beneficiary 2. The fee is invoiced to Beneficiary 2.
- b. Convert: Product modification from any product to Raw Copper or Shared pair
- c. A combination of a. and b.

35. This migration fee includes the deactivation of the source service.

Physical Migration fee	Price
Change owner/Convert to Raw Copper, <u>installed by Belgacom</u>	€ 36,35
<u>Change owner/Convert to Raw Copper, installed by a Certified Technician</u>	<u>€ 8,19</u>
Change owner/Convert to Shared Pair	€ 38,08
Convert from SP to RC+ (asked indirectly by end-user when ceases/ports his voice)	€ <u>5,28</u>

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36. If during a repair action performed by Belgacom on a line migrated to a Raw Copper line, installed by a certified technician, in case the trouble covered by the Trouble Ticket was due to an incorrect intervention performed by the certified technician, an additional fee for repair will be due. This fee will be invoiced on top of the Migration fee for Raw Copper, installed by certified technician.

<u>Additional fee for repair due to incorrect intervention by certified technician</u>	<u>Price</u>
<u>Raw Copper installed by certified technician</u>	<u>€65,57</u>

37. For scenarios for which no specific Single Line migration process is developed (see list of active scenarios in Annex K Migrations), the provisioning will be realized in two steps, the first will be the deactivation of the previous situation and the second one the activation of the new situation. Therefore a deactivation fee will be billed to the Beneficiary of the previous situation and an activation fee will be billed to the Beneficiary of the new service. In parallel, in case of product modification within the installed base of a Beneficiary, the same Beneficiary will be billed the deactivation fee and the activation fee.

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8.2. Project Migration fee

38. Because of the specific character of the Project Migration, pricing will be proposed on a case-by-case quotation.

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8.3. Mass Migration fees

Migration Fee for Mass Migrations	Price
Mass Migration to BRUO Raw Copper	€ 27,19
Mass Migration to BRUO Shared Pair	€ 35,46

39. For scenarios for which no specific Mass migration process is developed (see list of active scenarios in Annex K Migrations), the provisioning will be realized in two steps, the first will be the deactivation of the previous situation and the second one the activation of the new situation. Therefore a deactivation fee will be billed to the Beneficiary of the previous situation and an activation fee will be billed to the Beneficiary of the new service. In case of product modification within the installed base of a Beneficiary, the same Beneficiary will be billed the deactivation fee and the activation fee.

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9. ISLA fees

9.1. Set-up fee

40. This is the one-time fee for configuration of systems and resources. The setup fee is to be paid one time only, for the first Improved SLA Repair being BRUO or BROBA if they are requested at the same time.

	One-time fee
Setup fee	€2000,47

9.2. Activation fee

41. This is the one-time fee per line for setup of Improved SLA Repair in case of a new line.

	One-time fee
Activation fee	€8,23

9.3. Change SLA Type fee

42. One-time fee per line for change of the SLA Repair from Basic to Improved (or reverse) in case of an existing line.

	Per local loop
Change SLA type fee	€8,23

9.4. ISLA Repair Recurring fee

43. This is the monthly recurring fee per local loop on which the Improved SLA for repair has been activated. This fee will be added to the rental fee of the Service.

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	Monthly Rental
ISLA <u>Repair</u> Recurring Fee	€7,11

9.5. ISLA Provisioning one time fee

44. This is the one time fee per customer visit for an order for which the Improved SLA for Provisioning has been requested. This fee will be added to the activation fee of the order.

	<u>One time fee</u>
<u>ISLA Provisioning per customer visit</u>	<u>€ 10</u>

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10. Use of e-tools and databases

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10.1. Repair e-Tools

45. The e-tool for repair BRUO and the repair line measurement

Repair e-Tools	Price
Repair and Line Measurement	Free of Charge

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10.2. Street Information

46. The Beneficiary will be invoiced for the KVD inquiry performed.

Received in one inquiry:	Price
First KVD Inquiry (1 KVD + 1 half hour for looking up the info)	€ 17,25
For every extra KVD	€ 0,59
For every extra 20' started A maximum of €17.25 * {# of requested KVD's} will be billed	€ 16,66

47. The Network Street Relation Database can be obtained in MS Access format.

Network Street Relation Database	Price
Initial License Fee	€ 16.660
1 update/year annual fee	€ 2.000
6 updates/year annual fee	€ 5.000

11. Specific costs for certified technicians

11.1.1. Training and certification

11 The program of the training to follow by each candidate certified technician is determined by Belgacom individually, based on the Belgacom trainings already received by each candidate and on its professional experience. For each candidate to the certification it will result in a personal training program, based on a series of theoretical and practical training modules.

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followed by an individual test. The duration of each training module is a multiple of half days. The duration of the test is less than a half day.

12 After its certification, each certified technician will have to follow mandatory updating sessions organized periodically by Belgacom to refresh its technical skills on the services covered by the project Certified Technician and communicate him the evolution of the processes and of the documentation systems. The duration of each updating session is a multiple of half days.

13 The cost of a theoretical training module, or of an updating session, of an half day is: € 79,00 per certified technician.

14 The cost of a practical training module of an half day is: € 68,00 per certified technician.

15 The cost of the test is: € 53,00 per certified technician.

16 If the certified technician is an employee of a Beneficiary, the cost of the training modules and of the test will be invoiced by Belgacom to this Beneficiary.

17 If the certified technician is a subcontractor or an employee of a subcontractor of one or several Beneficiaries, the cost of the training modules and of the test will be invoiced by Belgacom to the subcontractor.

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Annex B 1.2

Service Description 2030

Belgacom access to the Raw Copper Loop

Connection to the collocation area

Physical Colocation

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2. Definition of the service 3

3. Colocation 4

4. Provisioning of blocks and Tie Cables 5

1. Scope

1. This Service Description deals with the definition of the service, equipment and application requirements for the connection of the Raw Copper Loops to the colocation space of Beneficiary, whereby Belgacom delivers the Tie Cables and Blocks.

2. Definition of the service

2. At the Belgacom Local Exchange building, the copper wires are terminated on the Main Distribution Frame. Beneficiary's access to the copper wires will be established with Tie Cables from the Main Distribution Frame of the Local Exchange building to Beneficiary's colocation area in that same Belgacom Local Exchange building.

Belgacom Local Exchange Building

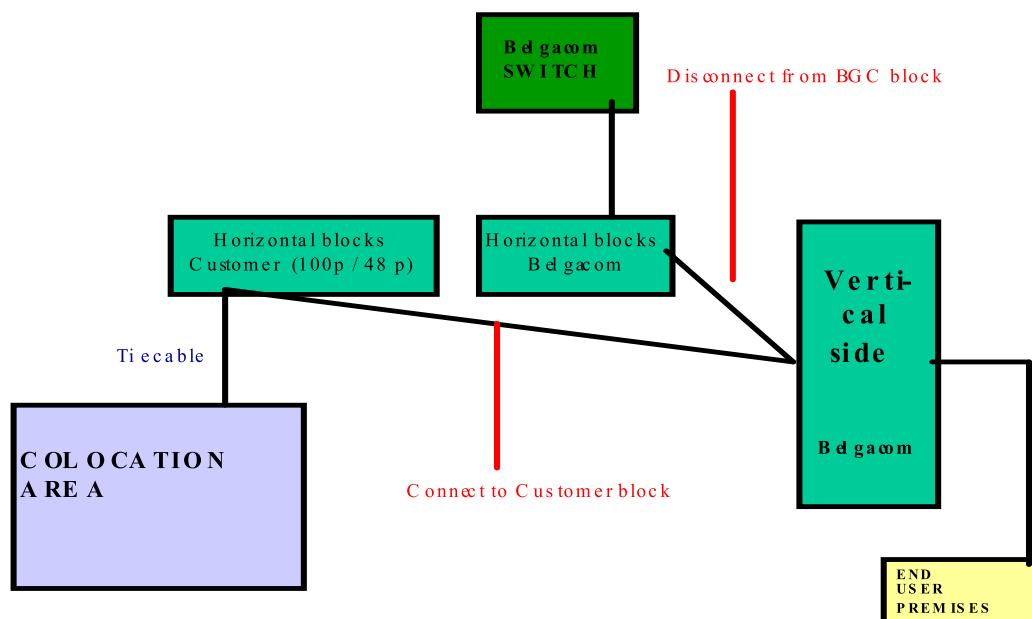


Fig. 1

3. Beneficiary will order the Tie Cables and connection blocks at Belgacom's Local Exchange building prior to the request of Raw Copper Loops. This ordering process is described in "Annex E: Planning and Operations manual".*

* The Annex will be provided to the requesting Beneficiary as soon as it will be available.

4. If at a certain moment, no more free wires are available in the Tie Cables or no more free space is available on blocks, the specific Raw Copper Loop requests issued by the Beneficiary will be rejected, since provisioning of that Raw Copper Loop cannot be implemented.

5. Standard default order:

The default standard unit that Beneficiary can order for the provisioning between blocks on the MDF and the colocation area are:

- 48 pairs for Type 2 loop with an increment of 2 blocks and associated cables: the blocks on the MDF will be two 48 pair blocks and the Tie Cables 4*24 pair shielded cables
- 100 pairs for the Type 1 loop with an increment of 1 block and associated cables: the block on the MDF will be a 100 pair block and the Tie Cables 1*100 pairs non-shielded cable or VVT cable.

6. Non-standard order:

Upon specific request of the Beneficiary, the incremental unit of ordering can be lowered to

- either 48 pairs for Type 2 loop with an increment of 1 block and associated cables: the block on the MDF will be a 48 pair block and the Tie Cables 2*24 pair shielded cable
- either 48 pairs for Type 2 loop with an increment of 1 block and associated cables: the block on the MDF will be a 48 pair block and the Tie Cables a 1*24 pair shielded cable. (The attention is drawn to the fact that the latter type of increment is subject to further investigation within Belgacom. Operational and documentation issues may therefore cause a longer provisioning delay than the ones indicated in the other related and relevant documents.)

7. The request for this lower increment must be explicitly notified to Belgacom. The prices for this lower increment can be found in "Annex H: Price list".

3. Colocation

8. Physical Colocation is a prerequisite for the implementation of this Service Description. The installation and maintenance of colocation will be made by Belgacom, as presented in the "Belgacom Physical Colocation Agreement" attached to this Agreement.

4. Provisioning of blocks and Tie Cables

9. Reference is made to “Annex E: Planning and Operations manual”.

Product	Comments
1. 48 pair blocks for the provisioning of Type 2 loops.	Default ordering per increment of 2
2. 24 pair shielded cable for the provisioning of Type 2 loops.	Default ordering per increment of 4
3. 100 pair blocks for the provisioning of Type 1 loops	Ordering per increment of 1
4. 100 pair non-shielded cable or VVT cable for the provisioning of Type 1 loops.	Ordering per increment of 1

Note: The above services are settled according to “Annex H: Price list”.

Annex B 1.3

Service Description 2035

Belgacom access to the Raw Copper Loop

Connection to the colocation area

Distant Colocation

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2.1. Definition.....5

2.2. Provisioning of modules.....5

3. Jumpering in the Cross Connection Cabinet. 7

1. Scope

This Service Description deals with the definitions, equipment and application requirements for the connection of the Raw Copper Loop to the Cross Connection Cabinet of Beneficiary, whereby Belgacom delivers the all mentionned equipment.

1.1. Definition

At the Belgacom Local Exchange building, the copper wires are terminated in the Main Distribution Frame. Beneficiary's access to the copper wire will be established with Extended Tie Cables from the Main Distribution Frame of the Local Exchange to the dedicated Beneficiary's Cross Connection Cabinet at the outside wall of that Local Exchange building.

Belgacom Local Exchange Building

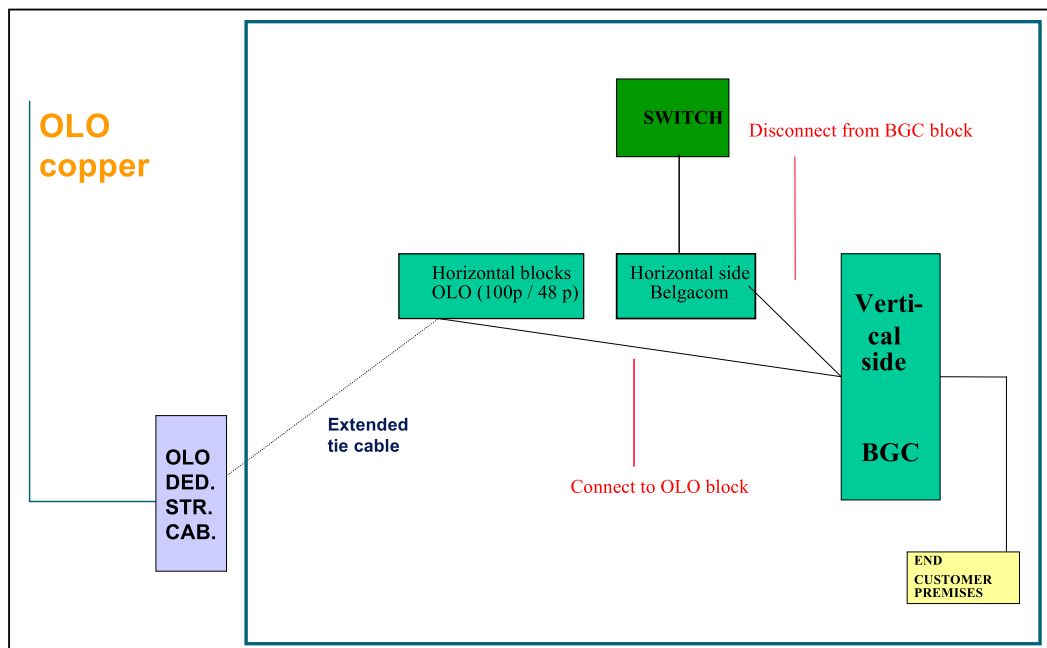


Fig. 1

Beneficiary will order the Extended Tie Cables and connection blocks at Belgacom's Local Exchange building prior to the request of Raw Copper Loops. This ordering process is described in "Annex E: Planning and Operations manual".

If at a given moment, no more free wires are available in the Extended Tie Cables or no more free space is available on any of the Beneficiary blocks, the specific Raw Copper Loop requests issued by the Beneficiary will be rejected.

Standard default order:

The default standard unit that Beneficiary can order for the provisioning between blocks on the MDF and the colocation area are:

- 48 pairs for Type 2 loop with an increment of 2 blocks and associated cables: the blocks on the MDF will be two 48 pair block and the Tie Cables 4*24 pair shielded cables
- 100 pairs for the Type 1 loop with an increment of 1 block and associated cables: the block on the MDF will be a 100 pair block and the Tie Cables 1*100 pairs non-shielded cable or VVT cable.

Non-standard order:

Upon specific request of the Beneficiary, the incremental unit of ordering can be lowered to

- either 48 pairs for Type 2 loop with an increment of 1 blocks and associated cables: the block on the MDF will be a 48 pair block and the Tie Cables 2*24 pair shielded cable
- either 48 pairs for Type 2 loop with an increment of 1 blocks and associated cables: the block on the MDF will be a 48 pair block and the Tie Cables 1*24 pair shielded cable. (The attention is drawn to the fact that the latter type of increment is subject to further investigation within Belgacom. Operational and documentation issues may therefore cause a longer provisioning delay than the ones indicated in the other related and relevant documents.)

The request for this lower increment must be explicitly notified to Belgacom. The prices for this lower increment can be found in “Annex H: Price list”.

1.2. Provisioning of blocks and Extended Tie Cables

Reference is made to “Annex E: Planning and Operations manual”.

Product	Comments
1. 48 pair blocks for the provisioning of Type 2 loops.	Default ordering per increment of 2
2. 24 pair shielded cable for the provisioning of Type 2 loops.	Default ordering per increment of 4
3. 100 pair blocks for the provisioning of Type 1 loops	Ordering per increment of 1
4. 100 pair non-shielded cable or VVT cable for the provisioning of Type 1 loops.	Ordering per increment of 1

Note: The above services are settled according to “Annex H: Price list”.

2. Description of the Cross Connection Cabinet

2.1. Definition

The existence of a Cross Connection Cabinet is a prerequisite for the implementation of this Service Description. The construction of the Cross Connection Cabinet is outside the scope of this agreement. The modules and the cable from these modules in the lower part of the Cross Connection Cabinet will be spliced on the cable from the Beneficiary according to the relevant provisions in the “Belgacom Distant Colocation Agreement”.

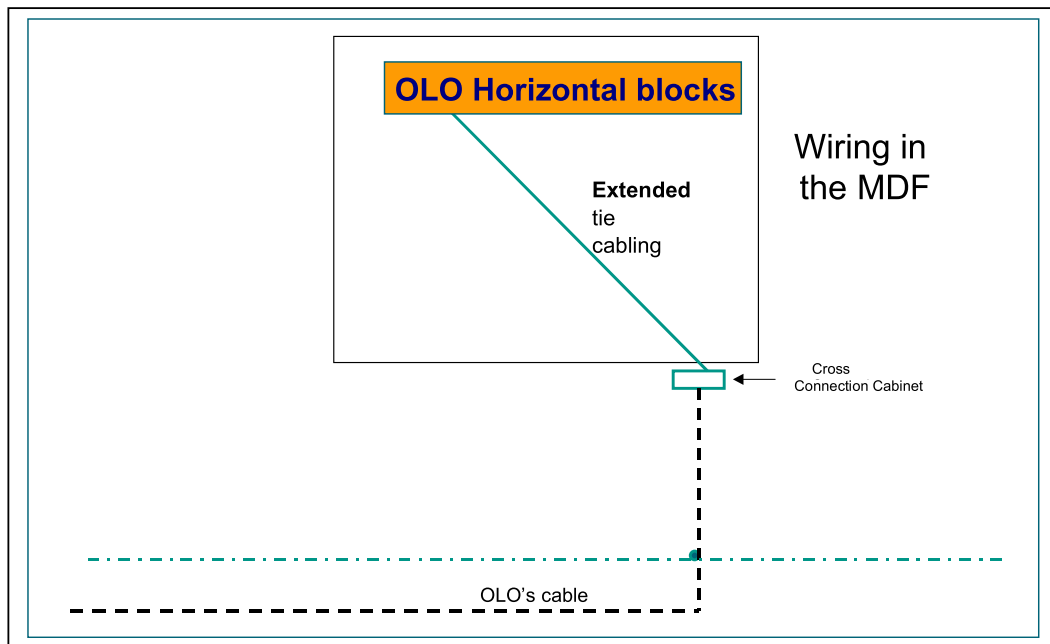


Fig. 2

Beneficiary will order the modules in the Cross Connection Cabinet prior to the request of Raw Copper Loops. This ordering has to be done at the same moment as the ordering of the blocks and the extended tie cabling to connect the MDF. The process is described in “Annex E: Planning and Operations manual”.

If at a certain moment, no more free space is available on the Cross Connection Cabinet blocks, the specific Raw Copper Loop requests issued by the Beneficiary will be rejected.

2.2. Provisioning of modules

Standard Order

The modules are composed of connectors. The unit that Beneficiary can order are:

- 96 connectors type LSA + (a+b+s) for Type 2 loops
- 100 connectors type LSA (a+b) for Type 1

Non-standard order:

Upon specific request of the Beneficiary, the incremental unit of ordering Connectors can be lowered to

- 48 connectors type LSA + (a+b+s) for Type 2 loops

Reference is made to “Annex E: Planning and Operations manual”.

Product	Comments
5. 96 connectors type LSA + (a+b+s) for Type 2 loops	Ordering per increment of 1
6. 100 connectors type LSA (a+b) for Type 1 loops	Ordering per increment of 1

Note: The above services are settled according to “Annex H: Price list”.

3. Jumpering in the Cross Connection Cabinet.

As indicated above, the Beneficiary will be responsible for handing over the necessary cable with the required distance to Belgacom and will be responsible for bringing the cable up to the Cross Connection Cabinet and connecting the Beneficiary cable to the lower blocks in the Cross Connection Cabinet.

The Beneficiary is further responsible for dimensioning the cable and selecting the pairs within the Beneficiary cable.

Belgacom will not be responsible for jumpering between the upper blocks and the lower blocks in the Cross Connection Cabinet. Belgacom can also not be held responsible for any disturbances caused in the signal due to the choice between the pairs in the external Cable provided by Beneficiary going to the Beneficiary premises.

Annex B 1.4 & B 2.4
Appendix B

Service Description 2040 & 3040

Belgacom access to the Raw Copper Services

Length of Tie Cabling per LEX

The information included in the sheet “lengths” refers to the lengths in scope of Tie Cabling as documented by Belgacom. These lengths are applicable only in case of Belgacom physical collocation – separate Beneficiaries Room with Badge access.

NET Name	Type	Distance		
		RC	SP (Splitter to Colo)	SP (Splitter to MDF)
03BAC/03BKC	AGE Only	NA	NA	NA
41GRE	AGE Only	NA	NA	NA
91GKK	AGE Only	NA	NA	NA
02MAR	AGE+LEX	150	135	12
02STR	AGE+LEX	250	250	20
03CEN	AGE+LEX	180	150	30
11HAS	AGE+LEX	75	80	15
16LEU	AGE+LEX	80	95	18
41LGE	AGE+LEX	180	40	
50ASS	AGE+LEX	95	60	58
56KOR	AGE+LEX	75	50	47
65MON	AGE+LEX	88	88	
71GIL	AGE+LEX	60	80	60
81MAH	AGE+LEX	190	190	
81NAM	AGE+LEX	115	115	
91GEN	AGE+LEX	60	74	16
02UKK - LDC 599	LDC	15		
02WEM - LDC 099	LDC	15		
02ALS	LEX	44	54	15
02AND	LEX	48	35	18
02BER	LEX	58	29	12
02BOS	LEX	40	52	15
02BRA	LEX	40	35	25
02CEN	LEX	29	33	10
02DRO	LEX	61	52	15
02EUR	LEX	67	66	22
02EVE	LEX	46	40	13
02GEN	LEX	53	45	15
02GIL	LEX	65	62	15
02GRI	LEX	95	53	20
02IXE	LEX	107	107	20
02JET	LEX	72	50	15
02LIN	LEX	39	39	31
02MOL	LEX	65	40	31
02MUT/02NOH	LEX	40	46	15
02NOR	LEX	44	48	15
02OBS	LEX	76	76	14
02OVE	LEX	46	30	16
02SAC	LEX	85	40	20
02SCH	LEX	95	112	30
02TVU	LEX	32	36	18
02UKK	LEX	65	71	14
02VIL	LEX	57	64	17
02WAT	LEX	59	55	15
02WEM	LEX	63	70	15
02WEZ	LEX	69	57	22
02WOL	LEX	56	54	21
03BER	LEX	85	70	15
03BOO	LEX	50	40	15
03BOR	LEX	20	20	20
03DEU	LEX	40	30	10
03HAV	LEX	60	50	10

03KAP	LEX	50		
03KON	LEX	40	30	10
03LIE	LEX	50		
03MER	LEX	50	40	20
03NIK	LEX	50	35	15
03OUD	LEX	50	35	20
03PUU	LEX	50	20	30
03SHO	LEX	35		
03SIL	LEX	30	20	10
03WIL	LEX	30	20	10
03ZUI	LEX	70	25	40
10LIM	LEX	32	32	
10WAV	LEX	31	31	
12TON	LEX	80		
14TUR	LEX	35	25	15
15MEM	LEX	75	60	15
15MES	LEX	60	40	20
16AAR/16ART	LEX	26	15	20
16KES	LEX	28	25	15
16TIE	LEX	28	22	12
41ANS	LEX	80	80	
41CHE	LEX	90	90	
41GUI	LEX	70	70	
41HER	LEX	90	25	
41LON	LEX	50	40	
41MAR	LEX	70		
50BRG	LEX	55		
51ROE	LEX	45		
52DEN	LEX	70		
53AAL	LEX	70		
54NIN	LEX	50		
56HAR	LEX	50	35	36
56HEU	LEX	70		
56MOU	LEX	39	39	
56WAR	LEX	53		
56WEV	LEX	49		
59OOS	LEX	45		
64LAL	LEX	80	80	
67NIV	LEX	70	70	
69TOU	LEX	70	70	
71CHA	LEX	100	100	
71CHT	LEX	28	24	
71GOS	LEX	37	37	
71MAR	LEX	56	56	
87VER	LEX	65	65	
89GEN	LEX	70		
91AMA	LEX	50	58	16
91GBR	LEX	50	32	18
91PIE	LEX	50	52	24
91ROO	LEX	50	56	18
91WET	LEX	60	64	14

Annex B 2.1

Service Description 3010

Belgacom Access to the Shared Pair Service

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1. Scope

1. This Service Description deals with the definitions of services, equipment and application requirements and properties of the Belgacom Offer for Shared Pair Service as described under section 2.4; and the procedures for ordering of and fault reporting to Belgacom with respect to the Service described herein.

2. Definition

2.1. Product definition of Shared Pair Service

2. A Raw Copper Loop is a pair of fully metallic copper wires on the section between Belgacom's Main Distribution Frame at the Belgacom Local Exchange building and the User's site connected on a Network Termination Point.
3. The Shared Pair Service is the service by which Belgacom provides to an Beneficiary an access to an User by means of a part of the frequency of a Raw Copper Loop, whereby the entire frequency of the loop concerned is shared by Belgacom and the Beneficiary as follows:
 - Belgacom provides PSTN or ISDN BA services to the User (for which a Full Subscription Fee is paid for by the User concerned) on the voice frequency part (also referred to in the present document as the low bandwidth) of that Raw Copper Loop
 - Beneficiary provides data services to the same User based on ADSL technology on the non-voice frequency part (also referred to in the present document as the high bandwidth) of that same Raw Copper Loop
4. The Shared Pair Service requires that the User maintains his single line PSTN or ISDN BA Belgacom service for which a Subscription Fee is paid for by the User concerned. "Annex E: Planning and Operations Manual", describes the procedures that are applicable in case of modifications or cancellations requested by the User of the single line Belgacom PSTN or ISDN BA Service. Any modification or a cancellation of the single line PSTN or ISDN BA Belgacom service requested by the User, will affect the access to or the price of the Shared Pair Service by the Beneficiary.
5. A Shared Pair Service can therefore only be offered on a single, non-loaded and active pair. No load coils or other active equipment can be present in the circuit.
In case load coils or other active equipment are present in the circuit, Belgacom will provide a process for proceeding with a new pair choice if technically feasible, where infeasible has to be justified to the Beneficiary. For these services by Belgacom, the Beneficiary will be charged the related extra fee that will be included in "Annex H": Pricing.
6. Beneficiary has the right to gain access to Shared Pair Service at the Main Distribution Frame level of the Local Exchange, where Belgacom will install and maintain the necessary equipment to split the high frequency that is delivered to Beneficiary and the low frequency used by Belgacom. For details and definitions of the high and the low bandwidth, reference is made to "Annex C: Technical Specifications Document".
7. The access to the high bandwidth at the Belgacom network side will be realized on the Belgacom Main Distribution Frame (MDF) by using dedicated Blocks per Beneficiary. From there, a pair of physical wires will be connected to the splitter rack (Connection Cables) and brought back from the Splitter rack to Beneficiary dedicated blocks for the low frequency. From the Splitter rack, connections will be made to the collocation area of the Beneficiary by use of Tie Cables in case of Physical collocation and by use of Extended Tie Cables in case of Distant collocation.

8. At the Local Exchange or the Local Distribution Center, the Demarcation Point in case of Belgacom delivered Tie Cabling will be
 - in case of Physical or Virtual Colocation: the point on the Tie Cable just before it is connected to the collocated equipment of the Beneficiary..
 - in case of Distant Colocation: the Connectors in a Cross Connection Cabinet in the immediate vicinity of the Belgacom Local building.
9. Notwithstanding what is mentioned above, the demarcation point in case of Beneficiary delivered Tie cabling will be the Splitter rack in case of Shared pair.
In case of tie cabling delivered by the Beneficiary, the area where the Demarcation Point is situated (area where the Splitter Rack is situated in case of Shared Pair) at the Belgacom Local Exchange or Local Distribution Center is in principle accessible to the Beneficiary for maintenance and test purposes. Beneficiary will have to justify the necessity of the planned maintenance and/or tests.
10. Beneficiary will have to substantially indicate the purpose of this access (to be mentioned with the application for guided access).
11. The access will be always with a security escort, at the expenses of the Beneficiary, and pursuant the conditions for guided access as described in the framework of co-mingling (physical colocation with escort access).

2.2. Network Termination Point

12. The access to the high bandwidth at the User site will be at the Belgacom Network Termination Point (NTP).
13. For single line PSTN Service, the Beneficiary will install the equipment on the Belgacom Network Termination Point at the User site.
For single line ISDN BA service, an intervention of a Belgacom technician on the User site will be required in case the User site does not have an AETHRA NT1-2ab as Belgacom Network Termination Point. At the time of installation, this intervention will relate to the fact that, in these cases, a Splitter will be installed by Belgacom between the Belgacom Network and the Network Termination Point at the User site.

2.3. Schematically

Belgacom Local Exchange

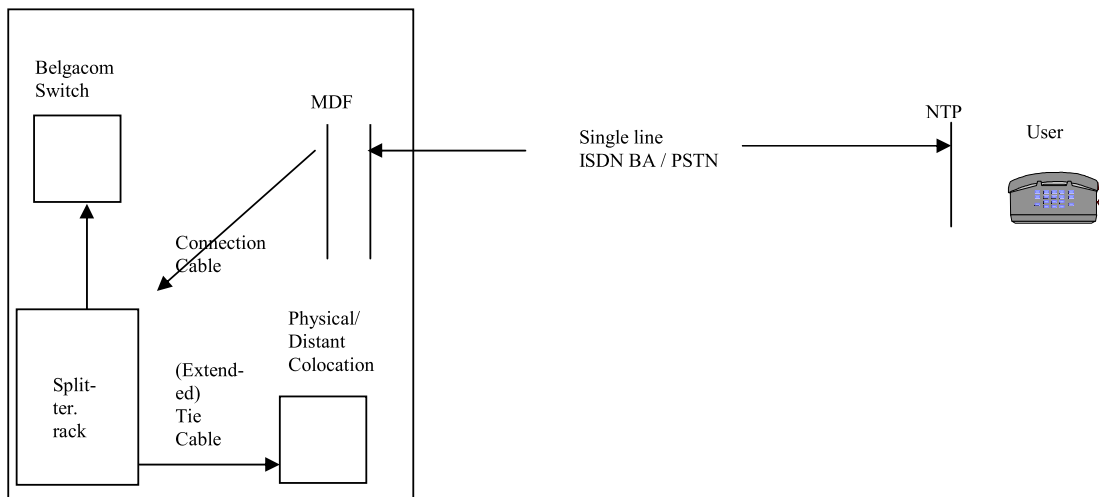


Fig. 1

For details on the Connection Cables and Tie Cables, reference is made to Service Description 3030 and 3035.

2.4. Service offered by Belgacom

14. The use of a Shared Pair is free, provided that the Beneficiary complies with the “Spectrum Management” rules described in the Annex C. Depending on the type of equipment that is directly connected to the unbundled Local Loop, different rules for the bringing into service and for the service level can be applicable. However, up until the Spectrum management rules have been fully described and implemented in the working group under supervision of the BIPT, and approved by the BIPT, the rules as set below will prevail.
 - A. SPP (Shared Pair Service over PSTN)
 - The high frequency band on the loop is to be used to connect ADSL equipment providing ADSL service capable of co-existing on the same pair as voice-band services (ADSL over PSTN). For technical details on the signals to be used, reference is made to “Annex C: Technical Specifications document”.
 - B. SPI (Shared Pair Service over ISDN)
 - The high frequency band on the loop is to be used to connect ADSL equipment providing ADSL service capable of co-existing on the same pair as ISDN Basic Access services (ADSL over ISDN). For technical details on the signals to be used, reference is made to “Annex C: Technical Specifications document”.

3. Connectivity to the Beneficiary Network

15. At the Belgacom Local Exchange building, the copper wires are terminated on the Main Distribution Frame. Beneficiary’s access to the copper wire pairs will be established by connecting Tie Cables from the Main Distribution Frame of the exchange to colocation area in case of physical colocation and by connecting Extended Tie Cables from the Main Distribution Frame of the exchange to the Cross Connection Cabinet in case of distant colocation.
16. The installation and maintenance of the (Extended) Tie Cable and the provisioning and maintenance of the Blocks will be made by Belgacom, as presented in Service Descriptions 3030 and 3035.

4. Colocation

17. For the provision of Colocation Services reference is made to the Colocation Agreement. Subscriptions to this agreement is a pre-requisite to install equipment in a Belgacom building. For the sake of clarity, Colocation Services can only be used to benefit from specific Belgacom Services requiring colocation.

5. Spectrum management and equipment aspects

18. “Annex C: Technical Specifications Document”^{*} to the contract, contains the requirements related to spectrum management and equipment connected for use of the shared pair.

6. Boundary conditions and prerequisites

19. The Beneficiary is only allowed to use the Shared Pair Service for the purpose described in Section 2.4.
20. All equipment used by the Beneficiary will comply with the R&TTE Directive.
21. It is noted that Belgacom will not undertake customer care handling of Users of the Beneficiary. If Belgacom receives requests from Users of the Beneficiary due to the inadequate handling of such requests by the Beneficiary, Belgacom will not deal with them.
22. In case there is a change in Shared Pair Service type, the Beneficiary will address a request for a deactivation and an installation to Belgacom, in order to obtain the requested modification.
23. If equipment or network components, that are operated by Beneficiary for its own use and that are connected to Belgacom's public telecommunications network, cause disturbances in Belgacom's network, Beneficiary shall be required to disconnect the User connection without any delay.
24. Belgacom shall use, in good faith, all reasonable endeavours to correct any trouble affecting the quality of service Belgacom is providing to its own Users. In this respect, Belgacom is entitled to disconnect Beneficiary's connection to Belgacom's access network, on the basis of User complaints, reports from the operational services of Belgacom, etc., and provided that Belgacom can demonstrate that Beneficiary's systems cause service degradation or disruption of the services offered by Belgacom in the network.

7. Ordering of Shared Pair

25. Belgacom shall deliver access to the high bandwidth according to Beneficiary's orders transmitted to Belgacom. The general terms and conditions for delivering high bandwidth are defined in "Annex E: Planning and Operations manual".
26. The full details of the provisioning process can be found in "Annex E: Planning and Operations manual".

7.1. Standard provisioning rules

27. The Beneficiary can obtain the following standard Shared Pair Services:

Service	Contents	Fee
1.Inquiry	Examination of whether Shared Pair Service can be provided	Inquiry Fee (not to be paid if the inquiry is followed by a request)
2.Request for Shared Pair Service	Physical connection of the Shared Pair Service to the Beneficiary Network	Installation fee
3.Cancellation of Requests	Orders that have been placed by the Beneficiary but that are cancelled prior to implementation	Cancellation fee
4.Deactivation of Shared Pair Service	Belgacom disconnects the Shared Pair Service from the Beneficiary dedicated Blocks	Deactivation fee
5.Change Date	The Beneficiary requests a change in due date for the provisioning of the Shared Pair Service	Change date fee
6.NTP Intervention	If Belgacom needs to intervene at User site for the installation of a full-rate splitter	Telecom Installation fee, invoiced on top of the activation fee
7.Transfer	Transfer of a Shared Pair Service from Beneficiary 1 or Belgacom to Beneficiary 2	Is inferior to the installation fee (deactivation is at charge of Beneficiary 1)

Further comments:

28. On point 1

The purpose of an Inquiry is to investigate the availability of the Shared Pair Service at a particular User site. This inquiry consists of verifying whether an existing end to end single line PSTN or ISDN Belgacom service is available and of carrying out a pair selection test to verify that the Shared Pair Service, as indicated by the Beneficiary, can coexist with the surrounding pairs. An inquiry gives only the status of a of the User line at one specific moment in time. Belgacom guarantees the accuracy of the information provided at the moment of the inquiry, without prejudice to any subsequent change in the technical situation.

29. On point 2

The Beneficiary will indicate on his order form the date the Beneficiary wishes Belgacom to provision the Shared Pair Service.

30. When the Beneficiary places a firm order for the Shared Pair Service, Belgacom will also carry out a check whether the current existing single line ISDN or PSTN service is capable of

supporting the high bandwidth signal requested by the Beneficiary. Belgacom will perform additionally a pair selection test to verify that the service, as ordered by the Beneficiary, can coexist with the surrounding pairs.

31. On new pair selection

In case the order can not be implemented on the ISDN BA or PSTN service due to the presence of load coils or other active equipment on the existing single pairs, Belgacom will inform the Beneficiary of this fact according to the process described in “Annex E: Planning and Operations manual”

When the Beneficiary does not confirm his Request at that time, the Request will be implemented if technically feasible and the Beneficiary will be billed for the other pair selection choice according to the different elements as set out in “Annex H2.1: Price List”

32. Belgacom will inform the Beneficiary in good faith, as soon as possible, of the modifications of the current ordering procedures by means of an Appendix to “Annex E: Planning and Operations Manual”.

33. In case the order cannot be implemented because of technical reasons (of which Belgacom has to publish a limitative list that can be adapted on a case by case basis afterwards), the Beneficiary's Request will be rejected. If the Request for Shared Pair Service can be implemented, Belgacom will proceed with the implementation of that firm order.

34. On point 3

The Beneficiary has the right to cancel an order that it has submitted to Belgacom for the implementation of a Shared Pair Service. However, Belgacom will bill the Beneficiary for the work done in the process.

35. On point 4

The Beneficiary can request the Deactivation of the Shared Pair Service at a particular User site

36. On point 5

The Beneficiary has the right to change the date it indicated at the time of transmitting the Request for the Shared Pair Service. In such a case, the Beneficiary will be billed a change date fee.

37. On point 7

When there is a transfer from Shared Pair Service from Beneficiary 1 to Beneficiary 2, it is presumed that two Beneficiaries, according to agreement with the User, handle the removal of the User's services and co-ordinate the hand over of the Shared Pair Service.

It is acknowledged that Belgacom will only transfer the Shared Pair Service from Beneficiary 1 to Beneficiary 2 upon request of Beneficiary 2 solely. Belgacom will terminate the contract for that specific Shared Pair Service by informing Beneficiary 1 of the request from Beneficiary 2, without revealing the identity of Beneficiary 2.

Belgacom handles the request of the Beneficiary 2, taking over the Shared Pair Service.

Belgacom does not in any case handle complaints between Beneficiary 1 and Beneficiary 2.

38. The different services, as described above, are settled according to “Annex H2.1: Price list”. For the installation fee, different price setting can apply to different types of installations based on the work done by Belgacom. Reference is made to Annex H2.1.

7.2. Termination of the voice subscription with Shared Pair

39. In case of a Shared Pair Service where both Belgacom and the Beneficiary provide services to an User, it can occur that the User cancels his voice subscription for that Shared Pair Loop. In that case, independent of the reason for termination of the voice subscription, Belgacom will ensure that the service on the high bandwidth remains into service. This is applicable in condition that positions on Belgacom Horizontal blocks that are not connected are available at the MDF.
40. Belgacom will inform the Beneficiary that the Shared Pair Service has been converted to a Raw Copper + Splitter, for which the Beneficiary will be charged the monthly rental fee for Raw Copper instead of Shared Pair. For repair the conditions of Raw Copper will apply. For the change to Raw Copper + splitter, no conversion fee is applicable. The Beneficiary has at that moment the possibility to ask for a conversion from its Shared Pair to a Raw Copper and will by this free up a dedicated Splitter Card. In this case, a conversion fee will be charged to the Beneficiary.
41. In case the Raw Copper + Splitter stays active and is not converted into Raw Copper, the terms and conditions applicable on repair and maintenance will be the terms and conditions applicable to Raw Copper Services as described in the Belgacom Reference Offer and the related documents.
A change to Raw Copper is only possible if Beneficiary concerned subscribed, next to Shared Pair, to a Raw Copper contract and if positions are free on the dedicated horizontal Beneficiary blocks under that raw copper contract.
42. If the Beneficiary decides to convert the Raw Copper + Splitter into Raw Copper, Beneficiary is notified of the fact that an interruption of its service during a limited timeframe (defined in hours) will take place in order to do the re-jumpering.
43. For the sake of clarity, this process can only take place pursuant the General Terms and Conditions and if the necessary infrastructure is in place to do the re-jumpering, without prejudice to other conditions that are currently being investigated from a process point of view.

7.3. Non-standard provisioning rules

44. In case the request for implementation of Shared Pair Service can not be executed, Beneficiary request will be rejected.
45. Belgacom will reject the requests if:
 - no single line PSTN or ISDN BA Belgacom Service is provided to the User concerned;-the requested service is incompatible with the Belgacom pair selection rules.
 - Belgacom will also reject requests if no positions and/or pairs are available on the Beneficiary Blocks, (Extended) Tie Cables and Connection Cables
46. Belgacom also will reject the requests if a new pair choice is reasonably and/or technically not possible over the existing infrastructure which must be detailed and proved to the Beneficiary.
47. Belgacom further reserves the right to reject requests for implementation of a Shared Pair Service for a Beneficiary based on wrong format data. The rejection list can be found in "Annex E: Planning and Operations manual".

8. Wrongful repair requests.

48. Belgacom's fault repair of Shared Pair Service between the Main Distribution Frame at the Local Exchange and the User NTP is included in the periodic payment for the Shared Pair. The procedures for that fault reporting are described in "Annex E: Planning and Operations manual".
 49. In case of a repair request where the fault was not caused by Belgacom and Belgacom has performed work for that repair request, Belgacom reserves the right to bill the Beneficiary for the work done by Belgacom in light of that specific request according to "Annex H2.1: Price list" It is noted that Belgacom in a first phase will not automatically charge the Beneficiary for wrongful repair requests.
-

Annex B 1.4 & B 2.4
Appendix A

Service Description 2040 & 3040

Belgacom access to the Raw Copper Services

Technical Specifications

Technical Specification for the delivery of a shielded twisted 24 pairs cable

I. Introduction

1. This document specifies the properties of the cable used for connecting the Main Distribution Frame to the Colocation Area in the local exchange. It is an extract of the Belgacom technical specification used when purchasing this type of cable. Some characteristics of the purchased cable may be other than those required in this specification, but the electrical requirements are always maintained.

II. Description of the cable

2. The cable is respectively made of: 24 symmetrical pairs, each of them having the following characteristics:
3. Conductor: a mono-conductor wire of 0.5 mm (± 0.01 mm) diameter made of annealed copper, single strand, circular in section, and tinned.
4. Insulation: a full polyvinyl chloride insulating coat of 0.20 mm thickness (0.17 mm minimum) and with a nominal external diameter of 0.90 [+0.05 mm, -0.03 mm]. The colours shall correspond with IEC 189-2 App. A and IEC 304.

1	white	blue
2	white	orange
3	white	green
4	white	brown
5	white	grey
6	red	blue
7	red	orange
8	red	green
9	red	brown
10	red	grey
11	black	blue
12	black	orange
13	black	green
14	black	brown
15	black	grey
16	yellow	blue
17	yellow	orange
18	yellow	green
19	yellow	brown
20	yellow	grey
21	white-blue	blue
22	white-blue	orange
23	white-blue	green
24	white-blue	brown

5. The cabling element is a pair of two insulated conductors designated wire A and wire B. Twisting pitch of the pair: 50mm maximum.
6. The 24 cabling elements are stranded in concentric layers. A binding tape is placed between successive layers. The sequence of elements is from the centre to the outside layer; the counting direction is clockwise and the same in each layer.
7. The core of the cable is wrapped with a protective layer of non-hygroscopic material, wound helical or longitudinal lapping and consists of 1 or 2 tapes with overlap.
8. A tinned copper wire with the same dimensions as the conductor wires is included in the cable in continuous contact with the surface of the screening foil.
9. A screening foil consists of a sandwich foil aluminium-insulated tape-aluminium with an aluminium thickness of 25 microns on both sides. The tape is applied longitudinally round the wrapped core with an overlap of 6 mm minimum.
10. A braid shield of tinned copper wires, forming a screen with a minimum coverage ratio of 50 %, is placed around the preceding elements. The diameter of the single wires is between 0.10 mm and 0.20 mm.
11. A thread of non-hygroscopic material denoting company of manufacture is laid underneath the sheath.
12. A monochrome grey (RAL 7032, colored in the block) sheath in LSZH material is enveloping the previous assembly. Sheath thickness: 0.80 mm nominal, 0.60 mm minimum. The diameter of the finished cable does not exceed 11.5 mm.
13. On the surface of the coating, the following indications are printed with permanent black (or dark blue) ink: SP XXX (to be later defined) - NAME OF THE MANUFACTURER (MANUFACTURING YEAR).
14. Under or after this metrical indication, an indexed number allows to measure easily the length of a cable part by making the difference of two indexes.
0 1 2 3 4 5 6 ...

III. Electrical Features

Electrical requirements of the conductor

15. The loop resistance is maximum 196.5 ohm/km at 20°C and the conductivity is minimum 57 m/ohm.mm² at 20°C.

Insulating resistance

16. The insulating resistance between the two wires of the pair or between each wire and the screen is not inferior to 500 Megohm x kilometer after a minute of electrification.

Dielectric strength

17. The dielectric strength is minimum 1500 Vdc when measured during 1 minute.

Cable impedance

18. The cable impedance is in the range 80-110 ohms at 1 MHz.

Attenuation

19. At 1 Mhz, the attenuation may not exceed 32 dB/km.

Crosstalk between 2 pairs

20. The near end and far end crosstalk values (between two symmetrical pairs under the screen placed side by side on a length of 250 meters) are greater than 55 dB at 1 MHz and 40 dB at 10 MHz

Mutual capacitance

21. The mutual capacitance is maximum 100 nF/km measured between 500 and 2000 Hz.

Capacitance unbalance

22. Between any pair and the earth the capacitance unbalance does not exceed 750 pF/500m with the exception of 1 value of the values up to 1500 pF/500m at 1 kHz.

Technical Specification for the Reel

23. Belgacom accepts reels with a maximum diameter of 1 meter. This as the installations teams handle the reels manually to transport it up to the relevant floor in the Local Exchange building. In case more reels are delivered on a site, they need to be placed one next to another (no piling).

Annex B 1.4

Service Description 2040

Belgacom access to the Raw Copper Services

Delivering of Tie Cable by Beneficiary

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Appendix A: Technical specifications

Appendix B: List with Length of cable and places to deliver the cable

1. Scope

1. This document deals with the definition of the service, equipment and application requirements for the delivering of Tie Cable by Beneficiary in case Beneficiary chooses the option to deliver its own cable. This by exception to what is stated in Service Description 2030 and Service Description 2035 as in accordance to which Belgacom automatically delivers the associated number and type of Tie Cable for every Block ordered.
2. Except for the specific provision contained the present document, the other Annexes and in particular “Annex B2: Service Description 2030” and “Annex B3: Service Description 2035” remain fully applicable.
3. The present General Terms and Conditions shall prevail on any other contractual obligations in respect to the specific subject matter “Tie Cable delivered by Beneficiary”.
4. For the sake of clarity this present Service Description applies to connection to the Physical Colocation badge or escorted access as well to connection to the Distant Colocation.

2. Definition of service

5. This Service is provided in the framework of the services as indicated in the General Terms and Conditions for the provisioning of Raw Copper in the Local Loops.
6. When Beneficiary orders the dedicated equipment at Belgacom’s Local Exchange building prior to the request of ULL Raw Copper Services, Beneficiary shall indicate on the firm order form that the delivery of the associated Tie Cable will be the responsibility of the Beneficiary.
7. Beneficiary will provide on Requested Date of Delivery Belgacom with at least the exact length of cable on reel needed to execute the order. Place of delivery is determined by the LEX of installation.
8. Installation of the Tie Cable will only be done by the technicians of Belgacom or by the subcontractors of Belgacom.
9. For the sake of clarity the cable remains the property of Beneficiary and under its responsibility.
10. The demarcation point in case of Beneficiary delivered Tie cabling will be the Beneficiary dedicated Blocks on the MDF in case of Raw Copper. In case of tie cabling delivered by the Beneficiary, the area where the Demarcation Point is situated (MDF area in case of Raw Copper) at the Belgacom Local Exchange or Local Distribution Center is in principle accessible to the Beneficiary for maintenance and test purposes. Beneficiary will have to justify the necessity of the planned maintenance and/or tests.
11. Beneficiary will have to substantially indicate the purpose of this access (to be mentioned with the application for guided access).
12. The access will be always with a security escort, at the expenses of the Beneficiary, and pursuant the conditions for guided access as described in the framework of co-mingling (physical colocation with escort access).

3. Ordering Infrastructure

13. Except for the specific provisions stated in the present section 3, “Annex E: Planning and Operations Manual” remains fully applicable.

3.1. General

14. Orders are related to Beneficiary dedicated equipment at the Belgacom's LEX's. This equipment only consists in Beneficiary Horizontal Blocks. The ordered Beneficiary Blocks will be standard equipment (see “Annex C: Technical Specifications”). All installation is done by the technicians of Belgacom or by the subcontractors of Belgacom. Forecasts (if any) and Ordering are done for Beneficiary Horizontal Blocks, where for every Block ordered the associated number and type of Tie Cables will be delivered by Beneficiary.
15. When Beneficiary submits its firm order form, to order dedicated equipment at the Belgacom LEX for the pre-provisioning of Raw Copper, Beneficiary will indicate that he will provide the associated Tie Cable. Beneficiary will fill in the date and hour for delivery of the cable.
16. Firm orders shall be done through the use of the specific templates provided on the Belgacom secured website for LLU.
17. Templates will be considered as valid only when they are properly completed. In case data is missing or is not correct, the template will be rejected. In the latter case, Belgacom will indicate the reasons of rejection on the template. All firm orders will be submitted by registered mail to the SPOC of Belgacom for ULL.
18. For the sake of clarity, it is confirmed that for all matters related to the forecasting process will follow the guidelines as stated in “Annex E: Planning and Operations Manual”.

3.2. Prerequisites

19. As long as a Beneficiary does not have approved colocation facilities, no Beneficiary Horizontal Blocks orders can be submitted. A colocation facility is approved once the colocation Agreement has been signed and proof of payment of advance payment or 50% of the costs charged to the Beneficiary have been provided by Beneficiary.

3.3. Ordering procedure

20. The Beneficiary can order its blocks through a firm order. A firm order consists of the requested number of Beneficiary Horizontal Blocks, per type of Blocks (see order template available on the Belgacom secured website for LLU) and this for each LEX. Together with the firm order, the Beneficiary includes the date when he wants the Blocks and associated Tie Cabling to be ready.
21. In the situation where cable trays are present, Tie Cable has been delivered by Beneficiary and sufficient place is available on the MDF, the delay for a firm order will be equal to the delay as stated in “Annex E: Planning and Operations Manual”.
22. In all other cases, the Beneficiary will need to take into account the delays as stated in “Annex E: Planning and Operations Manual”.
23. Belgacom will confirm the receipt of every firm order. When the installation of the Blocks and Tie Cabling is complete, the OLO will receive documentation on the position of his blocks on

the MDF and on the references of the positions on the blocks. This information is important to communicate together with each order for a specific Raw Copper loop.

4. Specific Conditions

24. When delivering the Tie Cable, Beneficiary has to fulfill the following specific conditions.
If Beneficiary has not fulfilled one or more conditions, Belgacom can neither guarantee to meet its own obligations, nor to respect the delays as set in the present document and other annexes.
25. For any additional work that explicitly or implicitly needs to be done by Belgacom because Beneficiary has not fulfilled one or more conditions, Belgacom reserves the right to bill the Beneficiary for the work executed by Belgacom.

4.1. Type of cable

26. Each telecom cable consists of a number of copper conductors grouped in quads; these quads can be arranged in bundles or in layers, depending on the type of cable.
Cable delivered by Beneficiary will have to comply with the technical requirements as set by Belgacom in "Appendix A: Technical Specifications".

4.2. Identification of cable

- Following markings should be made in relief on the outer sheath of the cable:
 - Name of Beneficiary
 - The nominal number of pairs
 - The diameter of the conductors
 - The year of production
 - The name or sign of the supplier

E.g.: For a cable series 12 with 20 pairs, with conductors 0,5 mm, in 2001 made by supplier X the marking becomes: Beneficiary 12 050 5 -01 -X

- The marking should be repeated every 500mm.

4.3. Length of cable

- Depending on the LEX where the Tie Cable has to be installed, the length of cable will be different.
27. In "Appendix B: a list with the exact length that is needed per LEX can be found.
 28. Note that this list only mentions the LEX's where colocation facilities have already been established and the exact length of Tie Cable is already known. For other LEX's, length will be provided by Belgacom as part of the quotation form.
- Beneficiary has to deliver to Belgacom at least the exact length of cable.
 - Length of cable may be cumulated. Beneficiary will deliver a separate reel per involved site, if any.

- Beneficiary will deliver per order a separate reel with the requested length of the cable.

4.4. Cable delivered on reel

- Beneficiary will deliver the cable, reeled in an even way, on a reel. This reel will have to comply with the specifications as set in “Appendix A: Technical specifications”.
- The reel of the Beneficiary will be recognizable by a dedicated colour and the flange of the reels shall contain a label with:
 - Name Beneficiary
 - Name of contact person of Beneficiary
 - Telephone number where the contact person can be reached
 - The cable type
 - LEX name where the cable has to be installed
 - Order Reference Number
- The identifications should be easy to read and should not deteriorate under atmospheric circumstances.

4.5. Place where to deliver the cable

29. Depending on the LEX where the cable will be installed, the Beneficiary will have to deliver the cable on a predefined location. A list with the LEX's, where the colocation facilities have already been established, will indicate per LEX at which location the cable has to be delivered. See “Appendix B: List with places to deliver the cable”.

4.6. Appointment to deliver the cable

- As the locations, where the reel with cable has to be delivered, are not free accessible and not permanently manned, the Beneficiary has to make an appointment to deliver the cable.
- Beneficiary has to put on the firm order form his requested date and hour of delivery.

This date has to fall within the following timeframe:

- For the date, Beneficiary can set the day to deliver the cable:
 - * At the earliest: day of ordering + 2 Working Days
 - * At the latest: day of ordering + 4 Working Days
- For the hour, Beneficiary has to make his choice between:
 - * From 8.00 till 8.30
 - * From 8.30 till 9.00
 - * From 9.00 till 9.30

4.7. Receipt of goods

30. When Beneficiary delivers the reel with cable at the requested date of delivery, a Belgacom person will be present to take delivery of the goods. A receipt of goods form will be filled out. See template. Available on the Belgacom secured website for LLU.

4.8. Remove empty reel

- After Installation of the Tie Cable, Belgacom will bring the empty reel back to the place where Beneficiary has delivered the reel. Beneficiary will have to pick-up the empty reel at the date and hour which has been confirmed on the test & visit report.

This date has to fall within the following timeframe:

- For the date, Beneficiary can set the day to pick-up the empty reel:
 - * At the earliest: day of testing + 2 Working Days
 - * At the latest: day of testing + 4 Working Days
- For the hour, Beneficiary has to make his choice between:
 - * From 8.00 till 8.30
 - * From 8.30 till 9.00
 - * From 9.00 till 9.30

5. Prerequisite for the installation of Tie Cable delivered by Beneficiary

- Installation of the Tie Cable will be done by the technicians of Belgacom or by the subcontractors of Belgacom.
- Installation will be done within the timeframe, as set in “Annex E: Planning and Operations Manual”, only if all conditions linked to the delivery of the Tie Cable have been fulfilled.
- Whenever one of the conditions for the delivery of the Tie Cable has not been met or problems linked to the cable occur during the installation, Belgacom will inform Beneficiary SPOC. The delay due to these circumstances will be added to the timeframe as set in “Annex E: Planning and Operations Manual”.

6. Fault Reporting and Repair

31. Except for the specific provisions stated in the present section 6, “Annex E: Planning and Operations Manual” remains fully applicable.
32. In case Beneficiary considers it necessary during repair to perform certain tests, specific linked to the Tie Cable, it is the responsibility of the Beneficiary to give well-defined orders to Belgacom. Beneficiary will be billed for all work for which he has given the order and that has been executed by Belgacom.

7. Ownership and responsibilities

- 33. As mentioned in point 2, the cable remains the property of Beneficiary and under its responsibility.
- 34. For the sake of clarity, Beneficiary will be responsible for any damages caused by its cable to Belgacom or to any other third party.
- 35. For technical reasons, once the cable has been installed, Beneficiary will not be authorised to remove it, except if Beneficiary agrees to pay for the cost incurred by Belgacom to remove the cable.
- 36. Should the cable request technical intervention (tests in case of repair or replacement of cable), the work will exclusively be executed by Belgacom upon written request by the Beneficiary. The cost incurred by Belgacom for this intervention will be exclusively beared by Beneficiary.

8. Financial conditions

- 37. All charges and fees linked to the management and administrative work done by Belgacom, linked to the storage space and the installation, will be settled according to “Annex H: Price List”.

Annex B 1.6

Service Description 2045

Belgacom access to the Raw Copper Loop

Connection to the collocation

Local Distribution Center (LDC)

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2. Definition of the service 3

3. Order increments 4

1. Scope

1. This Service Description deals with the definition of the service, equipment and application requirements for the connection of the Raw Copper Loops to the colocation of the Beneficiary.
2. Colocation is a prerequisite for the implementation of this Service Description. The installation and maintenance of colocation will be made by Belgacom.

2. Definition of the service

3. The following cases of Belgacom colocation exist:
 - (1) LDC Building or container colocation¹
 - (2) LDC cabinet colocation or LDC Cross connection cabinet colocation²
 - (3) LDC vicinity colocation: Beneficiary will bring the cabling up to the LDC³

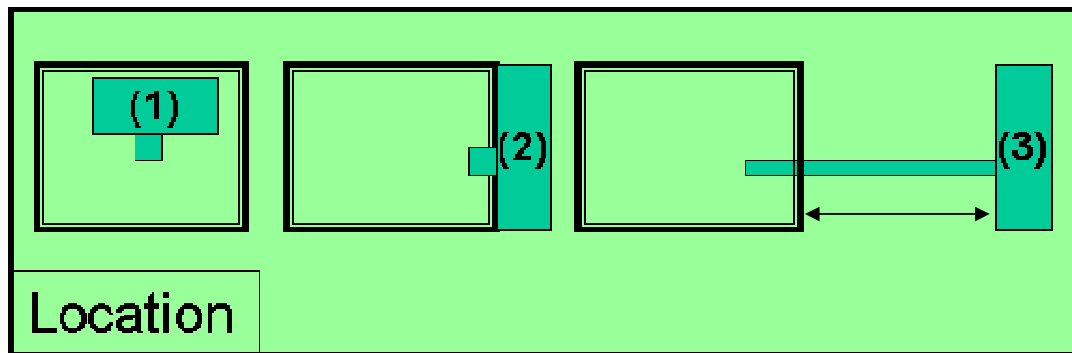


Fig. 1: Cases of Belgacom colocation

¹ Applicable for colocation case 2.2.1 and 2.2.2 in Service Description 'Colocation at the LDC Level'

² Applicable for colocation case 2.2.3 in Service Description 'Colocation at the LDC Level'

³ Applicable for colocation case 2.2.4 in Service Description 'Colocation at the LDC Level'

4. At the Belgacom LDC, the copper wires are terminated on the Main Distribution Frame. Beneficiary's access to the Raw Copper Service will be established with Tie Cables from the Main Distribution Frame of the Belgacom building to Beneficiary's colocation in that same Belgacom LDC.
5. Both the Low and High frequency are brought with the Tie Cables from the colocation to a dedicated Beneficiary block.

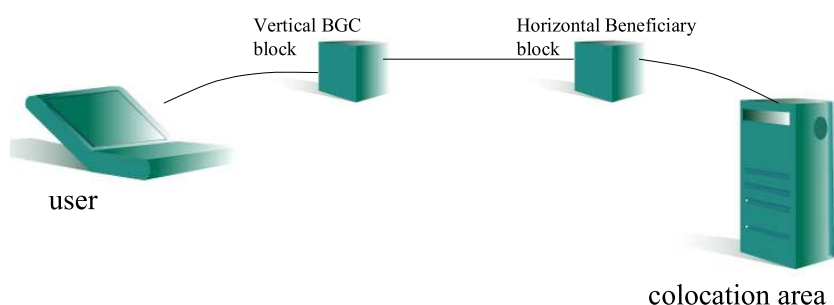


Fig. 2: Connection to the colocation

6. Beneficiary will order the Tie Cables and connection blocks at Belgacom's building prior to the request of Raw Copper Loops. This ordering process is described in "Annex E: Planning and Operations manual".
7. If at a certain moment, no more free wires are available in the Tie Cables or no more free space is available on blocks, the specific Raw Copper Loop requests issued by the Beneficiary will be rejected, since provisioning of that Raw Copper Loop cannot be implemented.

3. Order increments

Standard default order:

8. The default standard unit that Beneficiary can order for the provisioning between blocks on the MDF and the colocation area are:
 - 48 connections in case of LDC building or container colocation for connection of Type 2 loop: the block on the MDF will be a 1x48 pair block and the Tie Cabling 2x24 pair shielded cable
 - 48 connections in case of LDC Cabinet or LDC Cross Connection Cabinet colocation for connection to Type 2 loop: the block on the MDF will be a 1x48 pair blocks, the Tie Cabling 2x24 pair shielded cables, inside the Cabinet or Cross Connection cabinet, the Tie Cabling will be terminated on LSA blocks
 - 48 connections in case where Beneficiary brings cabling up to the LDC for Type 2 loop: the blocks on the MDF will be 1x48 blocks

Annex Jc

Specifications of the Tie Cables

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A) Tie cable for Type 1 services.

1. General Characteristics

1.1 Conductors

- 1.1.1 mono-conductor tinned copper wires with a diameter as mentioned in the present technical specifications with a tolerance of minus 0.01 mm and plus 0.03 mm. In principle the conductors should be in one length.
- 1.1.2 The electrical resistance of the conductors. The specific electrical resistance of the conductor measured at 20°C shall be $< 1/55 \text{ ohm}$ or $0,01818 \text{ ohm/m/mm}^2$. The resistance per meter and per mm^2 increases with the temperature with $0,000068 \text{ ohm/}^\circ\text{C}$.
- 1.1.3 The specific electrical resistance of the conductor measured at 20°C shall be $< 1/55 \text{ ohm}$ or $0,01818 \text{ ohm/m/mm}^2$. The resistance per meter and per mm^2 increases with the temperature with $0,000068 \text{ ohm/}^\circ\text{C}$.
- 1.1.4 The conductors should be tinned completely smooth over the entire surface with minimum 2 g/m².

1.2 Insulation of the conductors

1.2.1 Insulation material :

- a. Cables up to 10 pairs : polyethylene (PE)

The conductor should be centred completely in its insulation. The thickness should be even and free from blisters, holes, cracks, porous spots or any other defects. The insulation should not adhere to the conductors. The surface should be smooth and the colour stable. The colours should comply with the colours published in the International Electromechanical Committee, Publication 304 – latest edition.

- b. Cables as from 20 pairs on : insulation material of flame retardant polyethylene copolymer (FRPE)

Characteristics as per 2.1.a.

- 1.2.2 The PE and FRPE sheaths have a thickness of minimum 0,15 mm. This requirement is valid at any place of the sheath. The diameter of the insulated conductor should not exceed the diameter for this conductor, measured on the tinned copper with 0.6 mm.

1.3 Outersheath

1.3.1 The cable core is covered with an outersheath of polyethylene copolymer (FRPE).

1.3.2 He should be well centred and free from blasts, holes, and cracks, porous spots or any other defects. The surface should be smooth and equal over the whole length.

up to 10 pairs (F1) : light grey RAL 7032
20 pairs and more (F2) : dark grey RAL 7001

1.3.3 The FRPE-sheaths should have following minimum thickness

<u>Number of conductors</u>				<u>Minimum thickness</u>
up to	21			0,8 mm
from	22	to	55	1,0 mm
from	56	to	101	1,2 mm
from	102	to	175	1,4 mm
from	176	to	250	1,6 mm
from	251	to	350	1,8 mm
from	351	to	450	2,0 mm
from	451	to	808	2,2 mm

2. Cable assembly description

2.1 The cables consist of tinned copper conductors with a diameter of 0,6 mm for the cable with 2 pairs and 0,5 mm for the cables with more than 2 pairs, insulated with PE for cables up to 10 pairs and FRPE for cables as from 20 pairs on.

The conductors are twisted together with a lay of maximum 75 mm.

In order to avoid cross talk the lay of adjacent pairs should slightly deviate from each other.

The pairs will be stranded in concentric layers.

The wires are either mono- or bi-coloured.

The cable core is wrapped in a spiral way with an Alu-PET foil having an overlay of min. 20 %.

The thickness of the Alu will be 25 micron. For cable with two pairs the Alu-PET foil can be placed in a longitudinal way.

2.2 The colours of the wires are as follows:

<u>Pair</u>	<u>a-wire</u>	<u>b-wire</u>
1	white	blue
2	white	orange
3	white	green
4	white	brown
5	white	grey
6	red	blue
7	red	orange
8	red	green
9	red	brown
10	red	grey
11	black	blue
12	black	orange
13	black	green
14	black	brown
15	black	grey
16	yellow	blue

17	yellow	orange
18	yellow	green
19	yellow	brown
20	yellow	grey
21	white-blue	blue
22	white-blue	orange
23	white-blue	green
24	white-blue	brown
25	white-blue	grey
26	red-blue	blue
27	red-blue	orange
28	red-blue	green
29	red-blue	brown
30	red-blue	grey
31	blue-black	blue
32	blue-black	orange
33	blue-black	green
34	blue-black	brown
35	blue-black	grey
36	yellow-blue	blue
37	yellow-blue	orange
38	yellow-blue	green
39	yellow-blue	brown
40	yellow-blue	grey
41	white-orange	blue
42	white-orange	orange
43	white-orange	green
44	white-orange	brown
45	white-orange	grey
46	orange-red	blue
47	orange-red	orange
48	orange-red	green
49	orange-red	brown
50	orange-red	grey
51	orange-black	blue
52	orange-black	orange
53	orange-black	green
54	orange-black	brown
55	orange-black	grey
56	yellow-orange	blue
57	yellow-orange	orange
58	yellow-orange	green
59	yellow-orange	brown
60	yellow-orange	grey
61	white-green	blue
62	white-green	orange
63	white-green	green
64	white-green	brown
65	white-green	grey
66	red-green	blue
67	red-green	orange
68	red-green	green
69	red-green	brown
70	red-green	grey
71	green-black	blue
72	green-black	orange
73	green-black	green
74	green-black	brown
75	green-black	grey
76	yellow-green	blue
77	yellow-green	orange

78	yellow-green	green
79	yellow-green	brown
80	yellow-green	grey
81	white-brown	blue
82	white-brown	orange
83	white-brown	green
84	white-brown	brown
85	white-brown	grey
86	red-brown	blue
87	red-brown	orange
88	red-brown	green
89	red-brown	brown
90	red-brown	grey
91	black-brown	blue
92	black-brown	orange
93	black-brown	green
94	black-brown	brown
95	black-brown	grey
96	yellow-brown	blue
97	yellow-brown	orange
98	yellow-brown	green
99	yellow-brown	brown
100	yellow-brown	grey
101	white-grey	blue

- 2.3 The cables with 8 conductors and more should also have a tinned conductor insulated with PE/FRPE of the same diameter as the other conductors and placed in parallel with the cable direction (drainwire).
- 2.4 The insulation of this drainwire is white with double black ringmarking :
- distance between two colourings : 5 mm
- distance between two double colourings : 17 mm
- 2.5 Cables with four conductors are twisted into starquads.
- 2.6 The four conductors have following colours :
pair one : white and blue
pair two : turquoise and violet
- 2.7 In this cable the drainwire is replaced by an enamelled copperwire of 0,4 mm measured on the copper and 0,42 mm measured on the lacquer.
- 2.8 This wire is put in the centre of the starquad.

3. Particular characteristics

3.1 Insulation resistance

The insulation resistance is measured with 500 volt direct current at a temperature of 20 ° C.
The results are read after one minute.

3.1.1 Tests on finished cables

The conductors not being measured as well as the eventual metallic screenings are connected to earth.
The insulation resistance measured at 20 ° C, under these circumstances should not be less than 5000 meg.ohm.kilometer.

3.1.2 Tests on individual wires

The insulation resistance is measured with 500 volt direct current.

Take a few meters of the cable as testing sample. Take the wires separately and put them in water, first at a temperature of 20°C and then 40°C.

The insulation resistance between each conductor and the water is being measured after one hour in water for both temperatures. The insulation resistance should be at least 100 megohm.kilometer at 20°C and 10 megohm.kilometer at 40°C.

3.2 Diaphony between 2 pairs

The para- and tele-diaphony measured between 2 pairs, at their characteristic impedance, should be equal or above 48 dB at a signal of 1000 kHz.

B) Tie cable for Type 2 services.

4. Description of the cable

The cable is respectively made of:

- 4.1 24 symmetrical pairs, each of them having the following characteristics:
 - 4.1.1 Conductor : a mono-conductor wire of 0.5 mm (± 0.01 mm) diameter made of annealed copper, single strand, circular in section.
 - 4.1.2 Insulation : a full polyvinyl chloride insulating or PE coat of 0.20 mm thickness (0.17 mm minimum) and with a nominal external diameter of 0.90 [+0.05 mm, -0.03 mm]. The insulation shall fit closely to the conductor, without adhering to it. The colours shall correspond with IEC 189-2 App. A and IEC 304.
 - 4.1.3 The cabling element is a pair of two insulated conductors designated wire A and wire B. Twisting pitch of the pair: 50mm maximum.
- 4.2 The 24 cabling elements shall be stranded in concentric layers. A binding tape (preferably consisting of non-hygrosopic material) shall be placed between successive layers. The sequence of elements is from the centre to the outside layer; the counting direction is clockwise and the same in each layer.
- 4.3 The core of the cable must be wrapped with a protective layer of non-hygrosopic material, wound helical or longitudinal lapping and consists of 1 or 2 tapes with overlap.
- 4.4 A tinned copper wire with the same dimensions as the conductor wires shall be included in the cable in continuous contact with the surface of the screening foil.
- 4.5 A screening foil consisting of a sandwich foil aluminium-insulated tape-aluminium with an aluminium thickness of 25 microns on both sides. The tape shall be applied longitudinally round the wrapped core with an overlap of 6 mm minimum.
- 4.6 A braid shield of tinned copper wires, forming a screen with a minimum coverage ratio of 50 %, placed around the elements from 1.1. to 1.5. The diameter of the single wires shall be between 0.10 mm and 0.20 mm. The woven shield shall comply with the electrical requirements for the transfer impedance and the mechanical strength.
- 4.7 A thread of non-hygrosopic material denoting company of manufacture, laid underneath the sheath.
- 4.8 A monochrome grey (RAL 7032, colored in the block) sheath in LSZH material enveloping the previous assembly. The sheath shall be applied to fit closely to the core of the cable without adhering to the screen or to the insulated conductors or to the wrapping tape. It shall be perfectly continuous and having a thickness as uniform as possible. Sheath thickness: 0.80 mm nominal, 0.60 mm minimum. The diameter of the finished cable shall not exceed 11.5 mm.

5. Conductors

- 5.1 Composition of the conductors: the conductors have to be made of a copper wire drawn in one piece for the whole manufacturing length. No soldered joint is tolerated.
- 5.2 Eccentricity : the eccentricity shall be maximum 1.8 at any cross section.
- 5.3 Conductor insulation: The insulation (polyvinyl chloride or PE) of the conductor shall have adequate mechanical strength and elasticity which remains sufficiently constant during normal use; it shall be continuous and of uniform thickness.
- 5.4 Sheath insulation: The insulation (LSZH) of the conductor shall have adequate mechanical strength and elasticity which remains sufficiently constant during normal use; it shall be continuous and of uniform thickness.

6. Electrical characteristics

The measurements to carry out in order to check the electrical features should always be carried out on cable sections of a nominal length of 250 meters, at a temperature comprised in between 15 and 25 degrees centigrade.

6.1 Electrical requirements of the conductor

The loop resistance shall be maximum 196.5 ohm/km at 20°C and the conductivity shall be minimum 57 m/ohm.mm² at 20°C.

6.2 Insulating resistance

The measurements will be taken after a minute of electrification. The insulating resistance between the two wires of the pair or between each wire and the screen won't be inferior to 500 Megohm x kilometer.

6.3 Dielectric strength

The dielectric strength shall be minimum 1500 Vac when measured during 1 minute.

6.4 Cable impedance

The typical cable impedance has to be in the range 100 ohms ± 10 ohms at 1 MHz. With any price offer for this cable, the supplier has to provide a document containing the variation curves of the real and imaginary parts of the typical characteristic of a section of 250 meters, in function of the frequency, in a transmission band opening the range of 0.3 to 10000 kHz. Indications on the manufacturing tolerances have to be added to the curves which will be of average values.

6.5 Attenuation

With every price offer for this cable, the supplier will communicate the kilometric attenuation value at (20 ± 2)°C for the frequencies between 0.3 and 10000 kHz.
At 1 Mhz, the attenuation may not exceed 32 dB/km.

6.6 Crosstalk between 2 pairs

The supplier has to communicate the near end and far end crosstalk values at 100, 500, 1000 and 10000 kHz between two symmetrical pairs under the screen placed side by side on a length of 250 meters, each terminated on their cable impedance. This value has to be greater than 55 dB at 1 MHz and 40 dB at 10 MHz.

6.7 Mutual capacitance

The mutual capacitance shall be maximum 100 nF/km measured between 500 and 2000 Hz.

6.8 Capacitance unbalance

Between any pair and the earth the capacitance unbalance shall not exceed 750 pF/500m with the exception of 1 value of the values up to 1500 pF/500m at 1 kHz.

C) Tie cabling - Labelling

To guarantee an efficient operational work, each tie cable will be labelled as follows:

7. Raw Copper

7.1 Cable 24 pairs, OLO & BGC side

RC/A - Cooxx - 23/0/00 to 23/0/23 (xx) : OLO code
(numbering = column/bed/position)

7.2 Cable 100p, OLO & BGC side

RC - Cooxx - 23/5/00 to 23/5/99 (xx) : OLO code
(numbering = column/bed/position)

8. Shared Pair

8.1 BGC side

side "LINE" : SPL 0098/0001 to 0098/0024
side "POTS" : SPL 0098/0051 to 0098/0074
(numbering = upright/position)

8.2 OLO & BGC side

side "DATA" : Cooxx 61/01 SPL DATA 1-3 P (P for PSTN)
Cooxx 61/01 SPL DATA 1-3 I (I for ISDN)
(numbering = rack/subrack)

Annex B 1.7

Service Description 2050

Belgacom access to the Raw Copper Loop

Connection to the collocation

Street Cabinet (KVD)

The conditions are only applicable to Raw Copper.

This document is subject to changes after approval by BIPT based on experience in the handling of these cases.

1. Scope

1. This document deals with the definition of the service, equipment and application requirements for the connection of the Raw Copper Loops to the colocation of the Beneficiary.

2. Definition of the service

2. Considering the complexity of the connection at the level of the street cabinet, whereby different types of KVD's, different technical situations and different surrounding grounds exist, it is impossible at this time to standardize a connectivity description at this level. Therefore the connection to the KVD will be handled case by case.
3. Belgacom will investigate and handle only elements that are property of Belgacom and reside on the property of Belgacom. Special permissions for works or performance of works at surrounding grounds will be at the charge and coordination of the Beneficiary.

3. Ordering

4. The Beneficiary will communicate an order by fax or e-mail to his respective account manager. The order form will include the KVD number and requested number of users, with a minimum of 24 users.
5. Based on this order, a study will be done. The results of this study, that includes the technical solution (in case there is one) and an estimation of costs, this will be communicated to the Beneficiary. Every study will be billed related to the man days, resources and transports that were needed.
6. After the study has been performed, Beneficiary can decide whether to continue with a fix order. The Beneficiary confirms to continue the order to the point of contact. Every order executed will be billed based on costs made in that case.
7. Extensions of connectivity at the same KVD, another Beneficiary requesting connection at that KVD or any change of prior installed equipment or prior determined positions will be subject to a full new study.

Annex B 2.2

Service Description 3030

Belgacom access to Shared Pair Service

Connection to the colocation area

Physical colocation

Table of content

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2. Definition 3

3. Colocation 4

4. Provisioning of Blocks, Tie Cables and Splitters..... 4

1. Scope

1. This Service Description handles the definitions, equipment and application requirements for the connection of the Shared Pair Service to the Colocation area of Beneficiary, whereby Belgacom delivers all equipment mentioned below.

2. Definition

2. At the Belgacom Local Exchange, the copper wires are terminated in the Main Distribution Frames. Beneficiary's access to the Shared Pair Service will be established with Connection Cables and Tie Cables from the Main Distribution Frame of the Belgacom Local Exchange to Beneficiary's colocation area in that same Belgacom Local Exchange building.
3. Both the high and low frequency are brought to dedicated Beneficiary blocks. From a 48 pair block, a Connection Cable brings the high frequency and the low frequency to the Splitter Rack of Belgacom. The low frequency is brought back to another 48 pair Beneficiary block. A Cable is connected from this position to a Belgacom horizontal block that leads to the voice switch of Belgacom for providing the ISDN or PSTN Belgacom Service. Between the Splitter Rack and the colocation area, the transport of the signal done by use of Tie Cables.

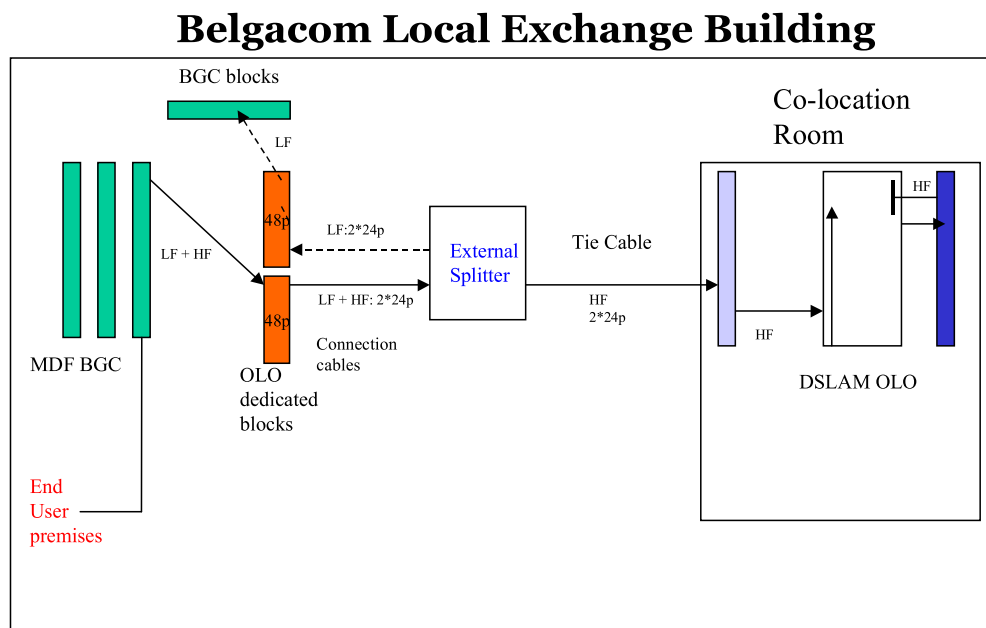


Fig. 1

4. Beneficiary will order the Tie Cables, Connection Cables, Blocks and Splitters at Belgacom's Local Exchange building prior to the request of Shared Pair Services for individual End Users. This ordering process is described in "Annex E: Planning and Operations manual".

5. If at a certain moment, no more free wires or positions on the blocks are available, the specific requests for individual End Users, issued by the Beneficiary, will be rejected, since provisioning of that Shared Pair Service cannot be implemented.
6. The connectivity at the LEX of Shared Pair is only possible if the voice service starts in the LEX. If the voice service resides at the LDC level it can be moved if possible to the LEX level in order to allow Shared Pair for that User at the LEX. The Beneficiary will pay the costs for this action.
7. The default standard unit that Beneficiary can order for the provisioning between blocks on the MDF and the Colocation area:
 - Blocks are 48 pair blocks; The minimum installation requires 2 blocks; 1 for cross connecting high and low bandwidth, 1 for connecting low bandwidth back to the Belgacom voice switch.
 - Cables will be per 24 pairs of shielded cable. The minimum installation requires 3 times 2*24 pairs; 2 times 2*24 pairs for the Connection Cable between Beneficiary blocks and Splitter rack, 1 time 2*24 pairs for the Tie Cable to the Colocation area of Beneficiary.
 - Splitters per 48. The Splitters have to be defined –per number of 24 Splitters- as being Splitters for PSTN lines or Splitters for ISDN lines.
8. Upon specific request of the Beneficiary, the incremental unit of ordering Tie Cables can be lowered to
 - 1 Block of 48 pairs
 - Cables will be per 24 pairs of shielded cable. The installation requires 3 times 24 pairs; 2 times 24 pairs for the Connection Cable between Beneficiary blocks and Splitter rack, 1 time 24 pairs for the Tie Cable to the Colocation area of Beneficiary.
 - Splitters per 24. The Splitters have to be defined as being Splitters for PSTN lines or Splitters for ISDN lines.
9. The request for this lower increment must be explicitly notified to Belgacom. The prices for this lower increment can be found in “Annex H: Price list”.

3. Colocation

10. Physical Colocation is a prerequisite for the implementation of this Service Description. The installation and maintenance of colocation will be made by Belgacom, as presented in the “Belgacom Physical Colocation Agreement” attached to this Agreement.

4. Provisioning of Blocks, Tie Cables and Splitters

11. Reference is made to “Annex E: Planning and Operations manual”.

Product	Comments
1. 48 pair blocks for the provisioning of SPP/SPI loops.	Default ordering per increment of 2
2. 24 pair shielded cable for the provisioning of SPP/SPI loops	Default Ordering per increment of 6
3. 48 Splitters for SPP loops or SPI loops.	Default Ordering per increment of 1

Note: The above services are settled according to “Annex H2.2: Price list”.

Annex B 2.3

Service Description 3035

Belgacom access to Shared Pair Service

Connection to the colocation area

Distant colocation

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2. Definition 3

3. Distant Colocation 5

4. Provisioning of blocks and Extended Tie Cables 5

5. Provisioning of connectors 6

6. Jumpering in the cross connection cabinet..... 6

1. Scope

1. This service description handles the definitions, equipment and application requirements for the connection of the Shared Pair loops to the cross connection cabinet of Beneficiary, whereby Belgacom delivers the equipment mentioned below. The present service description is only applicable on the sites where Beneficiary has no physical collocation already at his disposal.

2. Definition

2. At the Belgacom Local Exchange, the copper wires are terminated in the Main Distribution Frames. Beneficiary's access to the Shared Pair Service will be established with Connection Cables and Extended Tie Cables from the Main Distribution Frame of the Belgacom Local Exchange to Beneficiary's cross connection cabinet.
3. Both the high and low frequency are brought to dedicated Beneficiary blocks. From a 48 pair block, a Connection Cable brings the high frequency and the low frequency to the Splitter Rack of Belgacom. The low frequency is brought back to another 48 pair Beneficiary block. A Cable is connected from this position to a Belgacom horizontal block that leads to the voice switch of Belgacom for providing the ISDN or PSTN Belgacom Service. Between the Splitter Rack and the Cross connection cabinet, the transport of the signal done by use of Extended Tie Cables.

Belgacom Local Exchange Building

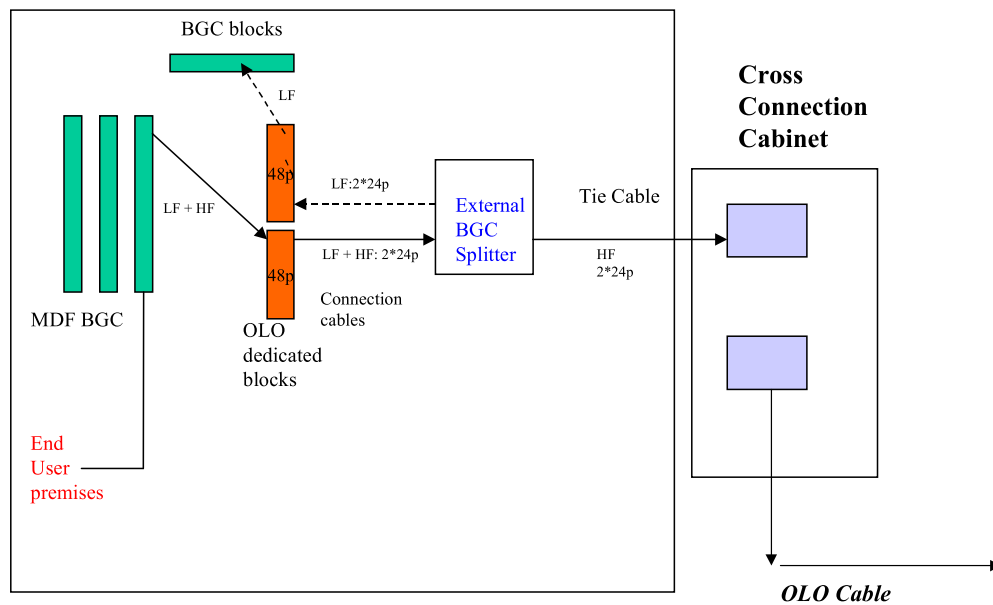


Fig. 1

4. The existence of a cross connection cabinet is a prerequisite for the implementation of this service description. The construction of the cross connection cabinet is outside the scope of this agreement.



Fig. 2

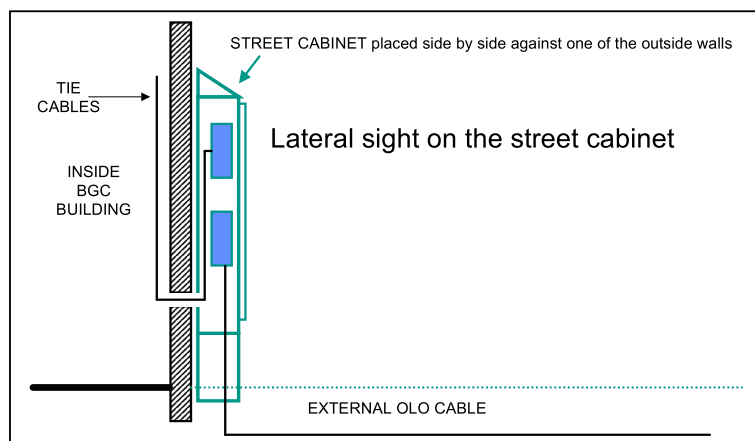


Fig. 3

5. Beneficiary will order the Extended Tie Cables, Connection Cables and Blocks at Belgacom's Local Exchange building prior to the request of Shared Pair Services for individual Users. This ordering process is described in "Annex E: Planning and Operations manual".
If at a certain moment, no more free wires or positions on the blocks are available, the specific requests for individual Users, issued by the Beneficiary, will be rejected, since provisioning of that Shared Pair Service cannot be implemented.
6. The connectivity at the LEX of Shared Pair is only possible if the voice service starts in the LEX. If the voice service resides at LDC level, it can be moved if possible to LEX level in order to allow Shared Pair for that User at the LEX. The Beneficiary will pay the costs for this action.
7. The default standard unit that Beneficiary can order for the provisioning between blocks on the MDF and the Colocation area:

- Blocks are 48 pair blocks; The minimum installation requires 2 blocks; 1 for crossconnecting high and low bandwidth, 1 for connecting low bandwidth back to the Belgacom voice switch.
 - Cables will be per 24 pairs of shielded cable. The minimum installation requires 3 times 2*24 pairs; 2 times 2*24 pairs for the Connection Cable between Beneficiary blocks and Splitter rack, 1 time 2*24 pairs for the Tie Cable to the Colocation area of Beneficiary.
 - Splitters per 48. The Splitters have to be defined –per number of 24 Splitters- as being Splitters for PSTN lines or Splitters for ISDN lines.
8. Upon specific request of the Beneficiary, the incremental unit of ordering Tie Cables can be lowered to
- 1 Block of 48 pairs
 - Cables will be per 24 pairs of shielded cable. The installation requires 3 times 24 pairs; 2 times 24 pairs for the Connection Cable between Beneficiary blocks and Splitter rack, 1 time 24 pairs for the Tie Cable to the Colocation area of Beneficiary.
 - Splitters per 24. The Splitters have to be defined as being Splitters for PSTN lines or Splitters for ISDN lines.
9. The request for this lower increment must be explicitly notified to Belgacom. The prices for this lower increment can be found in “Annex H2.3: Price list”.

3. Distant Colocation

10. Distant Colocation is a prerequisite for the implementation of this Service Description. The installation and maintenance of colocation will be made by Belgacom, as presented in the “Belgacom Distant Colocation Agreement” attached to this Agreement.

4. Provisioning of blocks and Extended Tie Cables

11. Reference is made to “Annex E: Planning and Operations manual”.

Product	Comments
1. 48 pair blocks for the provisioning of SPP/SPI loops.	ordering per increment of 2
2. 24 pair shielded cable for the provisioning of SPP/SPI loops.	ordering per increment of 6: 4 for connection cabling, 2 for extended tie cabling
3. 48 Splitters for SPP loops or SPI loops.	Default Ordering per increment of 1

Note: The above services are settled according to “Annex H2.3: Price list”.

5. Provisioning of connectors

12. The modules in the Cross Connection Cabinet are composed of connectors. The unit that Beneficiary can order are:
- 48 connectors type LSA + (a+b+s) for SPI/SPP loops

Product	Comments
4. 48 connectors type LSA + (a+b+s) for SPP/SPI loops	ordering per increment of 1

Note: The above services are settled according to “Annex H2.3: Price list”.

13. As in Section 2, and upon specific request of the Beneficiary, the incremental unit of ordering connectors can be lowered to
- 24 Connectors of type LSA + (a+b+s) for SPI/SPP loops
14. The request for this lower increment must be explicitly notified to Belgacom. The prices for this lower increment can be found in “Annex H2.3: Price list”.

6. Jumpering in the cross connection cabinet.

15. As indicated above, the Beneficiary will be responsible for handing over the necessary cable with the required distance to Belgacom. Belgacom will be responsible for bringing the cable up to the cross connection cabinet and connecting the Beneficiary cable to the lower blocks in the cross connection cabinet.
16. The Beneficiary is further responsible for dimensioning the cable and selecting the pairs within the Beneficiary cable.
17. Belgacom will not be responsible for jumpering between the upper blocks and the lower blocks in the cross connection cabinet. Belgacom can also not be held responsible for any disturbances caused in the signal due to the choice between the pairs in the external Cable provided by Beneficiary going to the Beneficiary premises.

Annex B 2.4

Service Description 3040

Belgacom access to the Shared Pair Services

Delivering of Tie Cable by Beneficiary

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Appendix A: Technical specifications

Appendix B: List with length of cable and places to deliver the cable

1. Scope

1. This document deals with the definition of the service, equipment and application requirements for the delivering of Tie Cable by Beneficiary in case Beneficiary chooses the option to deliver its own cable. This by exception to what is stated in Service Description 3030 and Service Description 3035 as in accordance to which Belgacom automatically delivers the associated number and type of Tie Cable for every Block ordered.
2. Except for the specific provision contained the present document, the other Annexes and in particular “Annex B12: Service Description 3030” and “Annex B13: Service Description 3035” remain fully applicable.
3. The present General Terms and Conditions shall prevail on any other contractual obligations in respect to the specific subject matter “Tie Cable delivered by Beneficiary”.
4. For the sake of clarity this present Service Description applies to connection to the Physical Colocation badge or escorted access as well to connection to the Distant Colocation.

2. Definition of service

5. This Service is provided in the framework of the services as indicated in the General Terms And Conditions for the provisioning of Shared Pair in the Local Loops.
6. When Beneficiary orders the dedicated equipment at Belgacom’s Local Exchange building prior to the request of ULL Shared Pair Services, Beneficiary shall indicate on the firm order form that the delivery of the associated Tie Cable will be the responsibility of the Beneficiary.
7. Beneficiary will provide on requested date of delivery Belgacom with at least the exact length of cable on reel needed to execute the order. Place of delivery is determined by the LEX of installation.
8. Installation of the Tie Cable will only be done by the technicians of Belgacom or by the subcontractors of Belgacom.
9. For the sake of clarity the cable remains the property of Beneficiary and under its responsibility.
10. Notwithstanding what is mentioned above, the demarcation point in case of Beneficiary delivered Tie cabling will be the Splitter rack in case of Shared pair.
11. In case of tie cabling delivered by the Beneficiary, the area where the Demarcation Point is situated (area where the Splitter Rack is situated in case of Shared Pair) at the Belgacom Local Exchange or Local Distribution Center is in principle accessible to the Beneficiary for maintenance and test purposes. Beneficiary will have to justify the necessity of the planned maintenance and/or tests.
12. Beneficiary will have to substantially indicate the purpose of this access (to be mentioned with the application for guided access).
13. The access will be always with a security escort, at the expenses of the Beneficiary, and pursuant the conditions for guided access as described in the framework of co-mingling (physical colocation with escort access).
14. The connectivity at the LEX of Shared Pair is only possible if the voice service starts in the LEX. If the voice service resides at the LDC level it can be moved if possible to the LEX level in

order to allow Shared Pair for that User at the LEX. The Beneficiary will pay the costs for this action.

3. Ordering Infrastructure

15. Except for the specific provisions stated in the present section 3, “Annex E: Planning and Operations Manual” remains fully applicable.

3.1. General

16. Orders are related to Beneficiary dedicated equipment at the Belgacom's LEX's. This equipment only consists in Beneficiary Horizontal Blocks. The ordered Beneficiary Blocks will be standard equipment (see “Annex C: Technical Specifications”). All installation is done by the technicians of Belgacom or by the subcontractors of Belgacom. Forecasts (if any) and Ordering are done for Beneficiary Horizontal Blocks, where for every Block ordered the associated number and type of Tie Cables will be delivered by Beneficiary.
17. When Beneficiary submits its firm order form, to order dedicated equipment at the Belgacom LEX for the preprovisioning of Shared Pair, Beneficiary will indicate that he will provide the associated Tie Cable. Beneficiary will fill in the date and hour for delivery of the cable.
18. Firm orders shall be done through the use of the specific templates available on the Belgacom secured website for LLU.
19. Templates will be considered as valid only when they are properly completed. In case data is missing or is not correct, the template will be rejected. In the latter case, Belgacom will indicate the reasons of rejection on the template. All firm orders will be submitted by registered mail to the SPOC of Belgacom for ULL.
20. For the sake of clarity, it is confirmed that for all matters related to the forecasting process will follow the guidelines as stated in “Annex E: Planning and Operations Manual”.

3.2. Prerequisites

21. As long as a Beneficiary does not have approved colocation facilities, no Beneficiary Horizontal Blocks orders can be submitted. A colocation facility is approved once the colocation Agreement has been signed and proof of payment of advance payment or 50% of the costs charged to the Beneficiary have been provided by Beneficiary.

3.3. Ordering procedure

22. The Beneficiary can order its blocks through a firm order. A firm order consists of the requested number of Beneficiary Horizontal Blocks, per type of Blocks (see Belgacom secured website for LLU) and this for each LEX. Together with the firm order, the Beneficiary includes the date when he wants the Blocks and associated Tie Cabling to be ready.
23. In the situation where cable trays are present, Tie Cable has been delivered by Beneficiary and sufficient place is available on the MDF, the delay for a firm order will be equal to the delay as stated in “Annex E: Planning and Operations Manual”.
24. In all other cases, the Beneficiary will need to take into account the delays as stated in “Annex E: Planning and Operations Manual”.
25. Belgacom will confirm the receipt of every firm order. When the installation of the Blocks and Tie Cabling is complete, the OLO will receive documentation on the position of his blocks on

the MDF and on the references of the positions on the blocks. This information is important to communicate together with each order for a specific Shared Pair loop.

4. Specific Conditions

26. When delivering the Tie Cable, Beneficiary has to fulfill the following specific conditions.
If Beneficiary has not fulfilled one or more conditions, Belgacom can neither guarantee to meet its own obligations, nor to respect the delays as set in the present document and other annexes.
27. For any additional work that explicitly or implicitly needs to be done by Belgacom because Beneficiary has not fulfilled one or more conditions, Belgacom reserves the right to bill the Beneficiary for the work executed by Belgacom.

4.1. Type of cable

28. Each telecom cable consists of a number of copper conductors grouped in quads; these quads can be arranged in bundles or in layers, depending on the type of cable.
Cable delivered by Beneficiary will have to comply with the technical requirements as set by Belgacom in "Appendix A: Technical Specifications".

4.2. Identification of cable

29. Following markings should be made in relief on the outersheath of the cable:
 - Name of Beneficiary
 - The nominal number of pairs
 - The diameter of the conductors
 - The year of production
 - The name or sign of the supplier

E.g.: For a cable series 12 with 20 pairs, with conductors 0,5 mm, in 2001 made by supplier X the marking becomes: Beneficiary 12 050 5 -01 -X

30. The marking should be repeated every 500mm.

4.3. Length of cable

31. Depending on the LEX where the Tie Cable has to be installed, the length of cable will be different.
32. In "Appendix B: a list with the exact length that is needed per LEX can be found.
33. Note that this list only mentions the LEX's where colocation facilities have already been established and the exact length of Tie Cable is already known. For other LEX's, length will be provided by Belgacom as part of the quotation form.
 - Beneficiary has to deliver to Belgacom at least the exact length of cable.

- Length of cable may not be cumulated
- Beneficiary will deliver per order a separate reel with the requested length of the cable.

4.4. Cable delivered on reel

34. Beneficiary will deliver the cable, reeled in an even way, on a reel.
This reel will have to comply with the specifications as set in "Appendix A: Technical specifications".
35. The reel of the Beneficiary will be recognizable by a dedicated colour and the flange of the reels shall contain a label with:
- Name Beneficiary
 - Name of contact person of Beneficiary
 - Telephone number where the contact person can be reached
 - The cable type
 - LEX name where the cable has to be installed
 - Order Reference Number
36. The identifications should be easy to read and should not deteriorate under atmospheric circumstances.

4.5. Place where to deliver the cable

37. Depending on the LEX where the cable will be installed, the Beneficiary will have to deliver the cable on a predefined location. A list with the LEX's, where the colocation facilities have already been established, will indicate per LEX at which location the cable has to be delivered. See "Appendix B: List with places to deliver the cable".

4.6. Appointment to deliver the cable

38. As the locations, where the reel with cable has to be delivered, are not free accessible and not permanently manned, the Beneficiary has to make an appointment to deliver the cable.
39. Beneficiary has to put on the firm order form his requested date and hour of delivery. This date has to fall within the following timeframe:
- For the date, Beneficiary can set the day to deliver the cable:
 - * At the earliest: day of ordering + 2 Working Days
 - * At the latest: day of ordering + 4 Working Days
 - For the hour, Beneficiary has to make his choice between:
 - * From 8.00 till 8.30
 - * From 8.30 till 9.00
 - * From 9.00 till 9.30

4.7. Receipt of goods

40. When Beneficiary delivers the reel with cable at the requested date of delivery, a Belgacom person will be present to take delivery of the goods.
A receipt of goods form will be filled out. See Belgacom secured website for LLU.

4.8. Remove empty reel

41. After Installation of the Tie Cable, Belgacom will bring the empty reel back to the place where Beneficiary has delivered the reel. Beneficiary will have to pick-up the empty reel at the date and hour which has been confirmed on the test & visit report.

This date has to fall within the following timeframe:

- For the date, Beneficiary can set the day to pick-up the empty reel:
 - * At the earliest: day of testing + 2 Working Days
 - * At the latest: day of testing + 4 Working Days
- For the hour, Beneficiary has to make his choice between:
 - * From 8.00 till 8.30
 - * From 8.30 till 9.00
 - * From 9.00 till 9.30

5. Prerequisite for the installation of Tie Cable delivered by Beneficiary

42. Installation of the cable will be done by the technicians of Belgacom or by the subcontractors of Belgacom.
43. Installation will be done within the timeframe, as set in “Annex E: Planning and Operations Manual”, only if all conditions linked to the delivery of the Tie Cable have been fulfilled.
44. Whenever one of the conditions for the delivery of the Tie Cable has not been met or problems linked to the cable occur during the installation, Belgacom will inform Beneficiary SPOC. The delay due to these circumstances will be added to the timeframe as set in “Annex E: Planning and Operations Manual”.

6. Fault Reporting and Repair

45. Except for the specific provisions stated in the present section 6, “Annex E: Planning and Operations Manual” remains fully applicable.
46. In case Beneficiary considers it necessary during repair to perform certain tests, specific linked to the Tie Cable, it is the responsibility of the Beneficiary to give well defined orders to Belgacom. Beneficiary will be billed for all work for which he has given the order and that has been executed by Belgacom.

7. Ownership and responsibilities

- 47. As mentioned in point 2, the cable remains the property of Beneficiary and under its responsibility.
- 48. For the sake of clarity, Beneficiary will be responsible for any damages caused by its cable to Belgacom or to any other third party.
- 49. For technical reasons, once the cable has been installed, Beneficiary will not be authorized to remove it, except if Beneficiary agrees to pay for the cost incurred by Belgacom to remove the cable.
- 50. Should the cable request technical intervention (tests in case of repair or replacement of cable), the work will exclusively be executed by Belgacom upon written request by the Beneficiary. The cost incurred by Belgacom for this intervention will be exclusively beared by Beneficiary.

8. Financial conditions

- 51. All charges and fees linked to the management and administrative work done by Belgacom, linked to the storage space and the installation, will be settled according to “Annex H: Price List”.

Annex B 2.5

Service Description 3015

Belgacom Access to the Shared Pair Service
at Local Distribution Centers

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1. Scope

1. This Service Description deals with the definitions of services, equipment and application requirements and properties of the Belgacom Offer for Shared Pair Service as described under section 2.4; and the procedures for ordering of and fault reporting to Belgacom with respect to the Service described herein.

2. Definition

2.1. Product definition of Shared Pair Service

2. A Raw Copper Loop is a pair of fully metallic copper wires on the section between Belgacom's Main Distribution Frame at the Belgacom LDC and the User's site connected on a Network Termination Point.
3. The Shared Pair Service is the service by which Belgacom provides to an Beneficiary an access to an User by means of a part of the frequency of a Raw Copper Loop, whereby the entire frequency of the loop concerned is shared by Belgacom and the Beneficiary as follows:
 - Belgacom provides PSTN or ISDN BA services to the User (for which a Full Subscription Fee is paid for by the User concerned) on the voice frequency part (also referred to in the present document as the low bandwidth) of that Raw Copper Loop
 - Beneficiary provides data services to the same User based on ADSL technology on the non-voice frequency part (also referred to in the present document as the high bandwidth) of that same Raw Copper Loop
4. The Shared Pair Service requires that the User maintains his single line PSTN or ISDN BA Belgacom service for which a Subscription Fee is paid for by the User concerned. "Annex E: Planning and Operations Manual", describes the procedures that are applicable in case of modifications or cancellations requested by the User of the single line Belgacom PSTN or ISDN BA Service. Any modification or a cancellation of the single line PSTN or ISDN BA Belgacom service requested by the User, will affect the access to or the price of the Shared Pair Service by the Beneficiary.
5. A Shared Pair Service can therefore only be offered on a single, non-loaded and active pair. No load coils or other active equipment can be present in the circuit.
In case load coils or other active equipment are present in the circuit, Belgacom will provide a process for proceeding with a new pair choice if technically feasible. For these services by Belgacom, the Beneficiary will be charged the related extra fee that will be included in "Annex H": Pricing.
6. Beneficiary has the right to gain access to Shared Pair Service at the Main Distribution Frame level of the LDC, where Belgacom will install and maintain the necessary equipment to split the high frequency that is delivered to Beneficiary and the low frequency used by Belgacom. For details and definitions of the high and the low bandwidth, reference is made to "Annex C: Technical Specifications Document".
7. The access to the high bandwidth at the Belgacom network side will be realized on the Belgacom Main Distribution Frame (MDF) by using dedicated Blocks per Beneficiary. From there, a pair of physical wires will be connected to the splitter rack (Connection Cables) and brought back from the Splitter rack to Beneficiary dedicated blocks for the low frequency. From the Splitter rack, connections will be made to the collocation area of the Beneficiary by

use of Tie Cables in case of Physical colocation and by use of Extended Tie Cables in case of Distant colocation.

8. At the LDC or the Local Distribution Center, the Demarcation Point will be
 - in case of Physical or Virtual Colocation: the point on the Tie Cable just before it is connected to the collocated equipment of the Beneficiary..
 - in case of Distant Colocation: the Connectors in a Cross Connection Cabinet in the immediate vicinity of the Belgacom Local building.
9. The demarcation point in case of Beneficiary delivered Tie cabling shall be the Beneficiary dedicated Blocks on the MDF in case of Raw Copper. In case of Tie cabling delivered by the Beneficiary, the Beneficiary has access to the area where the demarcation point is situated (MDF area in case of Raw Copper) at the Belgacom Local Exchange or Local Distribution Center for maintenance and test purposes. Beneficiary shall have to justify the necessity of the maintenance and/or tests planned. Beneficiary shall have to indicate the purpose of his access substantially (to be mentioned with the application for guided access). Access shall always be with a security escort, at the expense of the Beneficiary, and pursuant to the conditions for guided access as described in the framework of co-mingling (physical colocation with escort access).

2.2. Network Termination Point

10. The access to the high bandwidth at the User site will be at the Belgacom Network Termination Point (NTP).
11. For single line PSTN Service, the Beneficiary will install the equipment on the Belgacom Network Termination Point at the User site.
For single line ISDN BA service, an intervention of a Belgacom technician on the User site will be required in case the User site does not have an AETHRA NT1-2ab as Belgacom Network Termination Point. At the time of installation, this intervention will relate to the fact that, in these cases, a Splitter will be installed by Belgacom between the Belgacom Network and the Network Termination Point at the User site.

2.3. Schematically

Belgacom LDC

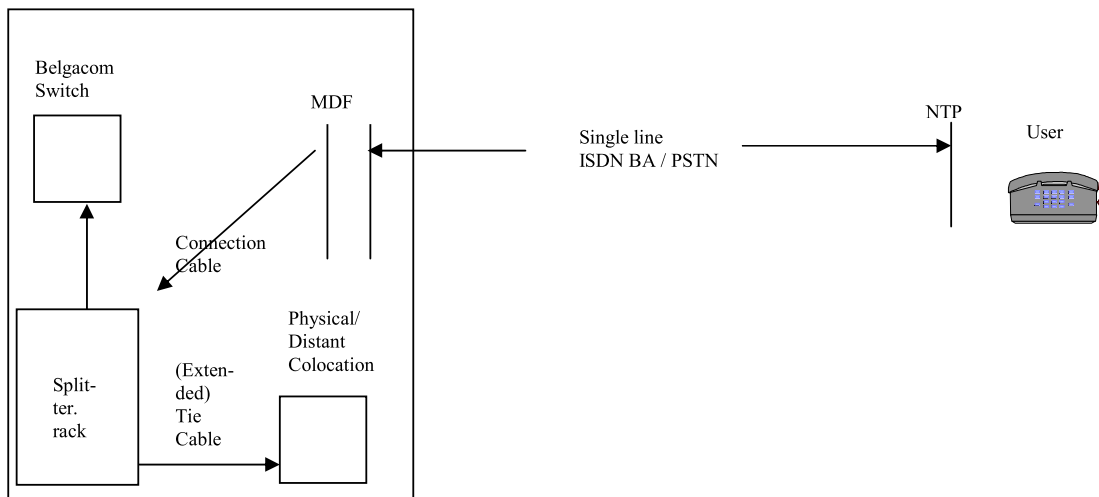


Fig. 1

For details on the Connection Cables and Tie Cables, reference is made to Service Description 3030 and 3035.

2.4. Service offered by Belgacom

12. The use of a Shared Pair is free, provided that the Beneficiary complies with the "Spectrum Management" rules described in the Annex C. Depending on the type of equipment that is directly connected to the unbundled Local Loop, different rules for the bringing into service and for the service level can be applicable.
13. SPP (Shared Pair Service over PSTN)
 - The high frequency band on the loop is to be used to connect ADSL equipment providing ADSL service capable of co-existing on the same pair as voice-band services (ADSL over PSTN). For technical details on the signals to be used, reference is made to "Annex C: Technical Specifications document".
14. SPI (Shared Pair Service over ISDN)
 - The high frequency band on the loop is to be used to connect ADSL equipment providing ADSL service capable of co-existing on the same pair as ISDN Basic Access services (ADSL over ISDN). For technical details on the signals to be used, reference is made to "Annex C: Technical Specifications document".

3. Connectivity to the Beneficiary Network

15. At the Belgacom LDC, the copper wires are terminated on the Main Distribution Frame. Beneficiary's access to the copper wire pairs will be established by connecting Tie Cables from the Main Distribution Frame of the exchange to colocation area in case of physical colocation and by connecting Extended Tie Cables from the Main Distribution Frame of the exchange to the Cross Connection Cabinet in case of distant colocation.
16. The installation and maintenance of the (Extended) Tie Cable and the provisioning and maintenance of the Blocks will be made by Belgacom, as presented in Service Descriptions 3030 and 3035.

4. Colocation

17. For the provision of Colocation Services reference is made to the Colocation Agreement. Subscriptions to this agreement is a pre-requisite to install equipment in a Belgacom building. For the sake of clarity, Colocation Services can only be used to benefit from specific Belgacom Services requiring colocation.

5. Spectrum management and equipment aspects

18. "Annex C: Technical Specifications Document"^{29*} to the contract, contains the requirements related to spectrum management and equipment connected for use of the shared pair.

6. Boundary conditions and prerequisites

19. The Beneficiary is only allowed to use the Shared Pair Service for the purpose described in Section 2.4.
20. All equipment used by the Beneficiary will comply with the R&TTE Directive.
21. It is noted that Belgacom will not undertake customer care handling of Users of the Beneficiary. If Belgacom receives requests from Users of the Beneficiary due to the inadequate handling of such requests by the Beneficiary, Belgacom will not deal with them.
22. In case there is a change in Shared Pair Service type, the Beneficiary will address a request for a deactivation and an installation to Belgacom, in order to obtain the requested modification.
23. If equipment or network components, that are operated by Beneficiary for its own use and that are connected to Belgacom's public telecommunications network, cause disturbances in Belgacom's network, Beneficiary shall be required to disconnect the User connection without any delay.
24. Belgacom shall use, in good faith, all reasonable endeavours to correct any trouble affecting the quality of service Belgacom is providing to its own Users. In this respect, Belgacom is entitled to disconnect Beneficiary's connection to Belgacom's access network, on the basis of User complaints, reports from the operational services of Belgacom, etc., and provided that Belgacom can demonstrate that Beneficiary's systems cause service degradation or disruption of the services offered by Belgacom in the network.

7. Ordering of Shared Pair

25. Belgacom shall deliver access to the high bandwidth according to Beneficiary's orders transmitted to Belgacom. The general terms and conditions for delivering high bandwidth are defined in "Annex E: Planning and Operations manual".
26. The full details of the provisioning process can be found in "Annex E: Planning and Operations manual".

7.1. Standard provisioning rules

27. The Beneficiary can obtain the following standard Shared Pair Services:

Service	Contents	Fee
1. Inquiry	Examination of whether Shared Pair Service can be provided	Inquiry Fee (not to be paid if the inquiry is followed by a request)
2. Request for Shared Pair Service	Physical connection of the Shared Pair Service to the Beneficiary Network	Installation fee
3. Cancellation of Requests	Orders that have been placed by the Beneficiary but that are cancelled prior to implementation	Cancellation fee
4. Deactivation of Shared Pair Service	Belgacom disconnects the Shared Pair Service from the Beneficiary dedicated Blocks	Deactivation fee
5. Change Date	The Beneficiary requests a change in due date for the provisioning of the Shared Pair Service	Change date fee
6. NTP Intervention	If Belgacom needs to intervene at User site for the installation of a full-rate splitter	Telecom Installation fee, invoiced on top of the Installation fee
7. Transfer	Transfer of a Shared Pair Service from Beneficiary 1 or Belgacom to Beneficiary 2	Is inferior to the installation fee (deactivation is at charge of Beneficiary 1)

Further comments:

28. On point 1

The purpose of an Inquiry is to investigate the availability of the Shared Pair Service at a particular User site. This inquiry consists of verifying whether an existing end to end single line PSTN or ISDN Belgacom service is available and of carrying out a pair selection test to verify that the Shared Pair Service, as indicated by the Beneficiary, can coexist with the surrounding pairs. An inquiry gives only the status of a of the User line at one specific moment in time. Belgacom guarantees the accuracy of the information provided at the moment of the inquiry, without prejudice to any subsequent change in the technical situation.

29. On point 2

The Beneficiary will indicate on his order form the date the Beneficiary wishes Belgacom to provision the Shared Pair Service.

30. When the Beneficiary places a firm order for the Shared Pair Service, Belgacom will also carry out a check whether the current existing single line ISDN or PSTN service is capable of

supporting the high bandwidth signal requested by the Beneficiary. Belgacom will perform additionally a pair selection test to verify that the service, as ordered by the Beneficiary, can coexist with the surrounding pairs.

31. On new pair selection

In case the order can not be implemented on the ISDN BA or PSTN service due to the presence of load coils or other active equipment on the existing single pairs, Belgacom will inform the Beneficiary of this fact according to the process described in “Annex E: Planning and Operations manual”

When the Beneficiary does not confirm his Request at that time, the Request will be implemented if technically feasible and the Beneficiary will be billed for the other pair selection choice according to the different elements as set out in “Annex H2.1: Price List”

32. Belgacom will inform the Beneficiary in good faith, as soon as possible, of the modifications of the current ordering procedures by means of an Appendix to “Annex E: Planning and Operations Manual”.

33. In case the order cannot be implemented because of technical reasons (of which Belgacom has to publish a limitative list that can be adapted on a case by case basis afterwards), the Beneficiary's Request will be rejected. If the Request for Shared Pair Service can be implemented, Belgacom will proceed with the implementation of that firm order.

34. On point 3

The Beneficiary has the right to cancel an order that it has submitted to Belgacom for the implementation of a Shared Pair Service. However, Belgacom will bill the Beneficiary for the work done in the process.

35. On point 4

The Beneficiary can request the Deactivation of the Shared Pair Service at a particular User site

36. On point 5

The Beneficiary has the right to change the date it indicated at the time of transmitting the Request for the Shared Pair Service. In such a case, the Beneficiary will be billed a change date fee.

37. On point 7

When there is a transfer from Shared Pair Service from Beneficiary 1 to Beneficiary 2, it is presumed that two Beneficiaries, according to agreement with the User, handle the removal of the User's services and co-ordinate the hand over of the Shared Pair Service.

It is acknowledged that Belgacom will only transfer the Shared Pair Service from Beneficiary 1 to Beneficiary 2 upon request of Beneficiary 2 solely. Belgacom will terminate the contract for that specific Shared Pair Service by informing Beneficiary 1 of the request from Beneficiary 2, without revealing the identity of Beneficiary 2.

Belgacom handles the request of the Beneficiary 2, taking over the Shared Pair Service.

Belgacom does not in any case handle complaints between Beneficiary 1 and Beneficiary 2.

38. The different services, as described above, are settled according to “Annex H2.1: Price list”. For the installation fee, different price setting can apply to different types of installations based on the work done by Belgacom after approval by BIPT. Reference is made to Annex H2.1.

7.2. Termination of the voice subscription with Shared Pair

39. In case of a Shared Pair Service where both Belgacom and the Beneficiary provide services to an User, it can occur that the User cancels his voice subscription for that Shared Pair Loop. In that case, independent of the reason for termination of the voice subscription, Belgacom will ensure that the service on the high bandwidth remains into service. This is applicable in condition that positions on Belgacom Horizontal blocks that are not connected are available at the MDF.
40. Belgacom will inform the Beneficiary that the Shared Pair Service has been converted to a Raw Copper + Splitter, for which the Beneficiary will be charged the monthly rental fee for Raw Copper instead of Shared Pair. For the change to Raw Copper + splitter, no conversion fee is applicable. The Beneficiary has at that moment the possibility to ask for a conversion from its Shared Pair to a Raw Copper and will by this free up a dedicated Splitter Card. In this case, a conversion fee will be charged to the Beneficiary.
41. In case the Raw Copper + Splitter stays active and is not converted into Raw Copper, the terms and conditions applicable on repair and maintenance will be the terms and conditions applicable to Raw Copper Services as described in the Belgacom Reference Offer and the related documents.
42. A change to Raw Copper is only possible if Beneficiary concerned subscribed, next to Shared Pair, to a Raw Copper contract and if positions are free on the dedicated horizontal OLO blocks under that raw copper contract.
43. If the Beneficiary decides to convert the Raw Copper + Splitter into Raw Copper, Beneficiary is notified of the fact that an interruption of its service during a limited timeframe (defined in hours) will take place in order to do the re-jumpering.
44. For the sake of clarity, this process can only take place pursuant to the General Terms and Conditions and if the necessary infrastructure is in place to do the re-jumpering, without prejudice to other conditions that are currently being investigated from a process point of view.

7.3. Non-standard provisioning rules

45. In case the request for implementation of Shared Pair Service can not be executed, Beneficiary request will be rejected.
46. Belgacom will reject the requests if:
 - no single line PSTN or ISDN BA Belgacom Service is provided to the User concerned;-
 - the requested service is incompatible with the Belgacom pair selection rules.
 - Belgacom will also reject requests if no positions and/or pairs are available on the Beneficiary Blocks, (Extended) Tie Cables and Connection Cables
47. Belgacom also will reject the requests if a new pair choice is reasonably and/or technically not possible over the existing infrastructure which must be detailed and proved to the Beneficiary.
48. Belgacom further reserves the right to reject requests for implementation of a Shared Pair Service for a Beneficiary based on wrong format data. The rejection list can be found in "Annex E: Planning and Operations manual".

8. Wrongful repair requests.

49. Belgacom's fault repair of Shared Pair Service between the Main Distribution Frame at the LDC and the User NTP is included in the periodic payment for the Shared Pair. The procedures for that fault reporting are described in "Annex E: Planning and Operations manual".
 50. In case of a repair request where the fault was not caused by Belgacom and Belgacom has performed work for that repair request, Belgacom reserves the right to bill the Beneficiary for the work done by Belgacom in light of that specific request according to "Annex H2.1: Price list" It is noted that Belgacom in a first phase will not automatically charge the Beneficiary for wrongful repair requests.
-

Annex B 2.6

Service Description 3045

Belgacom access to Shared Pair Service

Connection to the colocation

Local Distribution Center (LDC)

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1. Scope

1. This Service Description handles the definitions, equipment and application requirements for the connection of the Shared Pair Service to the Colocation of the Beneficiary.
2. Colocation is a prerequisite for the implementation of this Service Description. The installation and maintenance of colocation will be made by Belgacom.

2. Definition

3. The following cases of Belgacom colocation exist:
 - (1) Colocation within the LDC¹
 - (2) Street cabinet adjacent to the LDC²
 - (3) Beneficiary will bring the cabling up to the LDC³, the demarcation point is determined at the MDF in the LDC⁴

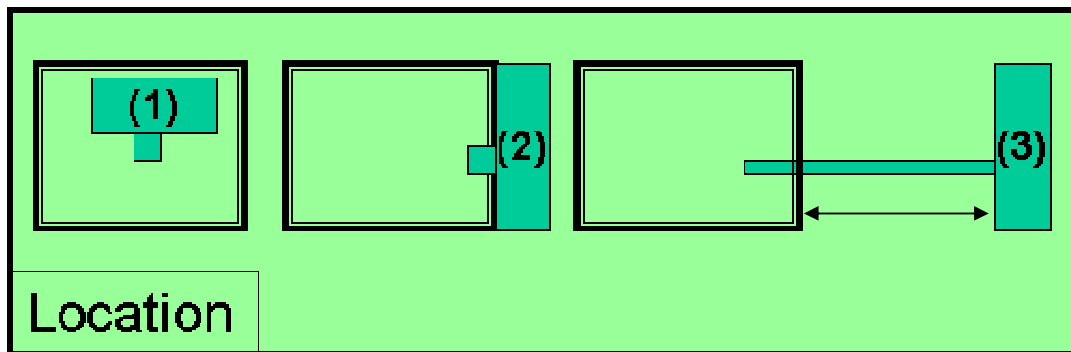


Fig. 1: Cases of Belgacom colocation

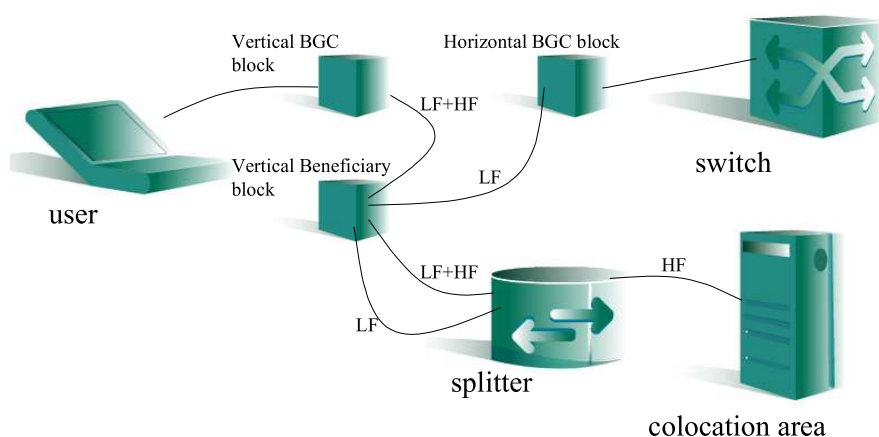
¹ Applicable for colocation case 2.2.1 and 2.2.2 in Service Description 'Colocation at the LDC Level'

² Applicable for colocation case 2.2.3 in Service Description 'Colocation at the LDC Level'

³ Applicable for colocation case 2.2.4 in Service Description 'Colocation at the LDC Level'

⁴ The cable will be installed by the Beneficiary up to the entrance of the LDC, the cable specifications will be agreed between Belgacom and Beneficiary

4. At the Belgacom LDC, the copper wires are terminated in the Main Distribution Frame. Beneficiary's access to the Shared Pair Service will be established with Connection Cables and Tie Cables from the Main Distribution Frame of the Belgacom LDC to Beneficiary's colocation in that same Belgacom LDC.
5. Both the high and low frequency are brought to dedicated Beneficiary blocks. From a 48 pair block, a Connection Cable brings the high frequency and the low frequency to the Splitter Rack of Belgacom. The low frequency is brought back to another or the same 48 pair Beneficiary block. A Cable is connected from this position to a Belgacom horizontal block that leads to the voice switch of Belgacom for providing the ISDN or PSTN Belgacom Service. Between the Splitter Rack and the colocation, the transport of the signal is done by use of Tie Cables.



LF: Low frequency, HF: High Frequency

Fig. 2: Connection to the colocation

6. Beneficiary will order the Tie Cables, Connection Cables, Blocks and Splitters at Belgacom's LDC prior to the request of Shared Pair Services for individual End Users. This ordering process is described in "Annex E: Planning and Operations manual".
7. If at a certain moment, no more free wires or positions on the blocks are available, the specific requests for individual End Users, issued by the Beneficiary, will be rejected, since provisioning of that Shared Pair Service cannot be implemented.
8. The connectivity at the LDC of Shared Pair is only possible if the voice service starts in the LDC.

3. Order increments

9. The default standard unit that Beneficiary can order for the provisioning between blocks on the MDF and the colocation are:
 - 24 connections in case of LDC Building or LDC Cabinet colocation for connection of shared pair services: the blocks on the MDF will be 1x48 pair blocks, the cabling 3x24 pair shielded cables, Splitters 1x24 defined as being Splitters for PSTN or/and ISDN.
 - 24 connections in case of LDC Cabinet or LDC Cross connection cabinet for connection of shared pair services: the blocks on the MDF will be 1x48 pair blocks, the cabling 3x24 pair shielded cables, Splitters 1x24 defined as being Splitters for PSTN or/and ISDN, inside the cabinet the Tie Cabling will be terminated on LSA blocks.

Annex D 3

**Prepayment
Terms and Conditions**

Raw Copper & Shared Pair Service

Prepayment Terms and Conditions

1. Belgacom will send on a monthly basis a pre-invoice at least on the 2nd working day after the starting of the month preceding the considered billing month. For Beneficiaries that are in service, the first pre-invoice shall be based on the average of the invoices for Services issued by Belgacom during the last three months. For Beneficiaries not yet in service and concluding a new Agreement, the first pre-invoice shall be based on the valuation of the average of the invoices for Services to be issued by Belgacom within the first three months of services.
2. The amount of the pre-invoice shall be adapted on a quarterly basis, i.e. increased or lowered as the case may be, based on the amounts due by the Beneficiary for the Services provided under the Agreement during the previous quarter.
3. The Beneficiary agrees to pay the amount of the pre-invoice at the latest the 10th calendar day from the date of the pre-invoice.
4. The amount of the pre-invoice shall be paid on a specific account number to be communicated. The interests generated by the amount of the pre-invoice paid on this account during the period starting from the date the pre-invoice is paid until the date the final invoice is paid shall be accrued to the Operator.
5. Within 15 calendar days after the end of the considered month, Belgacom will send a credit note regarding the pre-invoice together with the final invoices due for the considered month.
6. If for the same month the amount of the pre-invoice is higher than the amount of the final invoices, the balance shall be reimbursed by Belgacom.
7. If for the same month the amount of the pre-invoice is lower than the amount of the final invoices, the Beneficiary will pay the surplus.
8. Within 15 calendar days following the final invoice, the Beneficiary will make the payment by wire transfer. If payment is not received on this due date, Belgacom is entitled to the interest on the unpaid balance for late payment, and administrative and recovery costs as defined in the Agreement.
9. If the Beneficiary disagrees with an invoice received from Belgacom, it must notify in writing Belgacom thereof before the due date of such invoice in accordance with the relevant provisions of the Agreement.
10. Without prejudice to other legal or contractual remedies and notwithstanding anything to the contrary in the Agreement, in the event the Beneficiary fails to pay on due time any undisputed amount due under the present Prepayment terms and conditions, Belgacom shall be entitled to:
 - suspension of any SLA obligations that are not foreseen in the Basic SLA;
 - refusal in writing of any new Services, including Migration Services.

Annex Ja

Initial Information available to Operators

- 1 The secured Belgacom website contains the Annex J to the present Belgacom Reference ULL Offer, network information and other operational documents:
 - Annexes J:
 - Annex Ja - Initial Information available to Operators
 - Annex Jb - Non Disclosure Agreement
 - Annex Jc - Technical Specifications Tie Cabling
 - Annex Jd - Pair Selection Rules for Raw Copper Type 1 loops
 - Annex Je - Pair Selection Rules for Raw Copper Type 2 loops
 - Annex Jf - Pair Selection Rules for Shared Pair loops
 - Annex Jg - Transmission properties of the access network
 - Annex Jh – KVD Streets Information
 - Belgacom Network Information: Netcode limits, List of LEX's, List of LDC's, List of KVD's, List KVD –looplevelth, List LDC-KVD, List LEX-KVD, PQYZ per local
 - Operational Documents: Manual LLU Web Tools, Order Form for Equipment, XML files, DTD files, XML Manual, ...
 - Operational agreement: delivery of NTP
- 2 Prior to the provision of such information to an interested party eligible to benefit¹ from ULL Services; the concerned party will have to sign a Non Disclosure Agreement. Such Non Disclosure Agreement has been included in the present Annex J.
- 3 The signed Non Disclosure Agreement can be sent to the ULL Point of Contact at Belgacom, of which the co-ordinates are included in §1.5 of the present Reference Offer.
- 4 This Point of Contact can also be addressed for any further questions or remarks or requests for information regarding the present information or the procedure to obtain it.

¹ If refusal Belgacom will inform BIPT

Non-Disclosure Agreement

This non-disclosure agreement ("Agreement") has been made

Between

Customer, a company incorporated under the laws of ..., with registered office and place of business at ..., registered with the Brussels Register of Legal Entities under number [xxx].

(hereinafter "Customer")

and

Belgacom NV/SA, a Belgian autonomous public enterprise organized under the Law of March 21, 1991, and the Royal Decree of August 19, 1992, with registered office and place of business at 1030 Brussels, 27 Boulevard Roi Albert II, registered with the Brussels Register of Legal Entities under number 202.239.951.

(hereinafter "Belgacom")

Both parties to this agreement being hereafter referred to, collectively, as the "Parties", or, individually, as a "Party"

Witnesseth as follows:

Whereas, the Parties have shown interest to obtain information with respect to the unbundling of the local loops in the Belgacom network as described in the Belgacom's Reference ULL Offer (the "Business Purpose");

Whereas, in the framework of these discussions, the Parties may need to disclose to one another confidential information with regard to products, processes, commercial, research and development activities or, in general, any know-how in relation to their respective business activities.

Whereas, in order to protect the respective proprietary interest of the Parties in the information that each of the Parties might disclose to the other, the Parties have decided to agree on the terms and conditions subject to which such confidential information will be disclosed.

Now, therefore, in consideration of the mutual covenants herein contained, the Parties do agree as follows:

1. Confidential Information

1.1. In this Agreement, the term "Confidential Information" shall mean:

- Any information in any form communicated by one Party (or from any of its Associated Companies as defined in Section 1.5 of this Agreement) (the "Disclosing Party") to the other Party (or to its employees and advisors) (the "Receiving Party") in connection with the

Business Purpose, or obtained by the Receiving Party in connection with the Business Purpose, provided that such information is, at the time of its disclosure, designated, labeled or marked "confidential" or with an equivalent term. If such information was disclosed orally, it shall constitute Confidential Information provided that (i) a written notice containing a summary of the information disclosed orally and mentioning that such information is confidential, is issued by the Disclosing Party to the other within thirty days from the date of disclosure, or (ii) such disclosure is recorded in minutes of a meeting that are designated, labeled or marked "confidential" or designated, labeled or marked with an equivalent term.

and

- Any information communicated by the Disclosing Party to the Receiving Party in connection with the Business Purpose, or obtained by the Receiving Party in connection with the Business Purpose, which derives economic value, actual or potential, from not being generally known to persons other than the Disclosing Party, or which, by its nature, or, under the circumstances, are to be kept secret or confidential.
- 1.2. Any Confidential Information communicated or obtained prior to the conclusion of this Agreement shall be considered in the same manner and be subject to the same treatment as the Confidential Information disclosed after such date, provided that such Confidential Information is specifically identified by the Disclosing Party in a written notice sent to the Receiving Party within 30 days after the date of this Agreement.
- 1.3. For purposes of this agreement, "Confidential Information" does not include:
- information that is properly and lawfully in the public domain otherwise than by breach of this Agreement or any other obligation of confidence, as can be demonstrated on the basis of published documents and other evidence. Notwithstanding the foregoing, information that is specific to certain data will not be deemed to be in the public domain merely because such information is embraced by more general disclosures in the public domain. In addition, any compilation of public information, but which is set forth in a format which is not publicly available, will not be deemed as being in the public domain;
 - information that was disclosed by a third party to the Receiving Party without restriction on disclosure or use, unless the Receiving Party had actual knowledge that this information was acquired unlawfully or by a breach of contract or fiduciary relationship.
- 1.4. Information that does not constitute a trade secret will cease to be Confidential Information on the third anniversary of the first date of disclosure thereof by one Party to the other.
- 1.5. The term "Associated Companies" of a Party shall mean any subsidiary and/or parent company of such Party, together with any subsidiaries of such parent company. In this agreement, the terms parent and subsidiary company shall be understood as meaning, in the case of a parent company, only the companies which, directly or indirectly, hold more than fifty percent of the outstanding voting shares of the relevant company and, in the case of a subsidiary company, only the companies in which the relevant company holds, directly or indirectly, more than fifty percent of the outstanding voting shares.

2. Non-Disclosure

- 2.1. The Receiving Party shall refrain from disclosing the Confidential Information to any third party and shall use the Confidential Information only for the Business Purpose or the negotiation of any agreement related to the Business Purpose. In addition, the Receiving Party shall take any and all measures to ensure the confidentiality of this information. In any event, the Receiving

Party shall use efforts commensurate with those that such Party employs for protecting the confidentiality of its own Confidential Information.

- 2.2. Notwithstanding the foregoing, either Party shall be allowed to disclose the Confidential Information to third parties provided it has obtained the prior written consent of the other Party. Such written consent will be given case-by-case upon a discretionary basis. Such written consent shall only be valid and enforceable for the specific information listed therein. The written consent to disclose Confidential Information shall identify the third party or parties to which the information can be disclosed and shall set forth the terms and conditions to which such disclosure is subject.
- 2.3. Notwithstanding the general application of the provisions of Section 2.1, the Receiving Party shall not use the Confidential Information in any way detrimental to the Party who consented to the disclosure.
- 2.4. The Disclosing Party shall remain free to disclose to third Party Confidential Information disclosed to the Receiving Party.

3. Disclosure to Personnel, Advisors or Suppliers

- 3.1. A Receiving Party shall disclose the Confidential Information received from the other only to its employees, agents, directors, consultants or advisors who have a need to know such information because they are directly involved in the assessment, evaluation of or negotiation of agreements related to the Business Purpose. Such Party shall ensure that such employees, agents, directors, consultants or advisors are bound by the obligations of confidentiality in respect of the Confidential Information that are set forth in this Agreement.
- 3.2. Customer and Belgacom shall be entitled to disclose the other Party's Confidential Information to the employees, agents, directors, consultants or advisors of their Associated Companies, as stipulated in Article 3 hereabove, on the same terms as they can disclose the Confidential Information to their own management and employees subject to the obligations contained in Clause 1 of this Article.
- 3.3. Notwithstanding anything to the contrary in the foregoing provisions, each of the Parties undertakes not to disclose Confidential information to business divisions of their organization or business division of their Associated Companies that are engaged in activities competing with the other Party, unless such disclosure would be required for the Business Purpose, in which case no use whatsoever shall be made of this Confidential information for any purpose other than the Business Purpose.
- 3.4. Either Party shall be entitled to disclose Confidential Information which they received from the other Party to this Agreement to their suppliers of goods and services provided and to the extent that they are able to demonstrate that these suppliers effectively require to have access to such information in order to supply the relevant goods and services. The Parties shall do whatever is necessary in order to impose on the suppliers which have obtained access to Confidential Information under the present provision obligations to keep this information confidential which are at least equivalent to the obligations imposed under this Agreement.
- 3.5. Each Party shall be fully liable for any unauthorized disclosure or use of the Confidential Information by its employees, agents, directors, consultants, advisors or suppliers. Each of the Parties agrees, at its sole expense, to take all responsible measures (including but not limited to court proceedings) to restrain its employees, agents, directors, consultants, advisors or suppliers from prohibited or unauthorized disclosure or use of the Confidential Information.

4. Disclosure Required by Law

- 4.1. If the disclosure of Confidential Information to third parties is required by law, the Receiving Party shall refrain from disclosing the Confidential Information until it has informed the Disclosing Party in writing of the reasons and nature of the proposed disclosure. The Disclosing Party shall have a reasonable term to (i) make known its opinion with regard to the need to disclose the relevant information and with regard to the scope and nature of the information to be disclosed; to (ii) seek a protective order or other appropriate remedy or to (iii) waive compliance with the obligations of this Agreement.
- 4.2. If the Disclosing Party considers that the disclosure of Confidential Information is not required by law and in the absence of a protective order or other remedy, Parties shall designate a mutually acceptable counsel who shall decide whether the disclosure is required by law. Any expenses and costs flowing from the use of such a counsel will be borne by the Disclosing Party unless the claim for disclosure can be considered as unreasonable or frivolous.
- 4.3. If the Disclosing Party waives the obligations under this Agreement or if counsel decides that disclosure is required, the Receiving Party shall be entitled to disclose only that portion of the Confidential Information which is designated by the Disclosing Party or by counsel to be subject to disclosure required by law.
- 4.4. Parties shall cooperate to preserve the confidentiality of the information disclosed under this Agreement including, where relevant, by cooperating to obtain a protective order or other reliable assurance that confidential treatment will be granted by the addressee of the disclosure. Any costs flowing therefrom shall be borne by the Disclosing Party.
- 4.5. Without prejudice to the application of the foregoing, in the event that a disclosure to a competent government authority is required to ensure compliance with applicable laws, the Parties shall endeavor to ensure the confidential treatment of the Confidential Information by such government authorities.
- 4.6. The provisions of this agreement are without prejudice to the right of each of the Parties to disclose Confidential Information to the BIPT (Belgian Institute for Post and Telecommunications) where (i) such disclosure is necessary to comply with any general or specific reporting obligations of the Party concerned or where (ii) such disclosure is made in the context of formal proceedings initiated in front of the BIPT. If any such disclosure of Confidential Information is made, the Party communicating the information concerned will ensure that the attention of the BIPT is properly drawn to the fact that the information is confidential and that the information needs to be kept confidential.

5. Limited Scope

- 5.1. This Agreement applies only in respect to those rights and obligations that are explicitly referred to herein. Nothing in this agreement shall be construed as, directly or indirectly, granting or conferring upon the Receiving Party any right of transfer and/or license under any patent, copyright, know-how, trademarks, registered trade names, service marks or any other right (including intellectual or industrial property rights), which is owned by or licensed to the other Party or which such other Party should acquire in property or by way of license.
- 5.2. The disclosure of Confidential Information shall not constitute an encouragement to infringe any industrial and/or intellectual property rights of third parties. The exchange of information shall not constitute any representation, warranty, assurance or guarantee with respect to the infringement of these rights.

6. No Representation or Warranty

- 6.1. Except as set forth in a subsequent definitive agreement between the Parties, neither Party shall be deemed to have made any representation or warranty as regards the accuracy or completeness of the Confidential Information communicated under this Agreement.
- 6.2. Neither Party nor any of its representatives shall have any liability to the other Party or its representatives relating to or resulting from the use of the Confidential Information, except in case of intentional or gross negligence.

7. Return of Confidential Information

- 7.1. If either Party decides that it does not wish to participate with the other in a transaction in relation to which Confidential Information was disclosed, it will promptly inform the other Party of that decision. In that case, any documents, designs, drawings, models, samples, computer software or other tangible items, in either electronic or paper format, constituting Confidential Information and communicated by the Disclosing Party ("Primary Materials") shall be returned by the Receiving Party at the request of the Disclosing Party. In addition, at the request of the Disclosing Party, all copies of the Primary Materials will, be destroyed or returned to the Disclosing Party and the Receiving Party shall certify in writing to the Disclosing Party that all such copies have been destroyed or returned to the Disclosing Party.
- 7.2. Any notes, analyses, compilations, comparisons, studies, interpretations or other similar documents prepared by a Receiving Party, its employees, agents, directors, consultants or advisors, which contain, reflect or are based upon, in whole or in part, the Confidential Information ("Derivative Materials") will be kept by such Party and shall be kept confidential by it, or will be destroyed by it if so requested by the Disclosing Party. In the latter case, the Receiving Party shall certify in writing to the Disclosing Party that the Derivative Materials, including all copies thereof, have been destroyed or returned to the Disclosing Party.

8. Duration

- 8.1. This Agreement shall take effect on the date of conclusion of this Agreement and shall remain in force until the end of the third year following of the last disclosure of Confidential Information covered by this Agreement.
- 8.2. In the event that the Parties enter into one or more agreement related to the Business Purpose, the confidentiality provisions contained in that agreement will supersede the provisions of this Agreement.

9. Miscellaneous

- 9.1. In the event any one or more of the provisions contained in this agreement shall for any reason be held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any other provision of this agreement. This agreement shall be construed as if such invalid, illegal or unenforceable provision had never been set forth herein, and the agreement shall be carried out as nearly as possible according to its original terms and intent.

- 9.2. No failure or delay by either of the Parties in exercising any right, power or privilege hereunder shall operate as a waiver thereof, nor shall any single or partial exercise thereof preclude any other or further exercise thereof or the exercise of any right, power or privilege hereunder.
- 9.3. In the event of a breach by either of the Parties of any or all of the terms or conditions contained herein, the non-breaching Party may, at its option, institute and prosecute proceedings in court to obtain damages for any breach of this Agreement, or to enforce the specific performance hereof or to enjoin the disclosure or unauthorized use of any of the Confidential Information, but nothing herein shall be construed to prevent such other legal remedies as the non-breaching Party may elect to invoke.
- 9.4. Acceptance of the terms contained in this Agreement shall not compel the Parties to enter into any further agreements or to proceed with any possible relationship or other agreements. Nothing in this agreement shall prevent the Parties to pursue other business opportunities, interconnection, access or special access arrangements or agreements in Belgium or abroad, either independently or with third parties, simultaneously with the discussions between the Parties or subsequently.
- 9.5. This Agreement shall be governed by Belgian law.
- 9.6. Any and all disputes concerning or arising out of the conclusion, interpretation or performance of this Agreement will be submitted exclusively to the courts of Brussels in Belgium.

- 1 **In witness whereof**, the Parties have caused this Agreement to be duly executed in the English language by their respective duly authorized officers, at the date(s) mentioned hereunder in two original copies, of which each Party acknowledges having received one copy.

For Belgacom

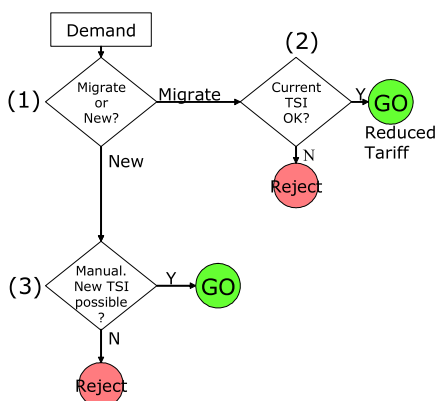
For Customer

—
By:
Title:
Date:

—
By:
Title:
Date:

By:
Title:
Date:

Current Raw Copper- Type1 Pair Selection Process



- (1) The OLO has the choice to introduce a demand for 'migrate' or 'new'. In case 'migrate' is possible a reduced installation tariff will be applied, as no truck roll out is necessary for re-jumpering at a lower level than the MDF.
- (2) Check if the current technical situation (TSI) of the 'active' line, the OLO wants take over, can be used 'as such', i.e. fulfils all 'pair selection criteria'.
'pair selection criteria'
 - **service availability**: the service is possible at the concerned MDF.
 - **pair continuity**: a full metallic pair exists between MDF and end customer
 - **pair position in the cable**: no special requirements
 - **service compatibility**: migrate possible for PSTN/ISDN lines and other Belgacom Services (e.g. LL, ...)
 - **length**: No criteria for length
- (3) Search for a new technical situation (TSI), that fulfils all pair 'selection criteria' (see above) and can be realised by intervention of an electrician, i.e. by re-jumpering of the concerned user pair in a distribution frame (either in Customer Premises, street cabinet, LDC, MDF).

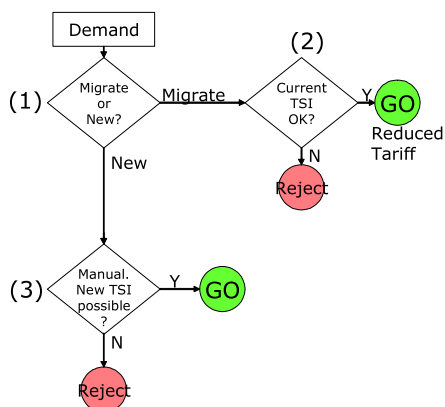
Details of current pair selection criteria for Type1:

- 1) Service availability
 - OLO has Type1 facilities at the concerned MDF and a free block position is transferred to BGC.
- 1) Pair continuity:
 - No Pair Gain System or filter (for 1+1) on the line, neither loading coils
- 2) Pair position in the cable:
 - No special requirements
- 3) Service compatibility, e.g.:
 - No DOVE line
 - No pay-phone infrastructure on this line
 - TSI is not a service-line
 - Only on single telephony line (no PBX, MSN number, DID, maintenance line, ...) or other Belgacom Service (e.g. LL, ...)
 - no reserved positions in TSI (i.e. other demand ongoing)

General remark:

A manual process is currently implemented..
Automation will be foreseen if volumes justify cost.

Current Raw Copper- Type2 Pair Selection Process



- (1) The OLO has the choice to introduce a demand for 'migrate' or 'new'. In case 'migrate' is possible a reduced installation tariff will be applied, as no truck roll out is necessary for re-jumpering at a lower level than the MDF.
- (2) Check if the current technical situation (TSI) of the 'active' line, the OLO wants take over, can be used 'as such', i.e. fulfils all 'pair selection criteria'.
 - 'pair selection criteria'**
 - **service availability**: the service (RC-TYPE1) is possible at the concerned MDF.
 - **pair continuity**: a full metallic pair exists between MDF and end customer
 - **pair position in the cable**: application of pair selection rules
 - **service compatibility**: migrate possible for PSTN/ISDN lines and other Belgacom Services (e.g. LL, ...)
 - **length**: No criteria for length
- (3) Search for a new technical situation (TSI), that fulfils all pair 'selection criteria' (see above) and can be realised by intervention of an electrician, i.e. by re-jumpering of the concerned user pair in a distribution frame (either in Customer Premises, street cabinet, LDC, MDF).

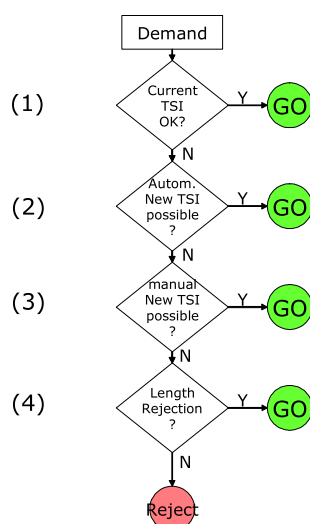
Details of current pair selection criteria for RC-Type2:

- 1) Service availability:
 - OLO has RC-Type1 facilities at the concerned MDF and a free block position is transferred to BGC.
- 2) Pair continuity:
 - No Pair Gain System or filter (for 1+1) on the line, neither loading coils
- 3) Pair position in the cable:
 - No HS Transmission line(2Mbit) in same quad or in quad +1/-1
- 4) Service compatibility, e.g.:
 - No DOVE line
 - No pay-phone infrastructure on this line
 - TSI is not a service-line
 - Only on single telephony line (no PBX, MSN number, DID, maintenance line, ...) or other Belgacom Service (e.g. LL, ...)
 - no reserved positions in TSI (i.e. other demand ongoing)

General remark:

A manual process is currently implemented.
Automation will be foreseen if volumes justify cost.

Shared Pair Pair Selection Process



- (1) Automatic check if current technical situation (TSI) of the PSTN/ISDN line, on which the OLO asks Shared Pair (SP), can be used 'as such', i.e. fulfils all 'pair selection criteria'.

'pair selection criteria':

- **service availability:** the service (Shared Pair) is possible at the concerned MDF.
- **pair continuity:** a full metallic pair exists between MDF and end customer
- **pair position in the cable:** application of pair selection rules
- **service compatibility:** Shared pair is only possible on simple PSTN/ISDN lines
- **length:** criteria of length as defined by BGC to ensure QoS

- (2) Automatic search for a new technical situation (TSI), that fulfils all pair 'selection criteria' (see above) and can be realised by intervention of an electrician, i.e. by re-jumpering of the concerned end customer pair in a distribution frame (either in Customer Premises, street cabinet, LDC, MDF).

- (3) The automatic pair selection processes may have either not been possible or did not succeed.

- Not possible: when an infrastructure project work (e.g. due to road works, network extension, ...) is ongoing on a cable, KVD,... the automatic pair selection process is blocked and pairs can only be assigned by the (local) Network Planning Services, responsible for these works

- Not succeeded: When the (simple) rules of the automated pair selection process were not able to cope with the network complexity, a manual assignment is tried, using the same principles for pair selection as in the automatic case (see (1) & (2)).

Remark: Extra manpower and process time is needed, which may be several days, when (local) Network Planning Services need to intervene.

- (4) If only reason for reject is line length, this rejection will be overruled.

Details of current pair selection criteria for Shared Pair:

- 1) Service availability:
 - OLO has SP facilities at the concerned MDF and a free, appropriate (PSTN or ISDN) splitter position is transferred to BGC.
- 2) Pair continuity:
 - No Pair Gain System or filter (for 1+1) on the line, neither loading coils
 - no bridged taps
- 3) Pair position in the cable:
 - No HS Transmission line(2Mbit) in same quad or in quad +1/-1
- 4) Service compatibility, e.g.:
 - No 16kHz taxation pulse on the line
 - No DOVE line
 - No pay-phone infrastructure on this line
 - TSI is not a service-line
 - Only on single telephony line (no PBX, MSN number, DID, maintenance line, ...)– no reserved positions in TSI (i.e. other demand ongoing)
- 5) Length check:
 - normal BGC rules will be overruled by step (4)

General remark:

The automatic part of the process is currently being implemented.

Characteristics of Cabling

1. Transmission properties of the access network

1.1. Generalities

- 1 A subscriber loop consists of sections of twisted pairs cables of different gauges. All the sections are buried and connected together by means of electrical joints, called splices, directly placed in the ground or sometimes in a manhole.
- 2 In the ideal situation, the Access Network has a star configuration with the feeder cable bundles going from the main distribution frame to the street cabinet. From the street cabinet, via distribution cables and drop wires, the wire pairs are terminated at the NTP (Network Termination Point) in the individual customer sites. The reality shows that cable arrangements leads sometimes to a meshed structure in the feeding network.
- 3 Each telecom cable consists of a number of copper conductors grouped in quads; these quads can be arranged in bundles or in layers, depending on the type of cable.

1.2. Physical characteristics of the cables

- 4 A conductor can be isolated by a layer of paper (in the old generation cables) or synthetic material, usually polyethylene.
- 5 Most of the conductors have a 0.5 mm or 0.6 mm diameter; distant customers however needs to be connected via conductors of 0.8 and 1.0 mm; 2000 pairs cables going out of the central office are sometimes made of 0.4 mm conductors.
- 6 In paper insulated cables, the conductors are surrounded by a lead sheath, generally protected by armouring and polyethylene sheath.
- 7 In plastic insulated cables used in the distribution network, the conductors are surrounded by a polyethylene sheath.
- 8 In plastic insulated cables used in the feeding network, the conductors are surrounded by an aluminium screen, a polyethylene internal sheath, an armouring and a polyethylene external sheath.
- 9 The plastic cables are in the majority of the cases longitudinally waterproof.

1.3. Electrical characteristics of the cables

- 10 The table below gives some typical characteristics of the access network cables [figures given by the cable manufacturers or by measurements in the field]

Diameter	LR	KC	A800	A40.000	A150.000	A300.000

0.4 mm	275	55	2.0	7.5	11.5	14.5
0.5 mm	180	50-55	1.3	6	9	11
0.6 mm	123	38.5-46	1.0	4	6	8
0.8 mm	69	38.5	0.7	2.5	4	5.5

LR = Loop Resistance in ohm/km

KC = average Kilometric Capacity in nF/km (it depends on the type of cable)

A800 = Attenuation measured at 800 Hz in dB/km

A40.000 = Attenuation measured at 40.000 Hz in dB/km

A150.000 = Attenuation measured at 150.000 Hz in dB/km

A300.000 = Attenuation measured at 300.000 Hz in dB/km

- 11 NB: the attenuation values are conditional. The reader must note that these figures are given for cable. A loop is made of several pieces of cables and then additional attenuation and reflections due to the splices and the different cable gauges will occur.
- 12 For the insulation resistance between the 'a' and 'b' wires of a pair (without terminal equipment) or between wire and earth, reference is made to Annex C : Technical Specifications.

Annex Jh

KVD-Streets Information

KVD-Streets Information

- 1 The Beneficiary can request an inquiry to obtain the streets that depend on a KVD. His requests can be sent by e-mail to the Belgacom Customer Service for LLU
- 2 (e-mail: **car.llu@belgacom.be**).
- 3 A request can include 1 or more KVD numbers + network name.
- 4 Depending on the extent of the request, the average response time for 10 KVD's for example is targeted at +- 3 working days. The inquiry results will be replied to by e-mail.
- 5 Pricing information for the KVD-Streets Information is listed in Annex H.
- 6 Service start will be communicated.

BROBA

BROBA

Belgacom Reference Offer for Bitstream Access

BROBA II ADSL (covering the technologies ADSL, Reach Extended ADSL2 and ADSL2+)

Main Body

This document starts to produce effects as of 21st of June, 2010 and will be valid until a subsequent Reference Offer is validly published.

As from 21st of June, 2010, interested Beneficiaries are in a position to use the Open Calendar facilities.

However, the rights and obligations related to Certified Technician will only be applicable as from 11th of October, 2010.

Belgacom reminds that several appeal proceedings were introduced by Belgacom before the Court of Appeal against some of the BIPT decisions related to BROBA. This new version of BROBA is published

by Belgacom without any adverse recognition and without prejudice to Belgacom interests. It shall under no circumstances be considered as a waiver by Belgacom of its rights and interests in the concerned appeal proceedings.

This document starts to produce effects as of 05/11/08 and until a subsequent Reference Offer is validly published—As from 05/11/2008 interested Beneficiaries are in a position to make a request for the services covered by the present document.

This document is in accordance with BIPT's decision.

With a view to the signature of the contract, the BROBA can be negotiated by the parties and does not substitute for the parties' will.

Except otherwise agreed by the parties, the contract shall be adapted if the BROBA is modified. This adaptation shall be in accordance with this BROBA's modification.

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1. Glossary

- Access Line: an Access Line is an interface between a Belgacom ATM switch located in an ATM Access Point and the Beneficiary Equipment. From patch line + data link + transmission to the Beneficiary
- ATM Access Point: an ATM Access Point provides access to the Belgacom ATM network through NNI connection with a Belgacom ATM switch.
- Beneficiary Equipment: Beneficiary equipment or any other equipment
- Certified Technician: Any technician employed either by a Beneficiary or by one of Beneficiary's subcontractors, trained and certified by Belgacom in order to perform, in place of a Belgacom technician, the installation of the BROBA 2 ADSL without voice lines.
- DSLAM: Digital Subscriber Line Access Multiplexer. DSLAMs are located in Belgacom Local Exchanges and they are owned and managed by Belgacom.
- Lex: Belgacom Local Exchange
- Network Termination Point (NTP): The termination point of a loop at the User premises. The Network Termination Point is a part of the Belgacom network.
- Except in the Main Body where each concerned technology is clearly specified, in all other BROBA documents the word "ADSL" equally refers to ADSL, Reach Extended ADSL2, and ADSL2+, unless specified otherwise.

2. Scope

1. This document entails the conditions related to the provision by Belgacom to the Beneficiary, of the Broba II ADSL, Reach Extended ADSL2 or ADSL2+ service, which will enable the Beneficiary to define its own ADSL, Reach Extended ADSL2 or ADSL2+ products and to market, distribute and sell under its name and on its behalf its own ADSL, Reach Extended ADSL2 or ADSL2+ products towards Users, using Belgacom installed and existing Network infrastructure, pursuant to the technical limitation of this existing infrastructure for offering the service.
2. The attention is drawn to the fact that taking into account that the present offer by definition implies the use of Belgacom DSLAM, this offer is related to the provision of ADSL, Reach Extended ADSL2, or ADSL2+ services only. In the future, this offer could be enlarged to other DSL technologies, after approval by BIPT as soon as these technologies are tested and at least 3 months before they are commercialized (retail and/or wholesale) by Belgacom.
3. This offer and its tariffs are only applicable for case where DSLAMs are located in Belgacom premises (LEX or LDC or KVD when provided by Belgacom in the framework of its own retail or wholesale offer). In particular, for ADSL2+, this offer will only be applicable for cases where ADSL2+ enabled DSLAMs are installed in Belgacom premises (LEX or LDC or KVD when provided by Belgacom in the framework of its own retail or wholesale offer). The list of ADSL2+ enabled DSLAMs will be available on the Operator Personal Page of the CWS secured website.
4. Due to incompatibilities between ADSL2+ and other technologies installed on the Belgacom loops, the loops served by some KVD's are excluded from the present offer. The list of the concerned KVD's is available on the Operator Personal Page of the CWS secured website.
5. This document contains the technical, operational and financial conditions, as well as a possible method of connection and the applicable terms and conditions related to such service.
6. The provision of the hereunder-described service supposes the following list of prerequisites that will need to be met at all times and in all circumstances:
 - Connection between the network of the Beneficiary and the Belgacom network (hereafter the "Network") is established pursuant to the principles set out in this document;
 - A line from the User to the LEX + LDC'S + Other relevant points where BELGACOM installed DSLAM's must be available

- If Small Networks Adaptations (SNA) works are required to deliver the service, they are allowed following the SNA rules used by Belgacom in its provisioning process;

If an impossibility to provision the service cannot be solved by SNA works, the order will be rejected;

3. Usage of a unique reference for migrations of without PSTN or ISDN Belgacom services

7. In scope of migration requests that a Beneficiary sends to take over a BRUO/BROBA service “without PSTN or ISDN Belgacom services” from another Beneficiary or a Belgacom ADSL without voice service, there will be an issue in the identification of the copper pair on addresses with for example more than one pair in service.
8. For a migration request from a BROBA/BRUO without PSTN or ISDN Belgacom service or from a Belgacom ADSL without voice service, the Beneficiary will include the circuit ID of the service communicated to the prior Beneficiary as identification of the service to be migrated.
9. The circuit ID that has been communicated by Belgacom at the provisioning of a new BRUO/BROBA service or of a new Belgacom ADSL without voice service is a unique reference that will identify both the service and the copper pair.
10. The service Beneficiary, communicates for all services without PSTN or ISDN Belgacom services the circuit ID, provided by Belgacom, to its User. This should be done by including this reference on the bills and contracts that is sent to the User for the service based on BRUO/BROBA. By that, in case of migration, the circuit ID can be exchanged between a Beneficiary and the User, just like is done today with the dial number. As a consequence the Circuit ID can be included systematically in the migration orders and this will avoid further problems in this case.
11. The Belgacom ADSL without voice service is identified by a circuit-id which can be found at the invoice as the identifier of the paragraph 'Internetverbinding/Connection Internet'.

4. Description of the Broba II ADSL, Reach Extended ADSL2 and ADSL2+ services in scope of the present offer

4.1 General

12. The provision by Belgacom to the Beneficiary of Broba II ADSL, Reach Extended ADSL2, or ADSL2+ service will enable the Beneficiary to define its own ADSL, Reach Extended ADSL2, or ADSL2+ products, and to market, distribute and sell under its name and on its behalf its own ADSL, Reach Extended ADSL2, or ADSL2+ products towards users, using Belgacom's installed and existing network infrastructure, pursuant to the technical limitation of this existing infrastructure for offering this service.
13. Beneficiaries shall be able to benefit from any changes in the Belgacom network infrastructure similar to what Belgacom is offering to its own retail services, and Beneficiaries shall be notified duly in advance of any changes in its "existing" infrastructure: at least 12 months in advance for any changes which may have a significant impact on the service offering and at least 6 months in advance for any minor changes. The BIPT will be informed in any case. Concerning the periods of notice, the BIPT can allow exceptions.
14. This offer is related to the provision of ADSL, Reach Extended ADSL2, or ADSL2+ services only but may evolve according to other DSL technologies planned by Belgacom and offered as Bitstream Access Services at least 3 months before commercialisation by Belgacom. The Broba II ADSL, Reach Extended ADSL2, or ADSL2+ will allow the Beneficiary to connect on Belgacom network at ATM Access Points and to receive any ATM cells from the User using ADSL, Reach Extended ADSL2, or ADSL2+ technology. The transport end-to-end between the User and the Beneficiary is ATM.
15. The present offer is offered in combination with ATM transport and ATM transport only. The resources to satisfy new demands for additional ATM capacity might no longer be available. Belgacom shall in no event be obliged to engage new investments in order to satisfy additional ATM demands from Beneficiaries of the present offer.
16. In case of Belgacom is not able to satisfy new demands for additional ATM capacity, it is entitled to look for alternatives. In particular Belgacom will in such case be entitled to use Ethernet as technical means to ensure the BROBA transport. This without prejudice to the continuation of existing ATM transport used by the Beneficiary.
17. The acceptance of the present offer is under the express consent that the technical ATM solution is susceptible of changing in the future. Such change will be done in respect of the timing and procedure set out in the following paragraphs.
18. Prior to the first change of transport handling from ATM to Ethernet in the framework of the present BROBA offer, Belgacom will propose a specific addendum for approval to BIPT that changes the present offer by adding the required information related to technical specifications; IT requirements and the service points for handover of traffic.
19. For any subsequent change in the handling and hand-over of the traffic from ATM to Ethernet Beneficiary will be notified prior to this change. The effective change will be done after the Beneficiary has been notified and after the Beneficiary was in the possibility to order its Ethernet connectivity for a specific location.
20. Belgacom's vendor of DSLAM for ADSL products is Alcatel. The Belgacom ADSL network is currently based on Alcatel A1000 and A7300 DSLAM's, version 4.x and 5.
21. The Bitstream access service is offered on basis of the equipment delivered by Belgacom's supplier at the moment of the equipment's bringing into service in a given site.
22. This implies that several versions can co-exist at the same time, for the use of Belgacom as well as for the Beneficiaries of the service.

23. When new DSLAM versions are planned by the supplier, Belgacom will inform the BIPT with a prior notice of 6 months or as soon as Belgacom is informed by its supplier. Belgacom will offer this equipment and equipment software to the Beneficiaries of the service. The functions not related to ATM are not applicable within the BROBA framework.

If Belgacom makes use of a “last buy option” proposed by its supplier at the moment of a version change, Belgacom will immediately inform the Beneficiaries and the BIPT.

24. Each new equipment or each new equipment software used by Belgacom for its retail or wholesale services will be made available for the Bitstream Access Services.
25. In case of software evolutions, Belgacom shall ensure that the software will be compatible with the previous one on the same configuration and will inform the Beneficiary, about the changes and their consequences. In case of Belgacom own pieces of software that would make the solution proprietary to the Belgacom environment, Belgacom shall ensure the compatibility of subsequent versions with the old ones
26. If Belgacom has to proceed to an upgrade or replacement of equipment or software equipment, this will be done under one or several of the following conditions:
- The new equipment software is compatible with the previous one and allows the same configurations;
 - The new equipment or equipment software is compatible with installed CPEs and modems as agreed by BelcomLab;
 - The old equipment or equipment software is, for any reason, no more available from the supplier;
 - The concerned equipment or equipment software is written-off by all parties
 - Investments to be realized by all parties are reasonable and justified;

Belgacom can deviate from these conditions if justified to and approved by BIPT.

Belgacom will inform the concerned parties before any upgrade or replacement: six working days for an upgrade or a maintenance patch, one working day for a correcting maintenance patch.

Belgacom will give an estimation and a description of the eventual potential alteration of the service.

27. Belgacom will ensure the management of the DSLAM and the proper configuration of it. This management and all relevant possibilities-functionalities (also the database aspect) will be described to the Beneficiary on simple demand.
28. The offering of service covers:
- The provision by Belgacom of bandwidth between the DSLAMs located in the Local Exchanges and LDC's or other relevant points where Belgacom installed DSLAM's in which the Beneficiary wants to connect User and the Belgacom ATM Access Point to which the Beneficiary Equipment is connected;
 - The provision by Belgacom of an Access Line between the Beneficiary Equipment and the Belgacom ATM Access Point;
 - The provision and the configuration by Belgacom of ATM Transport (use of CBR, VBR or UBR+ service as defined further in this offer) between the DSLAM and the Beneficiary Equipment.
29. In any event the service shall only be provided on the condition that the provisioning is supported by fully implemented processes and systems and can be treated in an automated way, unless Belgacom chooses – e.g. for reasons of efficiency - to do otherwise for reasons of efficiency.

4.2 Bandwidth between the Local Exchanges and the Belgacom ATM Access Point to which the Beneficiary equipment is connected

30. The Beneficiary will order bandwidth and more precisely Virtual Paths (VPs) between each DSLAM¹ located in the Lex + LDC's + other relevant points where Belgacom installed DSLAM's in which the Beneficiary wants to connect Users and the Belgacom Access Point to which the Beneficiary is connected.
31. The minimum bandwidth that has to be ordered by the Beneficiary between each DSLAM² in a LEX (or LDC or KVD) when provided by Belgacom in the framework of its own retail or wholesale offer and a Belgacom ATM Access Point is 256kbps PCR³. Bandwidth is available on request of the Beneficiary with a granularity of 256 kbps. The maximum bandwidth that can be ordered by VP by Beneficiary is explained in the BROBA Annex 6 "Pricing and Billing", in section 1.3.1, paragraph 34.
32. The Belgacom ATM Access Point(s) to which the Beneficiary Equipment is connected by means of an Access Line has (have) to be located in the same Access Area as the DSLAM(s) in the Lex(s) (or LDC(s) or KVD(s)) in which he wants to connect Users.
33. The list of Access Areas is available in Appendix C. The list of DSLAM's is available on the Operator Personal Page of the CWS secured website.

4.3 Access Line between Belgacom ATM Access Point and the Beneficiary Equipment

34. An Access Line will be established between the Beneficiary Equipment and the Belgacom ATM switch, located in the Belgacom ATM Access Point, to which the Beneficiary equipment is connected.
35. The list of Belgacom Access Areas is available in Appendix C.
36. The connection between the Belgacom ATM switch and the Beneficiary Equipment is subject to successful testing procedure, as set forth in Annex 2 (Section 1: ATM tests for Belgacom Data Connectivity).
37. The Beneficiary is allowed to do overbooking on the access line. Each Beneficiary is responsible for its dimensioning and the risks run by this one. The Beneficiary is allowed to do overbooking on the access line and Belgacom cannot refuse to provision a new or an upgrade of a VP/VC. However, when the sum of the guaranteed bandwidths of all VP's on an access line exceeds the SCR of that access line capacity, any trouble ticket opened at Belgacom by the Beneficiary which leads to the conclusion that the request for repair has as origin an excessive overbooking will be invoiced to the Beneficiary at the tariff of Wrongful Repair Request and the timer conditions as set out in the SLA and Improved SLA will not be of application to this trouble ticket.
38. The Access Line is made of:
 - A Patch Line as described in Section 4.3.1;
 - A Data Link as described in Section 4.3.2;
39. For information on the Technical Specifications of the Access Line, reference is made to Annex 2 (Section 2: Specifications of the Access Line).

4.3.1 Patch Line

¹ Only applicable to the DSLAMs listed on the Operator Personal Page of the CWS secured website.

² Only applicable to the DSLAMs listed on the Operator Personal Page of the CWS secured website.

³ Ratio 1 only.

40. The Patch Line is the physical element which consists of a coax line between the Belgacom ATM switch and the Belgacom DDF for transmission capacities up to 34 Mbps. For rates exceeding this threshold, the Patch Line is the physical part which consists of the fibre link (including necessary transmission equipment) between the Belgacom ATM switch and the ODF.
41. The Patch Line is installed and maintained by Belgacom. The Patch Line has to be paid by the Beneficiary in both Customer-Sited and Belgacom-Sited Data Links Solutions.
42. The fees to be paid by the Beneficiary and corresponding to this Patch Line are specified in Annex 6 of this document.

4.3.2 Data Link

43. The Data Link is the physical element between Belgacom Distribution Frame and the Beneficiary equipment.
44. By default, Data Links consist of a Customer-Sited Data Link Service as described in Appendix A.
45. Depending on Beneficiary's request, as explained in Appendix A, Data Links can be realized by means of Belgacom-Sited Data Link Service as described in the same Appendix.

4.4 ATM Transport between the DSLAM and the Beneficiary Equipment

46. Virtual Paths (VPs) will be configured by Belgacom, on behalf of the Beneficiary, to transport the ADSL and/or Reach Extended ADSL2 and/or the ADSL2+⁴ traffic of the Beneficiary's Users from the DSLAMs on which Beneficiary's Users are connected up to the Beneficiary's Equipment and reversely.
47. In each Lex + LDC's + other relevant points where Belgacom installed DSLAM's, Belgacom will create, for the Beneficiary, maximum 12 VP per DSLAM to which the Beneficiary's Users are connected to in order to transport the ADSL and/or Reach Extended ADSL2 and/or the ADSL2+⁵ traffic of these Users from the DSLAM they depend up to the Beneficiary Equipment and reversely.
48. These VP's can be of the following QoS:
 - CBR;
 - VBR rt with PCR/SCR ratio between 1 and 8;
 - VBR nrt with PCR/SCR ratio between 1 and 8.
 - UBR+⁶
49. For more information on the CDVT and MBS, reference is made to Annex 2: Technical specifications – section 3 (VP connectivity between Belgacom DSLAM and the Beneficiary)

⁴ Only applicable for cases where ADSL2+ enabled DSLAMs are installed in Belgacom premises.

⁵ Only applicable for cases where ADSL2+ enabled DSLAMs are installed in Belgacom premises.

⁶ UBR+ is not specific to Belgacom equipment

4.5 Activation of ADSL, Reach Extended ADSL2, or ADSL2+ on a specific User line

50. Subject to the conditions that the Beneficiary has ordered the necessary infrastructure (Access Line and Virtual Path(s)), the Beneficiary will be able to offer to Users services based on ADSL, Reach Extended ADSL2, or ADSL2+ technology, using Belgacom's installed and existing Network infrastructure, pursuant to the technical limitation of this existing infrastructure for offering ADSL, Reach Extended ADSL2, or ADSL2+ technology.
51. Belgacom will deliver Broba II ADSL, Reach Extended ADSL2 or ADSL2+ service to specific Users according to the Beneficiary's orders transmitted to Belgacom. Belgacom is able to configure the individual lines of Users at the DSLAM level on basis of following characteristics:
 - Maximum 12 VP per DSLAM;
 - Maximum 10 VC per ADSL, Reach Extended ADSL2 or ADSL2+ connection;
 - VP of minimum 256kbps SCR per DSLAM
 - VP granularity of 256 kbps;
 - ADSL, Reach Extended ADSL2 or ADSL2+ lines and ATM profiles: see point 52.
52. (For so long that the total number of line profiles in the system is below 128), the Beneficiary can obtain 8 own ADSL or Reach Extended ADSL2 or ADSL2+ Line Profiles and 8 own ATM Profiles. Additionally, the Beneficiary can use the profiles defined in a common pool of 20 ADSL, 2 Reach Extended ADSL2, and 2 ADSL2+ Line Profiles and 100 ATM Profiles. To provision a BROBA II line under a specific technology (i.e. : ADSL, Reach Extended ADSL2 or ADSL2+), the Beneficiary may only use its own profiles, or the common profiles, defined for this technology.
 - The ADSL or ADSL2+ profiles in the common pool will be added after agreement of all concerned Beneficiaries and Belgacom.
 - The Reach Extended ADSL2 profiles in the common pool will be defined for maximum downstream bit rates of 1120 kbps and 512 kbps, other values being maximum upstream bit rate 192, and minimum downstream and upstream bit rates of 32 kbps.
 - The 2 ADSL2+ profiles in the common pool will be defined for maximum downstream bit rates of respectively 9.024 kbps and 12.000 kbps, other bit rate values being maximum upstream 512 kbps, minimum downstream 288 kbps and minimum upstream 96 kbps.
53. The CoS of a VC on the DSLAM has to be of the same type, or lower, than the VP or VC requested in the ATM network: VBR rt VP or VC (ATM) can content CBR or VBR rt VC or lower (DSLAM) and VBR nrt VP or VC (ATM) can only content UBR+ or VBR nrt VC (DSLAM).
54. The provision of ADSL, Reach Extended ADSL2 or ADSL2+ on an existing User line requires the installation of an in-line filter or a full rate splitter both at the User designated premises and at the Belgacom Local Exchange concerned to split the traffic between data and voice. At the Belgacom Local Exchange side, this filter is integrated in the DSLAM.
55. The provision of ADSL, Reach Extended ADSL2 or ADSL2+ on an existing User line also requires the installation of a modem or a modem/router at the User side. The access to the Broba II ADSL, Reach Extended ADSL2 or ADSL2+ Service at the User site will be at the Belgacom Network Termination Point (NTP).
56. For the BROBA II ADSL, Reach Extended ADSL2 or ADSL2+ with voice service, an intervention of a Belgacom technician on the User site will be required in the following cases:
 - For ADSL or ADSL2+, if the User has an ISDN line and the User site does not have an AETHRA NT1-2ab as Belgacom Network Termination Point;
 - In case of new activation, if the User line has an alarm configuration (X25 line)⁷
 - In case of new activation, if the User line has a PABX configuration⁸

⁷ A line containing an alarm is fixed for security reasons into the wall or the wall socket. Installation using a micro filter is therefore impossible. A full rate splitter is installed by Belgacom.

57. At the time of installation, this intervention, named Telecom installation⁹, will relate to the fact that, in these cases, a splitter will be installed by Belgacom between the Belgacom Network and the Network Termination Point at the User site.
58. The Beneficiary is responsible to provide Belgacom with the correct information regarding the type of equipment present at the User premises only in case of PABX and/or ISDN and/or alarm configuration (if any).
59. For information, the modem or modem/router used by the User must be in conformity with the applicable standardization and its interoperability with the DSLAM must have been demonstrated. Belgacom will participate together with the Beneficiary in the solving of interworking issues.
60. The ATU-C handles different standards and supports ADSL, Reach Extended ADSL2 or ADSL2+ modems in conformity with Belgacom's UNI.
The technical specifications of the User to Network Interface (UNI) for ADSL, Reach Extended ADSL2 or ADSL2+ equipments to be connected to the Belgacom network can be found on:
 - http://www.belgacom.com/group/9/legal_technic/en/network-specifications.html

List of common modems tested by Belcomlab according to Belgacom UNI standard:

 - <http://www.belcomlab.com/fr/default.htm>
61. However, attention is drawn to the fact that an ATU-R based on the mentioned standards does not guarantee full interoperability with the ATU-C of Alcatel up to service level since interoperability is still under investigation.
62. Reach Extended ADSL2 is not supported for ISDN lines.
63. For ADSL or ADSL2+, the splitter and modem type are dependent on the type of telephone line (PSTN or ISDN). Consequently, any cancellation or any conversion on the telephone services may possibly affect the Beneficiary ADSL or ADSL2+ based service and requires the installation of new equipment at the User premises, at the Beneficiary expense, for the ADSL or ADSL2+ based service in question.
64. Attention of the Beneficiary is drawn to the fact that, for ADSL over ISDN related technology, the ISDN-low-pass filter standardization is not standardized yet (type 3 within ANNEX E from ITU-T 992.1) and mentioned as subject for further study by the standardization commissions. When applying an ADSL over ISDN low-pass filter at the Beneficiary side, it needs to be taken into consideration that in the Belgacom network, for ISDN, 4B3T line coding is used.

4.6 Small Network Adaptations

65. The Introduction Cable (also referred to as drop wire) is defined as the physical part of a End-User line that connects the Distribution Cable to the End-User Network Termination Point.
66. In some cases, the pair of fully metallic continuous unequipped copper wires exists from the Belgacom Main Distribution Frame at the Belgacom LEX or LDC up to the Distribution Cable in the street in front of the User premises.
67. In case no Introduction Cable is available for the provisioning of a Broba II ADSL, Reach Extended ADSL2 or ADSL2+ without voice, the following solutions, called Small Network Adaptations, will be applicable:
 - Realization of a new introduction in the building of the Beneficiaries User

⁸ The Telecom installation of a BROBA ADSL with voice line consists of the installation of a full rate splitter (conventional splitter), the placement of maximum 20 meters cable after the introduction point and a RJ11 plug on which the User can connect his modem.

⁹ The Telecom installation consists of the installation of a full rate splitter (conventional splitter), the placement of maximum 20 meters cable after the introduction point and a RJ11 plug on which the User can connect his modem.

- Renewal of the introduction in the building of the Beneficiaries User
 - Splicing additional pairs in the existing introduction splice of the building of the Beneficiaries User
 - Moving existing introduction from an existing Distribution Cable to another existing Distribution Cable.
68. These solutions will only be available upon specific request of the Beneficiary and providing that the Belgacom standard conditions for access are fulfilled. This requires that a free duct or an open trench is available on the private domain. If a free duct or an open trench is not available on the private domain, Belgacom can be asked to also perform this part of the work on condition that the Beneficiary agrees to pay the non-discriminatory commercial price for that part of the work performed by Belgacom. This price will be determined on a case-by-case basis.
69. The certified technicians will never perform Small Network Adaptations.
70. Belgacom will only perform the Small Network Adaptations if the splicing is done in front of the premises of that specific User. Belgacom will provide an Introduction Cable with a standard length of 20 meters to provide connection between the Distribution cable and the Network Termination Point. In case an introduction with a length more than 20 meters has to be provided, Belgacom will charge the Beneficiary the relevant price for the extra work. On the private domain, duct and trench must be provided by the Beneficiary.
71. In case no more free pairs are available in the Distribution Cable or the Feeder Cable, the request for Broba II ADSL, Reach Extended ADSL2 or ADSL2+ without voice will be rejected. The construction or trenching of new distribution cabling, new street cabinets or new feeder cabling is outside the scope of the present offer.

4.7 Network Termination Point

72. The Network Termination Point is the first termination point of a loop at the User premises.
73. The access to the high bandwidth at the User will be at:
- The Belgacom Network Termination Point (NTP) in case of distributed splitter
 - The splitter egress in case of Full Rate Splitter (Also called conventional splitter)
74. The provision of ADSL, Reach Extended ADSL2 or ADSL2+ on an existing User line requires the installation of a modem or a modem/router at the User side:
- For single line PSTN service, the Beneficiary will install a distributed splitter on the Belgacom Network Termination Point at User site or a Full rate splitter between the Belgacom Network and the Network Termination Point at User site.
 - For ADSL or ADSL2+ and a single line ISDN service with Telecom installation, Belgacom will install a Full Rate splitter between the Belgacom Network and the Network Termination Point at the User site. Belgacom is responsible up to the splitter-splitter included
 - For ADSL or ADSL2+ and a single line ISDN service without Telecom installation, the Beneficiary will install a Full Rate splitter between the Belgacom Network and the Network Termination Point at the User site. Belgacom is responsible up to the splitter-splitter excluded
 - For line without voice, Belgacom or – if decided by the Beneficiary – a certified technician chosen by the Beneficiary will in some cases install a Network Termination Point¹⁰. This intervention will be called Telecom installation.
- ~~74. The provision of ADSL or Reach Extended ADSL2 on an existing User line requires the installation of a modem or a modem/router at the User side:~~

¹⁰ For line without voice, Belgacom or – if decided by the Beneficiary – a certified technician chosen by the Beneficiary, will install a Network Termination Point in case the documentation of the Beneficiary or the documentation of Belgacom indicates that the NTP is not present. The process is further detailed in Appendix B: "NTP process for Provide New BROBA II without voice products".

- ~~For single line PSTN service, the Beneficiary will install a distributed splitter on the Belgacom Network Termination Point at User site or a Full rate splitter between the Belgacom Network and the Network Termination Point at User site.~~
 - ~~For ADSL and a single line ISDN service with Telecom installation, Belgacom will install a Full Rate splitter between the Belgacom Network and the Network Termination Point at the User site. Belgacom is responsible up to the splitter splitter included~~
 - ~~For ADSL and a single line ISDN service without Telecom installation, the Beneficiary will install a Full Rate splitter between the Belgacom Network and the Network Termination Point at the User site. Belgacom is responsible up to the splitter splitter excluded~~
 - ~~For line without voice, Belgacom will install a Network Termination Point in case the information of the Beneficiary or the documentation of Belgacom indicates that the NTP is not present. The process is further detailed in Appendix B: "NTP process for Provide New BROBA II without voice products". This intervention will be called Telecom installation.~~
75. In case of Small Network Adaptation, if a Network Termination Point must be installed, it will be at no extra cost for the Beneficiary, as this cost is included in the SNA fee.
76. The NTP can be of the following types:
- PSTN Lines:
 - i. TF95
 - ii. TF2001
 - iii. TF2007
 - ISDN Lines (in case of ADSL):
 - iv. TWIN
 - v. NT1
 - Lines without voice:
 - vi. TF2001
 - vii. TF2007
77. The Network Termination Point is a part of the Belgacom network.
78. The NTP makes part of the Belgacom public infrastructure. Belgacom is owner of this infrastructure and of this NTP.

4.8 Move from LDC to LEX

79. If a DSLAM is available in the LDC, VPs may be ordered in the LDC concerned in case the Beneficiary wants to connect end-users in that local net.
80. However, if a Beneficiary requests to move an end-user line from a LDC to a LEX, Belgacom will perform the work under the condition that there are enough available copper cables in the junction between the LEX and the LDC.
81. Since this move can often lead to malfunctioning of the end-user line, any trouble ticket that will be opened by the Beneficiary - and for which the diagnostic is that the issue is the consequence of the move – will be considered as a wrongful repair request.
82. If the Beneficiary asks to move back the line to its LDC, an activation fee will be invoiced to the Beneficiary.

4.9 Deployment rules

4.9.1 ADSL

83. ADSL is allowed for loops with attenuation at 800Hz less than 6,5dB.
84. In order to improve the provisioning process and the repair process of Broba II, ADSL deployment curves have been developed on basis of statistics of actual network. Different curves are defined for ADSL over POTS and for ADSL over ISDN as well as for the upstream and the downstream for both ADSL flavours. Those curves are only deployment rules and not a performance guarantee. The curves are subject to evolution and could be reviewed.

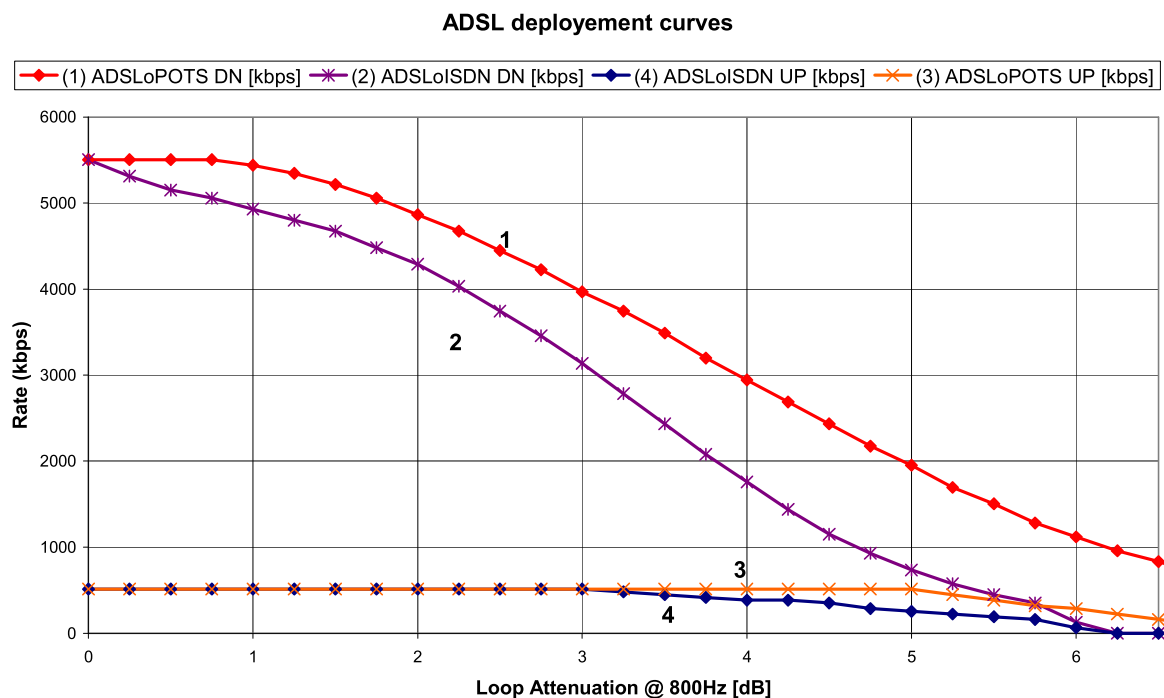


Fig. 1

The axes of the above graphic are the loop attenuation at 800Hz, versus the attainable bit rate.
Line 1, the most upper line, represents the ADSL over POTS downstream.
Line 2 represents the ADSL over ISDN downstream.
Line 3 represents the ADSL over POTS upstream.
Line 4 represents the ADSL over ISDN upstream.

85. The discrete values related to the above curve are listed hereunder:

Att @ 800Hz [dB]	ADSLoPOTS		ADSLoISDN	
	(3) ADSLoPOTS UP [kbps]	(1) ADSLoPOTS DN [kbps]	(4) ADSLoISDN UP [kbps]	(2) ADSLoISDN DN [kbps]
0	512	5504	512	5504
0,25	512	5504	512	5312
0,5	512	5504	512	5152
0,75	512	5504	512	5056
1	512	5440	512	4928

1,25	512	5344	512	4800
1,5	512	5216	512	4672
1,75	512	5056	512	4480
2	512	4864	512	4288
2,25	512	4672	512	4032
2,5	512	4448	512	3744
2,75	512	4224	512	3456
3	512	3968	512	3136
3,25	512	3744	480	2784
3,5	512	3488	448	2432
3,75	512	3200	416	2080
4	512	2944	384	1760
4,25	512	2688	384	1440
4,5	512	2432	352	1152
4,75	512	2176	288	928
5	512	1952	256	736
5,25	448	1696	224	576
5,5	384	1504	192	448
5,75	320	1280	160	352
6	288	1120	64	128
6,25	224	960	0	0
6,5	160	832	0	0

Table 14: Table of ADSL deployment rules

86. The provisioning and repair rules, for ADSL, are the following:

- Belgacom will provision BROBA II ADSL service on an end-user line only if loop attenuation at 800Hz is less than 6,5dB and if both upstream and downstream Minimum bit rates of the Line Profile are lower than indicated in above table for the corresponding ADSL flavour and loop attenuation.
- Belgacom will accept trouble tickets for resynchronisation problems only if both upstream and downstream Maximum bit rates of the Line Profile are lower than indicated in above table for the corresponding ADSL flavour and loop attenuation.
(The nearest above loop length in the table shall be considered).

4.9.2 Reach Extended ADSL2

87. Reach Extended ADSL2 is allowed for loops with attenuation at 800Hz comprised between 6,5 and 7,5dB.

88. Reach Extended ADSL2 is not allowed over ISDN loops.

89. The provisioning and repair rules, for Reach Extended ADSL2, are the following:

- Belgacom will provision BROBA II Reach Extended ADSL2 service on an end-user line only if following conditions are respected :
 - The loop attenuation at 800Hz is comprised between 6,5 and 7,5dB.
 - Upstream minimum bit rate is not greater than 64kbps.
 - Downstream minimum bit rate is not greater than 256kbps.
- Belgacom will accept trouble tickets for resynchronisation problems only if :
 - Upstream Maximum bit rate is not greater than 192kbps.
 - Downstream Maximum bit rate is not greater than 512kbps.

4.9.3 ADSL2+

90. If the Beneficiary has chosen one of the 2 common ADSL2+ line profiles defined in § 52, Belgacom will provision BROBA II ADSL2+ service on an end-user line in function of the following table:

Att @ 800Hz [dB]	Maximum Upstream [kbps]	Maximum Downstream [kbps]	Minimum Upstream [kbps]	Minimum Downstream [kbps]
<1,5	512	12.000	256	288
<2,5	512	9.024	256	288

These values are applicable for BROBA ADSL2+ with voice lines on PSTN, or for BROBA ADSL2+ without voice lines. In case of ADSL2+ with voice lines on ISDN, the following values will be applicable:

Att @ 800Hz [dB]	Maximum Upstream [kbps]	Maximum Downstream [kbps]	Minimum Upstream [kbps]	Minimum Downstream [kbps]
1,25	512	12.000	256	288
<2,25	512	9.024	256	288

Those values are only deployment rules and not a performance guarantee. The values are subject to evolution and could be reviewed.

91. Belgacom could add other line profiles than the 2 above-defined. This will only be possible after individual validation of the profiles by Belgacom, in line with the delays specified hereafter, and conditional to the availability of Belgacom IT resources to validate and to implement them in the Belgacom systems.
- The validation of a line profile by Belgacom consists in defining for which attenuation range this profile can be configured by Belgacom, in order to guarantee the stability of the lines dimensioned with this profiles, as well as of all other xDSL lines installed in the same cable bundle.
 - The attenuation range will of course also be used to validate each individual order of a BROBA ADSL2+ line: every order of a line that falls outside the attenuation range applicable for the profile specified in the order will be rejected (either for a common or for an additional line profile).
 - For any demand of additional profiles, the Operator must specify 6 months in advance the number of profiles (in line with rules on number of profiles defined in §52) needed and their main characteristics (maximum upstream and downstream bitrates). The complete definition of the profiles (maximum and minimum, upstream and downstream bitrates, PSTN or ISDN) must be defined 4 months in advance. Same timing are applicable for own and common profiles.
 - Conditional to the availability of sufficient resources for validation and IT resources, the creation of additional profiles is expected to be possible in the subsequent Belgacom release at the earliest, or in any subsequent release, provided the delays for communication described above have been respected. In any event these delays do not contain a commitment of Belgacom.
92. In order to clarify the rule applicable in case of repair, and to help the operators to define, if necessary, additional line profiles for ADSL2+, Belgacom delivers hereunder the ADSL2+ deployment table. This table is based on the ADSL percentile 90 and on the estimated gain between ADSL2+ and ADSL.

	ADSL2+overPOTS	ADSL2+overISDN

Att @ 800Hz [dB]	(3) ADSL2+oPOTS UP [kbps]	(1) ADSL2+oPOTS DN [kbps]	(4) ADSL2+oISDN UP [kbps]	(2) ADSL2+oISDN DN [kbps]
0	512	11008	512	11008
0,25	512	10656	512	10464
0,5	512	10336	512	9984
0,75	512	9984	512	9536
1	512	9536	512	9024
1,25	512	9024	512	8480
1,5	512	8480	512	7936
1,75	512	7904	512	7328
2	512	7296	512	6720
2,25	512	6720	512	6080
2,5	512	6112	512	5408

- By similarity to ADSL, Belgacom will accept trouble tickets for resynchronization problems on a BROBA ADSL2+ line only if both upstream and downstream Maximum bit rates of the Line Profile are lower than indicated in above table for the corresponding ADSL2+ flavour and loop attenuation.
- For lines dimensioned with a line profile above the curve, BGC will not do physical repair for instabilities or transmission quality issues for lines ADSL2+ provisioned at 9 or 12Mbps. The same principle as for ADSL shall be applied and a decrease speed to a target bit rate below the estimated ADSL2+ percentile 90 curve shall be requested before sending a technician.

4.10 Termination of the voice subscription with Broba II with voice

93. In case of a Broba II ADSL, Reach Extended ADSL2 or ADSL2+ with voice service where both Belgacom and the Beneficiary provide services to an User, it can occur that the User cancels his voice subscription for that Broba II with voice service. In that case, independent of the reason for termination of the voice subscription, Belgacom will ensure that the service on the high bandwidth remains into service.
94. Belgacom will inform the Beneficiary that the Broba II ADSL, Reach Extended ADSL2 or ADSL2+ with voice service has been converted to a Broba II ADSL, Reach Extended ADSL2 or ADSL2+ without voice service, for which the Beneficiary will be charged the monthly rental fee for Broba II on a non-active loop instead of Broba II on an active loop. For the change to Broba II ADSL, Reach Extended ADSL2 or ADSL2+ without voice, a conversion fee as specified in Annex 6 Pricing and Billing is applicable.

4.11 Migration

95. For more information on migrations, reference is made to the Migrations Offer (BRUO Annex K).

5. Operational Processes

5.1 Bandwidth and Access Line

96. Prior to the connection by Belgacom of a specific Beneficiary's User line,
- The Beneficiary must have provided Belgacom with a bandwidth order between each DSLAM¹¹ in a Lex (or LDC or KVD when provided by Belgacom in the framework of its own retail or wholesale offer) in which he wants to connect Users and Belgacom ATM Access Point to which he is connected.
 - Belgacom must have performed, on the Beneficiary request, the installation of a dedicated Access Line between an ATM switch located in a Belgacom ATM Access Point and the Beneficiary's equipment.
97. In any event, as far as operational processes related to the Access Line are concerned, both Parties will use at any time their best efforts to implement all necessary co-operation to ensure an adequate level of service provision both between the Parties and towards the Users concerned.
98. Delays for the provisioning of these access lines take into account the fact that, when public infrastructure works have to be realized, several actions and several actors can extend the time needed for provisioning of the access lines. Examples of interventions can be:
- Studies
 - Creation of implementation plan
 - Requests to Public Authorities for authorization to realize works on the Public Infrastructure (often 2 months or more)
 - Realization of the works
99. In the event that difficulties or problems arise in this respect, the Parties will use all necessary co-operation and consultation with a view to developing appropriate and workable solutions subject to agreement between the Parties.
100. For more information on processes, reference is made to Annex 4.

¹¹ Only applicable to the DSLAMs listed on the Operator Personnel Page of the CWS secured website.

5.2 Activation of ADSL, Reach Extended ADSL2 or ADSL2+ on a specific User line

5.2.1 General

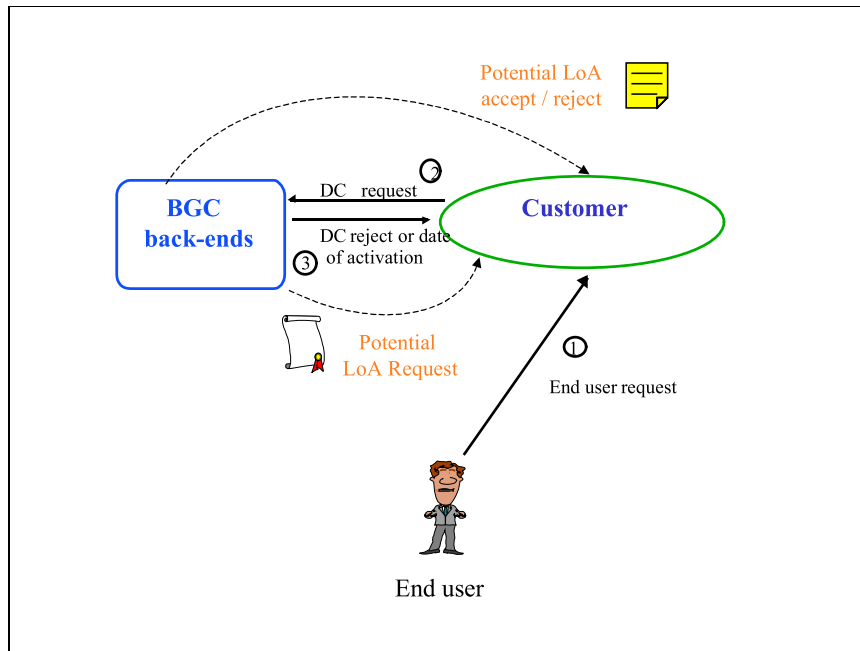
101. At the moment the Beneficiary requests the activation of ADSL, Reach Extended ADSL2 or ADSL2+ on an User line, within a specific Lex + LDC's + other relevant points where Belgacom installed DSLAM's, Belgacom verifies the existence on the DSLAM where this User line is connected of the VP necessary to transport the ADSL traffic of this User between the DSLAM from which this User depends and the Beneficiary equipment and reversely.
102. When the existence of the necessary VP has been confirmed, Belgacom does the configuration of the individual line (i.e. the configuration of the ATM profile & the ADSL, Reach Extended ADSL2 or ADSL2+ profile) of the User on DSLAM level. For a line without voice, and if decided by the Beneficiary, part of the installation can be made by a certified technician chosen by the Beneficiary.

5.2.2 Request for inquiry

103. The Beneficiary can request a check of an individual User line prior to the request for activation. This request is called an "inquiry". The check will be snapshot based and will rely on the following elements:
 - Technical spectral check of the system at the time of inquiry;
 - Pair gain system check;
 - Check of spectral saturation of cable.
104. On the basis of these parameters a positive or negative technical advice will be given on the possibility to activate an ADSL, Reach Extended ADSL2 or ADSL2+ service on the considered User line at the moment this check is carried out. Therefore, a positive technical advice does not necessarily mean or guarantee that the service can be made available to the Beneficiary at any time.

5.2.3 Process

- **Graphic illustration**



DC = Data Connectivity service (Broba II ADSL)

Fig. 2

- **Description**

105. A commercial contract is signed between a user and the Beneficiary.

106. The Beneficiary introduces a Broba II ADSL, Reach Extended ADSL2 or ADSL2+ request to Belgacom, with the following mandatory information:

- The Beneficiary requested date of activation (binding for Belgacom – see SLA);
- For line with voice, Directory Number and address are mandatory. For line without voice, address is mandatory. Currently, CID is optional in all cases.
- The name, address, contact person phone number during office hours, of the User.
- The option “certified technician”, for a line without voice, if the Beneficiary has decided to realize the installation with a certified technician.

The request will be managed between Belgacom and the Beneficiary via electronic messages or via fax as back-up procedure. For more information, reference is made to Annex 4 – Appendix D.

107. In order to activate ADSL, Reach Extended ADSL2 or ADSL2+ on an User line, Belgacom will perform, for each request, some checks, and a.o.

- Technical spectral check of the system at the time of request for activation;
- Pair gain system check;
- Spectral saturation of cable.
- Reach Extended ADSL not supported over ISDN
- ADSL2+ not supported on KVDs where in conflict with VDSL1
- ADSL2+ supported only on ADSL2+ enabled DSLAMs

On the basis of these checks, the order will be rejected and/or accepted.

If the order is accepted, the Beneficiary order intake will be performed [by a Belgacom technician, or when relevant by a certified technician](#), including:

- The performance of the necessary preparatory works in the Local Exchange for connecting an individual User line to DSLAM installed in the Belgacom Local Exchange;
- The realization of the necessary documentation to track that the User line carries ADSL, Reach Extended ADSL2 or ADSL2+ technology of the Beneficiary (only for Belgacom purposes).

The list of reject codes is available on the Belgacom CWS secured website.

5.3 Bandwidth Modification

5.3.1 General

108. To be able to offer the Broba II ADSL, Reach Extended ADSL2 or ADSL2+, the Beneficiary needs to order bandwidth between each DSLAM's¹² in the Lex + LDC's + other relevant points where Belgacom installed DSLAM's to which he wants to connect Users and the ATM Access Point to which the Beneficiary is connected.
109. In the limits of the VP specifications as mentioned in this offer (VP QoS and VP minimum dimensioning), the Beneficiary can request:
- For an upgrade of the total bandwidth he ordered between a specific DSLAM located in a Lex + LDC's + other relevant points where Belgacom installed DSLAM's and the ATM Access Point to which he is connected
 - For a downgrade of the total bandwidth he ordered between a specific DSLAM located in a Lex + LDC's + other relevant points where Belgacom installed DSLAM's and the ATM Access Point to which he is connected
 - For a modification of the bandwidth's allocation amongst the different VPs within a specific Lex + LDC's + other relevant points where Belgacom installed DSLAM's.
110. The Beneficiary will pay the corresponding fee for the modification of the Bandwidth ("Change of ATM transport parameters") as set forth in Annex 6.

5.3.2 Process

111. Firm orders of bandwidth per DSLAM shall be done through the use of an XML order as described in the XML content description documents available on the Operator Personal Page of the CWS secured website.
112. For more information on processes, reference is made to Annex 4.

5.4 Repair

5.4.1 General

113. Repairs are carried out on the Network after the Beneficiary has informed Belgacom provided the Beneficiary has made the preliminary investigations and is confident that the problem is in Belgacom Network. The Beneficiary, when reporting that there is a problem, has to give

¹² Only applicable to the DSLAMs listed on the Operator Personal Page of the CWS secured website.

precise information about the nature of the problem. Belgacom will, when appropriate, confirm the existence of the problem.

114. If Belgacom becomes aware of a problem on the network, Belgacom automatically coordinates the necessary actions to resolve the problem according to the applicable arrangements.

Note: modification and interruptions

115. The maintenance and the development of the Network may require Belgacom to limit the Broba II ADSL, Reach Extended ADSL2 or ADSL2+ service or to suspend it temporarily. Belgacom undertakes to limit the duration of this period to the time that is required for the execution of the work and that duration will, in no way, be longer than the period that Belgacom would require if her own services needed to be suspended. In such cases, Belgacom will inform the Beneficiary in due time at least 48 hours in advance, and communicate the estimated suspension time and the reason of suspension. Such service interruptions are not included in the (I)SLA on service availability.

5.4.2 Repair on a specific User line

116. The Beneficiary will communicate possible network related problems of Users to Belgacom. Belgacom will never be first line of contact with the User for the Beneficiary ADSL, Reach Extended ADSL2 or ADSL2+ based service, based on Broba II ADSL, Reach Extended ADSL2 or ADSL2+ service.

5.4.3 Repair for spectral issues reasons

117. If problems occur as a consequence of a Beneficiary ADSL, Reach Extended ADSL2 or ADSL2+ based service (for instance: interference of the Beneficiary system with existing system in service in the cable bundle, connection of non-compatible equipment), Belgacom may solve the problem by removing the concerned Beneficiary service on the concerned User line under LIFO (Last In First Out) mode. The related costs will be invoiced to the Beneficiary. In case of dispute regarding the costs either party can ask BIPT to verify the claimed costs.
118. Note that the inquiry "loop attenuation" doesn't examine the spectral characteristics of the line and cannot consequently determine with 100% accuracy that the line won't present technical problems.
119. If the xDSL services offered by the Beneficiary appear to be the cause of an abnormal¹³ perturbation, Belgacom will demonstrate that this was caused by the services of the Beneficiary and will, eventually, interrupt the service to be able to make this demonstration. The same procedure applies if the xDSL services offered by Belgacom appear to be the cause of an abnormal perturbation. The general rule that must be followed is: first system in service should stay in service. The Beneficiary has, at all time, the right of verification.

¹³ Abnormal : when disturbances on other lines in the same cable are not in line with the technical rules and authorisation conditions as defined within the context of the technical specifications

5.5 Billing

5.5.1 General

120. Principle: all Standard Fees as described in Annex 6, whenever relevant, will be invoiced to and are to be paid by the Beneficiary.

5.5.2 Process

- **Graphic illustration**

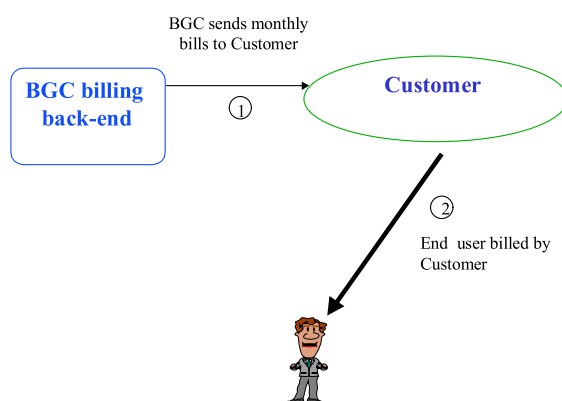


Fig. 3

- **Description**

121. The Beneficiary will receive a monthly invoice containing the fees (recurring and non-recurring) for that period. Invoices related to any relevant fees are to be paid within the foreseen deadlines as set out in the Pricing & Billing document (Annex 6)

Appendix A: Access Line

6. Customer-Sited Data Link

6.1 Preliminary

122. The terms, conditions and requirements set out in this section determine the general framework between Belgacom and the Beneficiary on Customer-Sited Data Link Service in the framework of provision of a connection between a Belgacom ATM switch, located in an ATM Access Point, and the Beneficiary Equipment, in the framework of this Agreement. This service will be referred to hereafter as "Customer-Sited Data Link".
123. For the provision of 2Mbit/s, 34Mbit/s or STM-1 Customer-Sited Data Link, The Beneficiary will subscribe a one (1) year contract, under which the 2Mbit/s, 34Mbit/s or STM-1 Customer-Sited Data Link Service is made available to the Beneficiary for a fixed term of one year. At the end of this period, the contract will be tacitly renewed for an indefinite duration and can be terminated at any time with a notice of at least one calendar month. If the Beneficiary wishes to terminate the contract during the initial one-year term, the Beneficiary will pay to Belgacom a termination fee equal to the total of the rental fees until the end of such term.

6.2 Description

124. Customer-Sited Data Link is a connection system that is provided in its entirety by Belgacom between the Beneficiary Connection point at the Beneficiary premises, and Belgacom ATM Access Point.
125. Belgacom will install the necessary transmission equipment at the premises of the Beneficiary.
126. The Customer-Sited Data Link Service consists of one (1) or more 2Mbit/s, 34 Mbit/s or STM-1 Systems.
127. 2Mbit/s, 34Mbit/s or STM-1 Systems provided under this Service Plan do not have Diversity of routing.
128. Diversity of routing can be available as an option (when technically feasible and at a price based on a quote from Belgacom for the diversity routing aspect).
129. The Beneficiary Connection point is located at the Beneficiary's premises.

6.3 Implementation

130. The implementation of Customer-Sited Data Link Service will be in accordance with the Technical Specifications provided in Annex 2 – Section 2: Technical Specifications of the Access Line.

6.4 General Conditions

131. A Customer-Sited Data Link Service can be ordered by the Beneficiary between a specified Belgacom ATM Access Point (Connection Point) and the specified Beneficiary's premises.
132. The Beneficiary shall provide and maintain, at its expense, the cabling from the Point of Connection to the Beneficiary equipment including any cross connections that are required.

133. All Belgacom transmission equipment shall comply with the appropriate Belgacom Technical Specifications provided in Annex 2 – Section 2: Technical Specifications of the Access Line.

6.5 Prices

134. The Beneficiary shall pay to Belgacom the installation and rental fees provided in Annex 6 for Customer-Sited Data Link Service.

6.6 Specific Conditions

135. Belgacom will identify each 2Mbit/s, 34Mbit/s or STM-1 Customer-Sited Data Link provided pursuant to the conditions of this Section through attributing them a codification number.

7. Belgacom-Sited Data Link

7.1 Preliminary

136. The terms, conditions and requirements set out in this section determine the general framework between Belgacom and the Beneficiary on Belgacom-Sited Data Link Service in the framework of the provision of a connection between a Belgacom ATM switch, located in a Belgacom ATM Access Point and the Beneficiary Equipment, in the framework of this service. This Service will be referred to hereafter as “Belgacom-Sited Data Link”.
137. A Belgacom-Sited Data Link Service can be brought into service with regard to a specified site, and the Beneficiary can be entitled to install the equipment required to this effect in the Belgacom building concerned, if and only if the Beneficiary has prior to this time signed an appropriate Colocation Agreement with regard to the site concerned.
138. The Belgacom-Sited Data Link Service can only be used for all connection purposes with Belgacom ATM/FR data network. If the Beneficiary benefits from Belgacom-Sited Data Link Service with regard to a certain site, the Beneficiary is authorized to lease Data Link facilities to or from another party for the purpose of allowing a direct connection between the Network and such other party.
139. For the sake of clarity, it is noted that Data Links covered by this document are either 2Mbit/s, 34Mbit/s or 155Mbit/s Data Links.

7.2 Description

140. Belgacom-Sited Data Link Service will only be available in Belgacom ATM Access Points.
141. A “Belgacom-Sited Data Link Service” is a connection service where Belgacom offers the possibility to a Beneficiary to provide the entire Data Link including the transmission equipment that is installed in a Belgacom technical building. The Beneficiary will install its cable infrastructure at least up to an introduction duct designated by Belgacom in the immediate vicinity of the Belgacom ATM Access Point (building) in which any Belgacom ATM switch (Access Point) is located.
142. The Beneficiary Point of Connection for this type of Data Link is located in the Belgacom premises on the indoor cable connecting the Beneficiary’s transmission equipment to the Belgacom DDF, at the place where that cable enters the collocation room.
143. In the event that Belgacom is caused to replace the collocation room in which the transmission equipment of the Beneficiary is to be installed, then both Parties will cooperate to find a mutually acceptable solution.

144. The Beneficiary shall install equipment in its colocation area and following the rules set out in the colocation agreement. The Beneficiary's transmission facilities will be extended outside the colocation room to a digital distribution frame (DDF) within Belgacom's technical area to allow the 2Mbit/s and 34Mbit/s or to an Optical Light Distribution Frame (OLDF) within Belgacom's technical area to allow the 155Mbit/s Links to be established. Belgacom or Belgacom's authorized staff working under its responsibility will carry out this extension under the financial conditions stated in Annex 6.

7.3 Scheme

145. See below for a general scheme illustrating Belgacom-Sited Data Link (scheme valid for 2 Mbit/s and 34Mbit/s configurations):

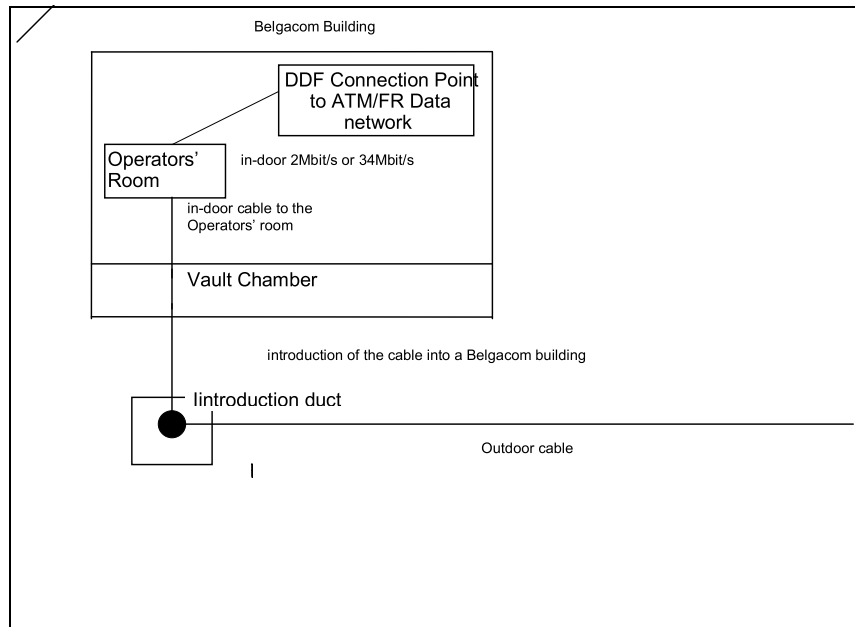


Fig. 4

7.4 General Conditions

146. All Beneficiary transmission equipment shall comply with the Technical Specifications provided in Annex 2 – Section 2: Technical Specifications of the Access Line.
147. The Beneficiary shall provide to its employees full information regarding the content of the rules to be respected regarding Belgacom-Sited Data Links.

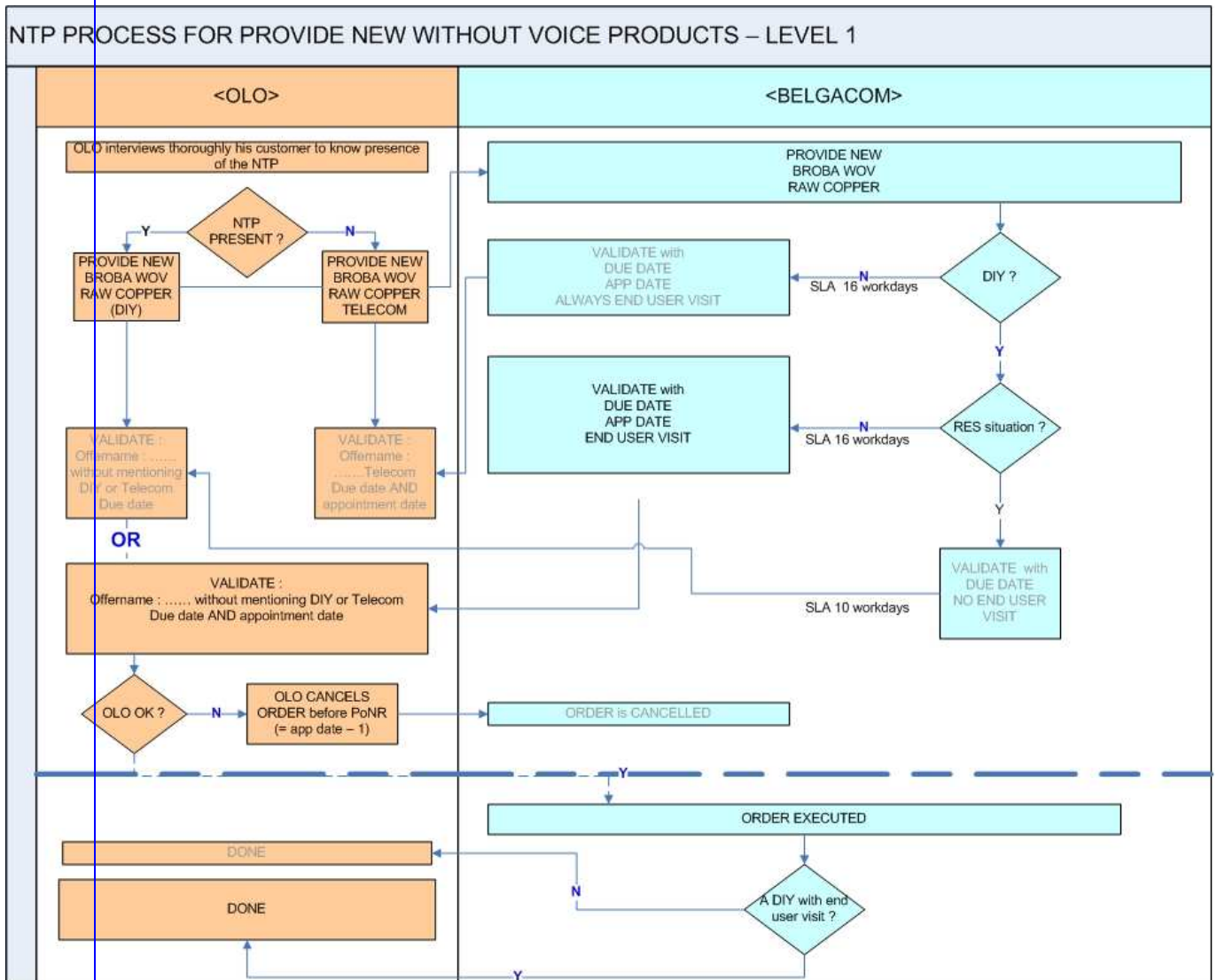
7.5 Procedures

148. The Beneficiary is responsible for determining the number of Belgacom-Sited Data Link Service that the Beneficiary requires. In this respect, Belgacom does not make a representation that it will at all times be in a position to provide the full capacity ordered by the Beneficiary. In particular, it is not excluded that, taking into account possible evolutions in the future, Belgacom may be confronted with a high number of requests for the installation of additional collocation spaces in different buildings that would not allow Belgacom to respect all relevant timers. In these cases, Belgacom will have to inform the market and BIPT.

7.6 Prices

149. The Beneficiary shall pay to Belgacom the installation and rental fees specified in Annex 6 for Belgacom-Sited Data Link Service.

Appendix B: NTP Process for Provide New BROBA II without voice



Appendix C: List of Access Areas and ATM Access Point

8. List of Access Areas

Access Area	Included Telephone Zones
Antwerpen:	03
Bruxelles:	02
Gent:	09 (*), 052, 053, 054, 055
Kortrijk:	050, 051, 056, 057, 058, 059
Liège:	04 (*), 019, 080 (*), 085, 086, 087
Leuven-Hasselt:	013, 014, 015, 016, 011, 012, 089
Mons-Charleroi:	065, 068, 069, 071, 060, 064, 067
Namur:	081, 082, 083, 084, 061, 063, 010

(*): For the sake of clarity, it is confirmed that the zone codes indicated above in the context of the present offer are limited to the numbers which identify fixed network termination points. In particular, 09 and 04 are respectively limited to the number series 092, 093 and 042, 043. As far as the code 080 is concerned, the numbers starting with 0800 are excluded.

9. List of ATM Access Points

City	Address	NCOW
Aalst	Ridderstraat 43	5321
Antwerpen - Berchem	Karel Coggestraat 2	3227
Antwerpen - Centrum	Lange Nieuwstraat 106	3224
Arlon	Avenue Jean-Baptiste Nothomb 40	6321
Ath	Rue Jean Jaurès, 11	6828
Brugge - Assebroek	Matmeers 2 A	5033
Brussels - Ixelles/Elsene	Rue Borrens - Borrensstraat 16	2646
Brussels - Etterbeek	Rue J. de Lalaing - J. de Lalaingstraat 36-40	2280
Brussels - Evere	Avenue des Anciens Combattants - Oudstrijderlaan 94	2726
Brussels - Linthout	Rue V. Lefèvre - V. Lefèvre 24-26	2732
Brussels - Marais	Rue du Marais - Broekstraat 72-74	2220
Brussels - Paille	Rue Lebeau - Lebeauststraat 2	2513
Brussels - Sacré-Coeur	Avenue A.J. Slegers - A.J. Slegerslaan 36	2770
Brussels - Schaarbeek	Rue Jan Blockx - Jan Blockxstraat 26-30	2215
Brussels - St-Gilles- /St. Gillis	Rue Steens - Steensstraat 11	2538
Brussels - Uccle	Rue Rodenbach - Rodenbachstraat 133	02
Brussels - Woluwe	Voordestraat 10	2725
Charleroi - Centre	Rue de la science 2	7127
Charleroi - Gilly	Sentier de la Limite 80	7141
Chimay	Rue Reine Astrid 5	6021
Ciney	Rue d'Omalius 67 B	8321
Dendermonde	Courtenstraat 22	5221
Diest	Ferd. Allenstraat 38	1333
Dinant	Rue Bribosia 9	8222
Durbuy	Chainrue 52	8621
Genk	Europalaan 27	8930
Gent - Centrum	Sint Niklaasstraat 27	9223
Gent - Keizer Karel	Keizer Karelstraat 1	9265
Hasselt	Paardsdemerstraat 10	1127
Herentals	Molenvest 13	1421
Huy	Rue du Vieux-Pont 16	85
Ieper	Vooruitgangsstraat 1	5720
Jemelle	Rue Delvigne 76	8421
Kortrijk	Doorniksestraat 61-65	5622
La Louvière	Rue de la Concorde 17	6422
Leuven	Vismarkt 17	1621
Libramont	Rue des alliés 1	6122
Liège - Centre	Rue de l'université 30	4223
Liège - Grétry	Rue d'Harscamp 17	4349
Mechelen	Stationstraat 58	1540
Mons	Rue des fosses 7	6533
Namur	Rue Marie-Henriette 60	8172
Namur	Rue Rogier 2	8123
Ninove	Groenmarkt 42	5433
Nivelles	Place Albert 1	6722
Oostende	Hendrik Serruyslaan 18 A	5970
Roeselare	H. Consciencestraat 3-5	5120
Ronse	Politieke Gevangenerstraat 14	5521
Stavelot	Cour de l'hôtel de ville 3	8088
Tournai	Rue de la Tête d'Or 9	6922
Verviers	Rue Thil Lorrain 6	8733
Veurne	Pannestraat 1	5831
Waremmme	Rue Joachim 67	1932
Wavre	Rue de la Limite 2	1022

Belgacom

Reference Offer
For Bitstream Access

BROBA II SDSL ~~2008~~

Main Body

This document starts to produce effects as of 21st of June, 2010 and will be valid until a subsequent Reference Offer is validly published.

As from 21st of June, 2010, interested Beneficiaries are in a position to use the Open Calendar facilities.

However, the rights and obligations related to Certified Technician will only be applicable as from 11th of October, 2010.

Belgacom reminds that several appeal proceedings were introduced by Belgacom before the Court of Appeal against some of the BIPT decisions related to BROBA. This new version of BROBA is published by Belgacom without any adverse recognition and without prejudice to Belgacom interests. It shall under no circumstances be considered as a waiver by Belgacom of its rights and interests in the concerned appeal proceedings.~~This document starts to produce effects as of 05/11/2008 and until one~~

~~subsequent Reference Offer is validly published — As from 05/11/2008 interested Beneficiaries are in a position to make a request for the services covered by the present document.~~
~~This document is in accordance with BIPT's decision.~~

With a view to the signature of the contract, the BROBA can be negotiated by the parties and does not substitute for the parties' will.

Except otherwise agreed by the parties, the contract shall be adapted if the BROBA is modified. This adaptation shall be in accordance with this BROBA's modification.

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1 Preliminary

1. In this document, for reasons of facility, the acronym SDSL will be used instead of g.Shdsl.
2. All information and descriptions concerning the ATM part of this offer included in this document are related to SDSL in VC switching mode. For VP switching, reference is made to the BELGACOM BROBA II Main Body and other annexes.
3. Precisions concerning VP / VC switching options:
 - In VC switching mode, contrarily to VP switching mode, there is no pre-provisioning of the ATM part: VCs are configured at the moment of the implementation of the service
 - VPs implemented in the framework of Broba II ADSL can be used for Broba II SDSL in VP switching mode
4. The ATM access points are the same for Broba II SDSL as for Broba II ADSL

2 Glossary

5. Access Line: an Access Line is an interface between a Belgacom ATM switch located in an ATM Access Point and the Beneficiary Equipment. From patch line + data link+ transmission to the Beneficiary
6. ATM Access Point: an ATM Access Point provides access to the Belgacom ATM network through NNI connection with a Belgacom ATM switch.
7. Beneficiary Equipment: Beneficiary equipment or any other equipment
8. Any technician employed either by a Beneficiary or by one of Beneficiary's subcontractors, trained and certified by Belgacom in order to perform, in place of a Belgacom technician, the installation of the BROBA 2 SDSL lines
9. DSLAM: Digital Subscriber Line Access Multiplexer. DSLAMs are located in Belgacom Local Exchanges, Local Distribution Centers or other relevant points where Belgacom has installed such equipment and they are owned and managed by Belgacom.
- ~~9-10.~~ Lex: Belgacom Local Exchange
- ~~10-11.~~ Network Termination Point (NTP): The termination point of a Broba II SDSL loop at the End User premises. The Network Termination Point is a part of the Belgacom network.

xDSL: for example: ADSL, ADSL2, ADSL2+, gShDSL, enhanced SDSL, VDSL

3 Scope

- ~~11-12.~~ This document entails the conditions related to the provision by Belgacom to the Beneficiary, of the Broba II SDSL service, which will enable The Beneficiary to define its own SDSL products and to market, distribute and sell under its name and on its behalf its own SDSL products towards End Users, using Belgacom's installed and existing Network infrastructure, pursuant to the technical limitation of this existing infrastructure for offering the service.
- ~~12-13.~~ The attention is drawn to the fact that taking into account that the present offer by definition implies the use of Belgacom DSLAM, this offer is related to the provision of SDSL services only. In the future, this offer could be enlarged to other DSL technologies, after approval by BIPT as soon as these technologies are tested and at least 3 months before they are commercialized (retail and/or wholesale) by Belgacom.
- ~~13-14.~~ This offer and its tariffs are only applicable for cases where DSLAMs are located in Belgacom premises (Lex or LDC or KVD when provided by Belgacom in the framework of its own retail or wholesale offer).

~~14~~15. This document contains the technical, operational and financial conditions, as well as a possible method of connection and the applicable terms and conditions related to such service.

~~15~~16. The provision of the hereunder-described service supposes the following list of prerequisites that will need to be met at all times and in all circumstances:

- Connection between the network of the Beneficiary and the Belgacom network (hereafter the "Network") is established pursuant to the principles set out in this document;
- A line from the End User to the LEX + LDC'S + other relevant points where Belgacom has installed DSLAMs must be available
- If Small Networks Adaptations (SNA) works are required to deliver the service, they are allowed following the SNA rules used by Belgacom in its provisioning process;
- If an impossibility to provision the service cannot be solved by SNA works, the order will be rejected.

4 Usage of a unique reference for migrations of without PSTN or ISDN Belgacom services

~~16:17.~~ In scope of migration requests that a Beneficiary sends to take over a BRUO/BROBA service “without PSTN or ISDN Belgacom service” from another Beneficiary or a Belgacom ADSL without voice service, there will be an issue in the identification of the copper pair on addresses with for example more than one pair in service.

~~17:18.~~ For a migration request from a BROBA/BRUO without PSTN or ISDN Belgacom service or from a Belgacom ADSL without voice service, the Beneficiary will include the circuit ID of the service communicated to the prior Beneficiary as identification of the service to be migrated.

~~18:19.~~ The circuit ID that has been communicated by Belgacom at the provisioning of a new BRUO/BROBA service or of a Belgacom ADSL without voice service is the unique reference to identify both the service and the copper pair.

~~19:20.~~ The Beneficiary will communicate for all BRUO/BROBA without PSTN or ISDN Belgacom products the circuit ID provided by Belgacom to the User. This is best done by including this reference on the bills and contracts that is sent to the User for the service based on BRUO/BROBA. By that, in case of migration, the circuit ID can be exchanged between a Beneficiary and the End User, just like is done today with the dial number. As a consequence the Circuit ID can be included systematically in the migration orders and this will avoid further problems in this case.

~~20:21.~~ The Belgacom ADSL without voice service is identified by a circuit-id which can be found at the invoice as the identifier of the paragraph 'Internetverbinding/Connection Internet'.

5 Description of Broba II SDSL

5.1 General

~~21:22.~~ The provision by Belgacom to the Beneficiary of the Broba II SDSL service will enable the Beneficiary to define its own SDSL products, and to market, distribute and sell under its name and on its behalf its own SDSL products towards users, using Belgacom's installed and existing network infrastructure, pursuant to the technical limitation of this existing infrastructure for offering this service.

~~22:23.~~ Beneficiaries shall be able to benefit from any changes in the Belgacom network infrastructure similar to what Belgacom is offering to its own retail services, and Beneficiaries shall be notified duly in advance of any changes in its "existing" infrastructure: at least 12 months in advance for any changes which will have a significant impact on the service offering and at least 6 months in advance for any minor changes that will have a minor impact on the service offering. The BIPT will be informed in any case. Concerning the periods of notice, the BIPT can allow exceptions

~~23:24.~~ This offer is related to the provision of SDSL services. The Broba II SDSL service will allow the Beneficiary to connect on Belgacom network at ATM Access Points and to receive any ATM cells from the End User using SDSL technology. The transport end-to-end between the End User and the Beneficiary is ATM.

~~24:25.~~ Belgacom's vendor of DSLAM for ADSL products is Alcatel. The Belgacom ADSL network is currently based on Alcatel A1000 and A7300 DSLAM's, version 4.x.

~~25:26.~~ The Bitstream access service is offered on basis of the equipment delivered by Belgacom's supplier at the moment of the equipment's bringing into service in a given site.

~~26:27.~~ This implies that several versions can co-exist at the same time, for the use of Belgacom as well as for the Beneficiaries of the service.

~~27:28.~~ Each new equipment or each new equipment software used by Belgacom for its retail or wholesale services will be made available for the Bitstream Access Services.

~~28:29.~~ In case of software evolutions, Belgacom shall ensure that the software will be compatible with the previous one on the same configuration and will inform the Beneficiary about the changes and their consequences. In case of Belgacom own pieces of software that would make the solution proprietary to the Belgacom environment, Belgacom shall ensure the compatibility of subsequent versions with the old ones.

~~29:30.~~ If Belgacom has to proceed to an upgrade or replacement of equipment or software equipment, this will be done under one or several of the following conditions unless other reasons are justified by Belgacom and approved by the BIPT:

- The new equipment software is compatible with the previous one and allows the same configurations;
- The new equipment or equipment software is compatible with installed CPEs and modems as agreed by BelcomLab;
- The old equipment or equipment software is, for any reason, no more available from the supplier;
- The concerned equipment or equipment software is written-off by all parties
- Investments to be realized by all parties are reasonable and justified;

Belgacom will inform the concerned parties before any upgrade or replacement: six working days for an upgrade or a maintenance patch, one working day for a correcting maintenance patch.

Belgacom will give an estimation and a description of the eventual potential alteration of the service.

~~30:31.~~ Belgacom will ensure the management of the DSLAM and the proper configuration of it. This management and all relevant possibilities-functionalities (also the database aspect) will be exhaustively described to the Beneficiary on simple demand.

~~31:32.~~ The offering of service under this document covers:

- The provision by Belgacom of bandwidth between the DSLAMs located in the Local Exchanges and LDC's or other relevant points where Belgacom has installed DSLAM's in which the Beneficiary wants to connect End User and the Belgacom ATM Access Point to which the Beneficiary Equipment is connected;
- The provision by Belgacom of an Access Line between the Beneficiary Equipment and the Belgacom ATM Access Point;
- The provision and the configuration by Belgacom of ATM Transport (use of CBR or VBR or UBR+ service as defined further in this offer) between the DSLAM and the Beneficiary Equipment.

5.2 The "connection" that is established between the end-user and the Beneficiary can be seen as follows:

5.2.1 End-user and DSLAM from which end-user depends:

~~32:33.~~ The Beneficiary will ask Belgacom to activate SDSL on this line and is free to choose one of the SDSL-data rates defined in the table of the section ~~7.17.4~~ of this document.

~~33:34.~~ In the framework of Broba II SDSL, there is no rate-adaptiveness, as the bitrate delivered on the physical line is guaranteed (see section ~~7.7~~).

5.2.2 DSLAM from which end-user depends and ATM switch from which the DSLAM depends:

~~34:35.~~ A link of 155 Mbps, shared among several Beneficiaries, is brought to the back of the DSLAM rack and is connected to the Belgacom ATM switch from which the DSLAM depends. It is the responsibility of BELGACOM to manage the interface cards.

5.2.3 The ATM switch from which the DSLAM depends and the ATM Access Point (ATM switch) to which the Beneficiary equipment is connected:

~~35:36.~~ 1 to 10 VCs will be configured between the DSLAM and the Beneficiary equipment to transport the SDSL traffic of an end-user up to the Beneficiary. The Beneficiary is responsible for the bandwidth dimensioning of the VCs between the DSLAM and the ATM Access Point.

5.3 Access Line between Belgacom ATM Access Point and the Beneficiary Equipment

~~36:37.~~ An Access Line will be established between the Beneficiary Equipment and the Belgacom ATM switch, located in the Belgacom ATM Access Point, to which the Beneficiary equipment is connected.

~~37:38.~~ The list of Belgacom Access Areas is available in Appendix C.

~~38:39.~~ The connection between the Belgacom ATM switch and the Beneficiary Equipment is subject to successful testing procedure, as set forth in Broba II ADSL Data Connectivity Annex 2 (Section 1: ATM tests for Belgacom Data Connectivity).

~~39:40.~~ The Beneficiary is allowed to do overbooking on the access line. Each Beneficiary is responsible for its dimensioning and the risks run by this one. The Beneficiary is allowed to do overbooking on the access line and Belgacom cannot refuse to provision a new or an upgrade of a VP/VC. However, when the sum of the guaranteed bandwidths of all VP's on an access line exceeds the SCR of that access line capacity, any trouble ticket opened at Belgacom by the Beneficiary which leads to the conclusion that the request for repair has as origin an excessive overbooking will be invoiced to the Beneficiary at the tariff of Wrongful Repair Request and the timer conditions as set out in the SLA and Improved SLA will not be of application to this trouble ticket.

~~40:41.~~ The Access Line is made of:

- A Patch Line as described in Section ~~5.3.15.3.1~~;
- A Data Link as described in Section ~~5.3.25.3.2~~.

~~41:42.~~ For information on the Technical Specifications of the Access Line, reference is made to Broba II ADSL Data Connectivity Annex 2 (Section 2: Specifications of the Access Line).

5.3.1 Patch Line

~~42:43.~~ The Patch Line is the physical element, which consists of a coax line between the Belgacom ATM switch and the Belgacom DDF for transmission capacities up to 34 Mbps. For rates exceeding this threshold, the Patch Line is the physical part that consists of the fiber link (including necessary transmission equipment) between the Belgacom ATM switch and the ODF.

~~43:44.~~ The Patch Line is installed and maintained by Belgacom. The Patch Line has to be paid by the Beneficiary in both Customer-Sited and Belgacom-Sited Data Links Solutions.

~~44:45.~~ The fees to be paid by the Beneficiary and corresponding to this Patch Line are specified in Annex 6 of this document.

5.3.2 Data Link

~~45:46.~~ The Data Link is the physical element between Belgacom Distribution Frame and the Beneficiary equipment.

~~46:47.~~ By default, Data Links consist of a Customer-Sited Data Link Service as described in Broba II ADSL Main Body - Appendix A.

~~47:48.~~ Depending on Beneficiary's request, as explained in Appendix A, Data Links can be realized by means of Belgacom-Sited Data Link Service as described in the same Appendix.

6 Schematic Presentation

~~48:49.~~ The service is provisioned on a non-active loop or active loop where telephone service or leased line service or other relevant service (s), if any, has to be released, (which means that, if the service is firstly released, the loop turns back to a non-active loop), using processes similar to those developed for raw copper loops, on top of a Circuit ID.

~~49:50.~~ From the MDF, the end-user line will be connected to the DSLAM using a 24-pair type II cable and will be terminated on a SDSL line card.

~~50:51.~~ The data is then put on the data network. The data stream is managed via PVC and is handed over to the Beneficiary at the ATM Access Points. No LF is returned to the Belgacom voice switch since SDSL doesn't support this service. Similarly, splitters are not necessary, neither in the LEX nor at the end-user premises.

~~51:52.~~ The Beneficiary connects to a Belgacom ATM Access Point by means of an Access Line. BELGACOM will configure each VC on behalf of the Beneficiary to transport the SDSL traffic of each end-user up to Beneficiary's equipment. BELGACOM will also configure the end-user line with profiles defined by the Beneficiary.

6.1 Broba II SDSL Service with Belgacom-Sited Data Link

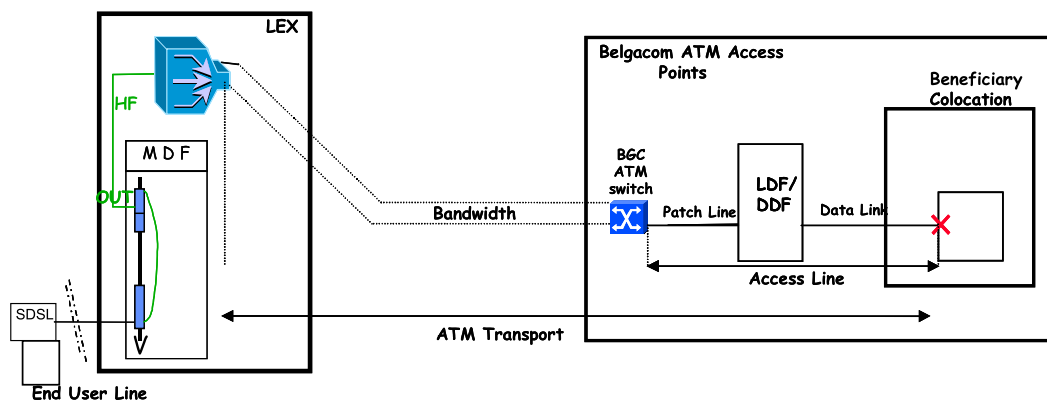


Fig. 1

52-53. The customer needs physical (separate room or comingling) collocation in the Belgacom Access Point.

6.2 Broba II SDSL Service with Customer-Sited Data Link

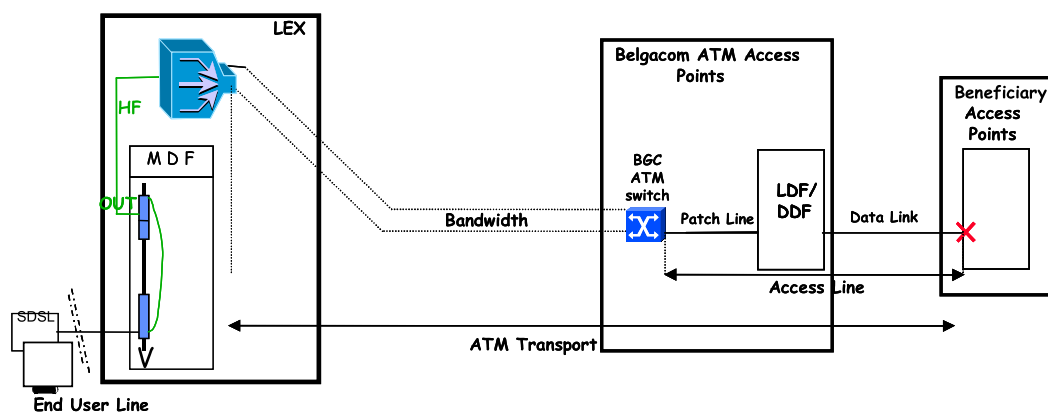


Fig. 2

7 Broba II SDSL profiles

7.1 Physical line from end-user to DSLAM

~~53:54.~~ When activating an SDSL line, the Beneficiary can choose one of the SDSL line profile defined in the following table. Those profiles are applicable both for Broba II SDSL VC and VP switching modes.

Bit rate
192 Kbps
384 Kbps
640 Kbps
832 Kbps
1024 Kbps
1216 Kbps
1472 Kbps
1664 Kbps
2048 Kbps
2304 Kbps

7.2 DSLAM – ATM backbone (VC switching)

~~54:55.~~ In VC switching, the Beneficiary can choose its ATM profiles within the following table.

Traffic descriptor	DSLAM	ATM backbone	ATM Bitrate	
ATM01	CBR	CBR	64	64
ATM02	CBR	CBR	128	128
ATM03	CBR	CBR	192	192
ATM04	CBR	CBR	256	256
ATM05	CBR	CBR	384	384
ATM06	CBR	CBR	512	512
ATM07	CBR	CBR	1023	1023
ATM08	CBR	CBR	1536	1536
ATM09	CBR	CBR	1984	1984
ATM10	UBR	VBR-nrt	256	1023
ATM11	UBR	VBR-nrt	512	1023
ATM12	UBR	VBR-nrt	512	2047
ATM13	UBR	VBR-nrt	64	64
ATM14	UBR	VBR-nrt	128	128

~~55:56.~~ Additionnally, the Beneficiary can use the ATM profiles defined in VC switching mode in the common pool of ATM Profiles ([see list "Shared ATM TD" on Personal Page](#)). The profiles in the common pool will be added after agreement of all concerned Beneficiaries and Belgacom.

~~56:57.~~ The QoS of a VC on the end-user side of the DSLAM has to be of the same type, or lower, than the VP or VC requested in the ATM network : VBR rt VP or VC (ATM) can content CBR or VBR rt VC or lower (DSLAM) and VBR nrt VP or VC (ATM) can only content UBR+ or VBR nrt VC (DSLAM).

7.3 DSLAM – ATM backbone (VP switching)

~~57-58.~~ If a Beneficiary opts for SDSL in VP switching mode, the rules as defined in Broba II ADSL are applicable, as the VPs implemented in the framework of Broba II ADSL can be used for Broba II SDSL in VP switching mode :

- The Beneficiary can obtain 8 own ATM Line Profiles. [usable for VP \(ADSL or SDSL\) switching.](#)
- Additionnally, the Beneficiary can use the ATM profiles defined in VP switching mode in the common pool of ATM Profiles ([see list "Shared ATM TD" on Personal Page](#)). The profiles in the common pool will be added after agreement of all concerned Beneficiaries and Belgacom.

~~58-59.~~ The QoS of a VC on the DSLAM has to be of the same type, or lower, than the VP or VC requested in the ATM network : VBR rt VP or VC (ATM) can content CBR or VBR rt VC or lower (DSLAM) and VBR nrt VP or VC (ATM) can only content UBR+ or VBR nrt VC (DSLAM).

8 Provisioning

~~59-60.~~ At the moment that the Beneficiary requests the activation of SDSL on a specific End User line, [Belgaeom](#):

- [Belgacom or a certified technician m](#)Makes the physical connection of the end-user line on the DSLAM
24-pair cables, 48-pair blocks, DSLAM sub-racks and line cards are shared between OLOs and Belgacom.
- [Belgacom m](#)Makes the setup and the configuration of the VCs on behalf of the Beneficiary following the VC parameters.
- [Belgacom c](#)Configures the End User line with a SDSL profile and with max. 4 VCs per SDSL connection; each VC has its own profile (Belgacom could increase this number in the future if a motivated demand is made by a Beneficiary).

~~60-61.~~ Prior to the connection by Belgacom of a specific Beneficiary's End User line,

- Belgacom must have performed, on the Beneficiary request, the installation of a dedicated Access Line between an ATM switch located in a Belgacom ATM Access Point and the Beneficiary's equipment.
- If the Beneficiary already has a possibility to use an access line (for Broba II ADSL or wholesale xDSL for instance, which can be of another party)..., he may make use of this one to connect to the ATM Point for Broba II SDSL (see also Broba II ADSL - Annex 6 – Pricing & Billing point 1.3).

~~61-62.~~ In any event, as far as operational processes related to the Access Line are concerned, both Parties will use at any time their best efforts to implement all necessary co-operations to ensure an adequate level of service provision both between the Parties and towards the End Users concerned.

~~62-63.~~ Delays for the provisioning of these access lines take into account the fact that, when public infrastructure works have to be realized, several actions and several actors can extend the time needed for provisioning of the access lines. Examples of interventions can be:

- Studies
- Creation of implementation plan
- Requests to Public Authorities for authorization to realize works on the Public Infrastructure (often 2 months or more)
- Realization of the works

63:64. In the event that difficulties or problems arise in this respect, the Parties will use all necessary co-operation and consultation with a view on developing appropriate and workable solutions subject to agreement between the Parties.

9 Inquiries

~~64.65.~~ The Beneficiary can request a check of an individual End User line prior to the request for activation. This request is called an “inquiry”.

~~65.66.~~ If the request is done via XML, an inquiry fee will be invoiced to the Beneficiary. If it's done via the web tool, a loop attenuation check fee will be invoiced (see Annex 6 – Pricing & Billing – points 1.1.1 and 1.1.2).

~~66.67.~~ The check will be snapshot based and will rely on the following elements:

- Technical spectral check of the system at the time of inquiry;
- Pair gain system check;
- Check of spectral saturation of cable.

~~67.68.~~ On the basis of these parameters a positive or negative technical advice will be given on the possibility to activate a SDSL service on the considered End User line at the moment this check is carried out. Therefore, a positive technical advice does not necessarily mean or guarantee that the service can be made available to the Beneficiary at any time.

~~68.69.~~ If Beneficiaries want to make inquiries via the web tool, they can consult the Belgacom website (www.belgacom.be - Wholesale – Lancer le site Web – Personal Page) - enter your login name and password – Broba II – Broba II SDSL Inquiry tool). After having introduced the data needed to identify the end-user loop, the Beneficiary will receive the distance and the attenuation at 800 Hz of the loop between the end-user and the nearest DSLAM equipped for SDSL.

An utilisation manual of the Inquiry Tool is available on the Belgacom Wholesale Personal Page (Regulatory Information/BROBA) describing the functionalities of this tool, the input needed and providing all needed explanations to interpret correctly its output.

~~69.70.~~ This inquiry will be billed to the Beneficiary (seen Annex 6 – Pricing & Billing – point 1.1.2).

10 Rules to follow with respect to End-user lines

10.1 Types of lines

~~70.71.~~ Access to- and ordering of end-user lines for the Broba II SDSL service is based on following definitions:

- Beneficiaries have the right to gain access to an end-to-end copper pair at Belgacom Local Exchange buildings or LDC or KVD when provided by Belgacom in the framework of its own retail or wholesale offer (consult the Belgacom website (www.belgacom.be - Wholesale – Lancer le site Web – Personal Page)), on the condition that the requested copper pair is unequipped, i.e. that no load coils or Active Equipment (coupling, repeaters, correctors, etc.) are present in the relevant circuit/s. It is further required that the copper pair exists and can be used without the need of severe network modification works, which have to be proved to the Beneficiary. In this respect, the small network adaptations performed by Belgacom are described in ~~10.2+0.2.~~
- For more information on migrations, reference is made to the Migrations Offer (BRUO Annex K).

- Belgacom currently doesn't plan any implementation of SDSL multi-pair. If Belgacom, in the future, decides to deploy the SDSL service on multiple pairs, this will be included in the Broba II SDSL offer and communicated to the market 3 months before the start of the service.

10.2 Small Network Adaptations

~~71:72.~~ The Introduction Cable (also referred to as drop wire) is defined as the physical part of a End-User line that connects the Distribution Cable to the End-User Network Termination Point.

~~72:73.~~ In some cases, the pair of fully metallic continuous unequipped copper wires exists from the Belgacom Main Distribution Frame at the Belgacom LEX or LDC up to the Distribution Cable in the street in front of the User premises.

~~73:74.~~ In case no Introduction Cable is available for the provisioning of a Data Connectivity (Broba II) without voice, the following solutions, called Small Network Adaptations, will be applicable:

- Realization of a new introduction in the building of the Beneficiaries User
- Renewal of the introduction in the building of the Beneficiaries User
- Splicing additional pairs in the existing introduction splice of the building of the Beneficiaries User
- Moving existing introduction from an existing Distribution Cable to another existing Distribution Cable.

~~74:75.~~ These solutions will only be available upon specific request of the Beneficiary and providing that the Belgacom standard conditions for access are fulfilled. This requires that a free duct or an open trench is available on the private domain. If a free duct or an open trench is not available on the private domain, Belgacom can be asked to also perform this part of the work on condition that the Beneficiary agrees to pay the non-discriminatory commercial price for that part of the work performed by Belgacom. This price will be determined on a case-by-case basis.

76. The certified technicians will never perform Small Network Adaptations.

~~75:77.~~ Belgacom will only perform the Small Network Adaptations if the splicing is done in front of the premises of that specific User. Belgacom will provide an Introduction Cable with a standard length of 20 meters to provide connection between the Distribution cable and the Network Termination Point. In case an introduction with a length of more than 20 meters has to be provided, Belgacom will charge the Beneficiary the relevant price for the extra work. On the private domain, the Beneficiary must provide duct and trench.

~~76:78.~~ In case no more free pairs are available in the Distribution Cable or the Feeder Cable, the request will be rejected. The construction or trenching of new distribution cabling, new street cabinets or new feeder cabling is outside the scope of the present offer.

~~77:79.~~ If small network adaptations are necessary to provide the requested service and Beneficiary did not include his approval in his request, Belgacom shall point out to the Beneficiary that he has the possibility to ask for small network adaptations (an absence of approval in the initial request shall not be considered as a reject).

10.3 Network Termination Point

~~78:80.~~ The Network Termination Point is the first termination point of a loop at the End User premises.

~~79:81.~~ If no Network Termination Point is present, Belgacom [or the certified technician chosen by The beneficiary](#) will install it at the moment of the line provisioning. This is automatically the case for Small Network Adaptations.

~~80:82.~~ The NTP can be of the following types :

- TF2001
- TF2007

~~81:83.~~ The NTP makes part of the Belgacom public infrastructure. Consequently, only Belgacom [or a certified technician](#) is allowed to install and to modify the NTP, unless otherwise stated.

10.4 Move from LDC to LEX

~~82:84.~~ If a DSLAM is available in the LDC, VPs may be ordered in the LDC concerned in case the Beneficiary wants to connect end-users in that local net.

~~83:85.~~ However, if a beneficiary requests to move an end-user line from a LDC to a LEX, Belgacom will perform the work under the condition that there are enough available copper cables in the junction between the LEX and the LDC.

~~84:86.~~ Since this move can often lead to malfunctioning of the end-user line, any trouble ticket that will be opened by the beneficiary - and for which the diagnostic is that the issue is the consequence of the move – will be considered as a wrongful repair request.

~~85:87.~~ If the beneficiary asks to move back the line to its LDC, an activation fee will be invoiced to the beneficiary.

10.5 Spectrum Management and equipment aspects

~~86-88.~~ The rules mentioned hereunder may be modified or completed on basis of the proposals of the Task Group Spectrum Management, approved by the BIPT.

~~87-89.~~ The number of broadband systems that can be deployed within an access cable is not limited. It does not mean that spectral interference between different systems is under control. Adding a lot of broadband systems within a cable leads to a general decrease of the performance, compared with the situation where only a few high frequency systems are deployed.

~~88-90.~~ In order to maintain a good performance level for the xDSL services, Belgacom is applying some pair selection rules. The purpose is to keep the new xDSL technologies at a distance of the existing and disturbing technologies.

~~89-91.~~ The only rules to be considered are the following: a line type 2 will not be located in the same quad than or in the adjacent quad of an existing 2 Mbits system.

~~90-92.~~ The pair selection rules do not offer any guarantees as to the potential bit rate in any access cable or on any specific copper pair.

~~91-93.~~ Note: particular requisites in terms of performance could lead to the definition of new rules and new types of lines in the future.

11 SDSL deployment rules

- 92-94. This table doesn't show the bit rates Beneficiaries can order. These bit rates are defined in the parameter tables in section 7.
- 93-95. However, this table shows the limitations bit rates versus loop attenuation at 800Hz as proposed by Belgacom. This means that if a Beneficiary's order exceeds these rules, his order will be rejected.
- 94-96. The limitations were calculated by taking into account the presence of potential signal perturbations (ADSL, SDSL) in the same quad and adjacent ones.
- 95-97. Tests were performed on feeding and distribution cables on the test environment of Belgacom.
- 96-98. Equipment: Chipset: Globespan, version 1.5
- 97-99. The maximum deployment of SDSL systems can limit the deployment of ADSL to some extent because of the risk of interference between SDSL and ADSL, which may be found in the same quad according to the pair selection rules. Therefore, the following attenuation at 800Hz restrictions have to be respected for the SDSL systems:

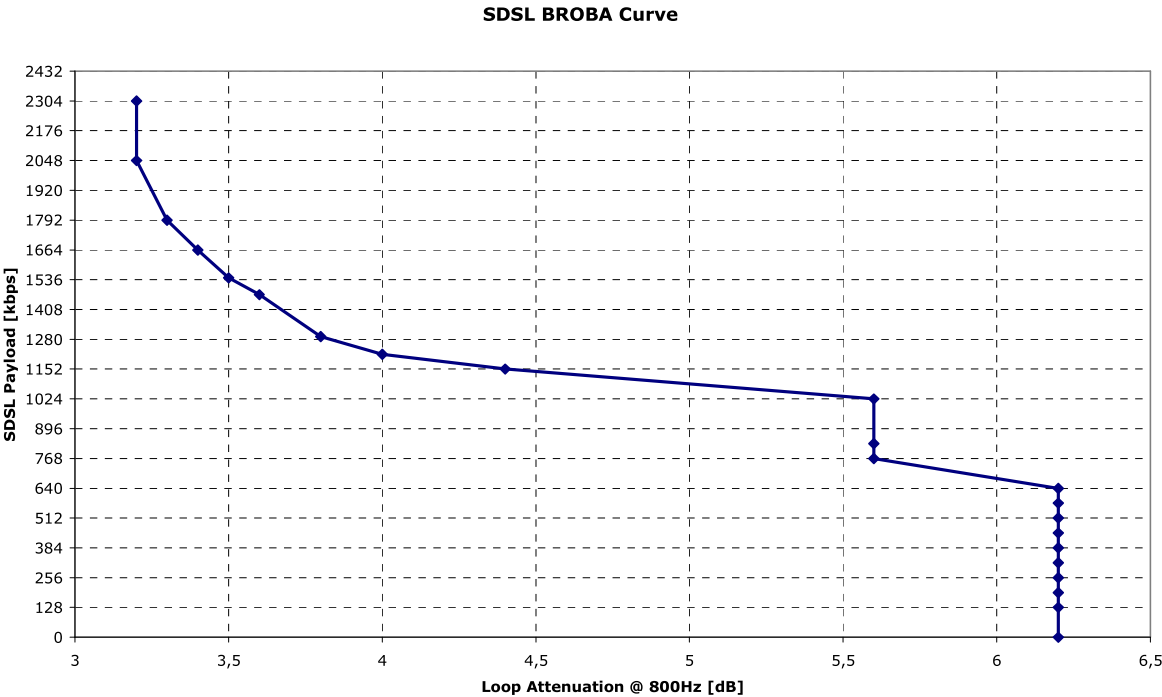


Fig.3

~~98.100.~~ The following table gives the x-y data of this graph, linear interpolation is to be used for points that are not listed in the table:

Att @ 800Hz	SDSL Line Rate (kbps)	SDSL Payload [kbps]
3,2	2312	2304
3,2	2056	2048
3,3	1800	1792
3,4	1672	1664
3,5	1552	1544
3,6	1480	1472
3,8	1300	1292
4	1224	1216
4,4	1160	1152
5,6	1032	1024
5,6	840	832
5,6	776	768
6,2	656	640
6,2	592	576
6,2	528	512
6,2	464	448
6,2	400	384
6,2	336	320
6,2	272	256
6,2	200	192
6,2	136	128
6,2	0	0

Note: this curve is subject to evolution.

12 Ordering of Broba II SDSL Services

~~99.101.~~ Belgacom delivers access to the Broba II SDSL service at the LEX or LDC or KVD when provided by Belgacom in the framework of its own retail or wholesale offer according to the Beneficiary's orders transmitted to Belgacom in accordance with the rules set out in this document.

12.1 Services that can be ordered

~~100.102.~~ An exhaustive list of the Broba II SDSL services can be found in Annex 6 – Pricing & Billing.

12.2 Rejection of Requests for Broba II SDSL

~~101.103.~~ Belgacom will reject a Request for Broba II SDSL service, in particular:

- if no Non-active loops are available (in case of a Request for a Non-active Loop); without prejudice of the right of the Beneficiary to request in that case a small network adaptation by Belgacom, according to the conditions as set out in ~~10.240.2~~;

- if no loop compatible with the applicable pair selection rules as defined above is available;
- if the order specifies a bit rate/attenuation that exceeds the attenuation/bit rate limitation curve.

~~102~~104. In case a migration cannot be executed, the Beneficiary's request will be rejected. However, in that case the Beneficiary has the possibility to send to Belgacom a Non-active Loop Request. In the event that the latter Request can neither be executed, this Request will also be rejected.

12.3 Ordering process

~~103~~105. Orders to activate the Broba II SDSL service on end-user lines are submitted by the Beneficiary to Belgacom through the use of the electronic messaging system MTS (Message Transfer System), by sending an e-mail or via fax. Each message contains one order form in attachment, coded in XML in case of MTS e-mail. On the condition that the Beneficiary has validly contracted for the provisioning of BROBA¹, he will obtain the encryption keys in order to sign and encrypt the message.

~~104~~106. The order must carry the following minimal information:

- Beneficiary's identification;
 - Name and full address of the end user to connect;
 - Customer ID (optional);
 - When relevant (in case of migrations or active loops), directory number (NA);
 - Ready for service date;
 - Profile chosen by the Beneficiary.
- The option "certified technician", if the Beneficiary has decided to realize the installation with a certified technician.

12.4 Migration

~~105~~107. For more information on migrations, reference is made to the Migrations Offer (BRUO Annex K).

¹ This point is still under study. In the meantime, the general rule is: for an order on a non-active loop: address, for an order of an active loop: address + dial number.

13 Billing

13.1 General

~~106~~108. Principle: all Standard Fees as described in Annex 6, whenever relevant, will be invoiced to and are to be paid by the Beneficiary.

13.2 Process

- **Graphic illustration**

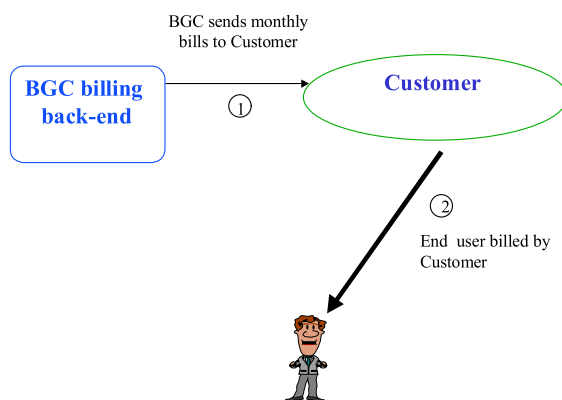


Fig. 4

- **Description**

~~107~~109. The Beneficiary will receive a monthly invoice containing the fees (recurring and non-recurring) for that period. Invoices related to any relevant fees are to be paid within the foreseen deadlines as set out in Pricing & Billing document (Annex 6).

14 Repair

14.1 General

~~108~~110. Repairs are carried out on the Network after the Beneficiary has informed Belgacom provided the Beneficiary has made the preliminary investigations and is confident that the problem is in Belgacom Network. The Beneficiary, when reporting that there is a problem, has to give precise information about the nature of the problem. Belgacom will, when appropriate, confirm the existence of the problem.

~~109~~111. If Belgacom becomes aware of a problem on the network, Belgacom automatically coordinates the necessary actions to resolve the problem according to the applicable arrangements.

~~109~~Note: modification and interruptions

~~110:112.~~ The maintenance and the development of the Network may require Belgacom to limit the service or to suspend it temporarily. Belgacom undertakes to limit the duration of this period to the time that is required for the execution of the work and that duration will, in no way, be longer than the period that Belgacom would require if her own services needed to be suspended. In such cases, Belgacom will inform the Beneficiary in due time at least 48 hours in advance, and communicate the estimated suspension time and the reason of suspension. Such service interruptions are not included in the (I)SLA on service availability.

14.1.1 Repair on a specific End User line

~~111:113.~~ The Beneficiary will communicate possible network related problems of End Users to Belgacom. Belgacom will never be first line of contact with the End User for the Beneficiary SDSL based service, based on the Broba II SDSL service.

14.1.2 Repair for spectral issues reasons

~~112:114.~~ If problems occur as a consequence of a Beneficiary SDSL based service (for instance: interference of the Beneficiary system with existing system in service in the cable bundle, connection of non-compatible equipment), Belgacom may solve the problem by removing the concerned Beneficiary service on the concerned End User line under LIFO (Last In First Out) mode. The related costs will be invoiced to the Beneficiary. In case of dispute regarding the costs either party can ask BIPT to verify the claimed costs.

~~113:~~

~~113:115.~~ Note that the inquiry “loop attenuation” doesn’t examine the spectral characteristics of the line and cannot consequently determine with a 100% accuracy that the line won’t present technical problems.

~~114:116.~~ If the SDSL services offered by the Beneficiary appear to be the cause of an abnormal² perturbation, Belgacom will demonstrate that this was caused by the services of the Beneficiary and will, eventually, interrupt the service to be able to make this demonstration. The same procedure applies if the DSL services offered by Belgacom appear to be the cause of an abnormal perturbation. The general rule that must be followed is: first system in service should stay in service. The Beneficiary has, at all time, the right of verification. Repair requests can be submitted by phone or e-mail in function of the types of faults (see Annex 4 – Planning & Operations point 8 for more information)..

² Abnormal : when disturbances on other lines in the same cable are not in line with the technical rules and authorisation conditions as defined within the context of the technical specifications

Appendix A: Access Line

15 Customer-Sited Data Link

15.1 Preliminary

~~115-117.~~ The terms, conditions and requirements set out in this section determine the general framework between Belgacom and the Beneficiary on Customer-Sited Data Link Service in the framework of provision of a connection between a Belgacom ATM switch, located in a ATM Access Point, and the Beneficiary Equipment, in the framework of this service. This service will be referred to hereafter as "Customer-Sited Data Link".

~~116-118.~~ For the provision of 2Mbit/s, 34Mbit/s or STM-1 Customer-Sited Data Link, The Beneficiary will subscribe a one (1) year contract, under which the 2Mbit/s, 34Mbit/s or STM-1 Customer-Sited Data Link Service is made available to the Beneficiary for a fixed term of one year. At the end of this period, the contract will be tacitly renewed for an indefinite duration and can be terminated at any time with a notice of at least one calendar month. If the Beneficiary wishes to terminate the contract during the initial one-year term, The Beneficiary will pay to Belgacom a termination fee equal to the total of the rental fees until the end of such term.

15.2 Description

~~117-119.~~ Customer-Sited Data Link is a connection system that is provided in its entirety by Belgacom between the Beneficiary Connection point at the Beneficiary premises, and Belgacom ATM Access Point.

~~118-120.~~ Belgacom will install the necessary transmission equipment at the premises of the Beneficiary.

~~119-121.~~ The Customer-Sited Data Link Service consists of one (1) or more 2Mbit/s, 34 Mbit/s or STM-1 Systems.

~~120-122.~~ 2Mbit/s, 34Mbit/s or STM-1 Systems provided under this Service Plan do not have Diversity of routing.

~~121-123.~~ Diversity of routing can be available as an option (when technically feasible and at a price based on a quote from Belgacom for the diversity routing aspect).

~~122-124.~~ The Beneficiary Connection point is located at the Beneficiary's premises.

15.3 Implementation

~~123-125.~~ The implementation of Customer-Sited Data Link Service will be in accordance with the Technical Specifications provided in Annex 2 – Section 2: Technical Specifications of the Access Line.

15.4 General Conditions

~~124-126.~~ A Customer-Sited Data Link Service can be ordered by the Beneficiary between a specified Belgacom ATM Access Point (Connection Point) and the specified Beneficiary's premises.

~~125-127.~~ The Beneficiary shall provide and maintain, at its expense, the cabling from the Point of Connection to the Beneficiary equipment including any cross connections that are required.

~~126-128.~~ All Belgacom transmission equipment shall comply with the appropriate Belgacom Technical Specifications provided in Annex 2 – Section 2: Technical Specifications of the Access Line.

15.5 Prices

~~127-129.~~ The Beneficiary shall pay to Belgacom the installation and rental fees provided in Annex 6 for Customer-Sited Data Link Service.

15.6 Specific Conditions

~~128-130.~~ Belgacom will identify each 2Mbit/s, 34Mbit/s or STM-1 Customer-Sited Data Link provided pursuant to the conditions of this Section through attributing them a codification number.

16 Belgacom-Sited Data Link

16.1 Preliminary

~~129-131.~~ The terms, conditions and requirements set out in this section determine the general framework between Belgacom and the Beneficiary on Belgacom-Sited Data Link Service in the framework of the provision of a connection between a Belgacom ATM switch, located in a Belgacom ATM Access Point and the Beneficiary Equipment, in the framework of this service. This Service will be referred to hereafter as " Belgacom-Sited Data Link".

~~130-132.~~ A Belgacom-Sited Data Link Service can be brought into service with regard to a specified site, and the Beneficiary can be entitled to install the equipment required to this effect in the Belgacom building concerned, if and only if the Beneficiary has prior to this time signed an appropriate Colocation Agreement with regard to the site concerned.

~~131-133.~~ The Belgacom-Sited Data Link Service can only be used for all connection purposes with Belgacom ATM/FR data network. If the Beneficiary benefits from Belgacom-Sited Data Link Service with regard to a certain site, the Beneficiary is authorized to lease Data Link facilities to or from another party for the purpose of allowing a direct connection between the Network and such other party.

~~132-134.~~ For the sake of clarity, it is noted that Data Links covered by this document are 2Mbit/s, 34Mbit/s or 155Mbit/s Data Links.

16.2 Description

~~133-135.~~ Belgacom-Sited Data Link Service will only be available in Belgacom ATM Access Points.

~~134-136.~~ A "Belgacom-Sited Data Link Service" is a connection service where Belgacom offers the possibility to a Beneficiary to provide the entire Data Link including the transmission equipment that is installed in a Belgacom technical building. The Beneficiary will install its cable infrastructure at least up to an introduction duct designated by Belgacom in the immediate vicinity of the Belgacom ATM Access Point (building) in which any Belgacom ATM switch (Access Point) is located.

~~135-137.~~ The Beneficiary Point of Connection for this type of Data Link is located in the Belgacom premises on the indoor cable connecting the Beneficiary's transmission equipment to the Belgacom DDF, at the place where that cable enters the collocation room.

~~136-138.~~ In the event that Belgacom is caused to replace the collocation room in which the transmission equipment of The Beneficiary is to be installed, then both Parties will cooperate to find a mutually acceptable solution.

~~137-139.~~ The Beneficiary shall install equipment in its collocation area and following the rules set out in the collocation agreement. The Beneficiary's transmission facilities will be extended outside the collocation room to a digital distribution frame (DDF) within Belgacom's technical area to allow the 2Mbit/s and 34Mbit/s or to an Optical Light Distribution Frame (OLDF) within Belgacom's technical area to allow the 155Mbit/s Links to be established. Belgacom or Belgacom's authorized staff working under its responsibility will carry out this extension under the financial conditions stated in Annex 6.

16.3 Scheme

~~138-140.~~ See below for a general scheme illustrating Belgacom-Sited Data Link (scheme valid for 2 Mbit/s and 34Mbit/s configurations):

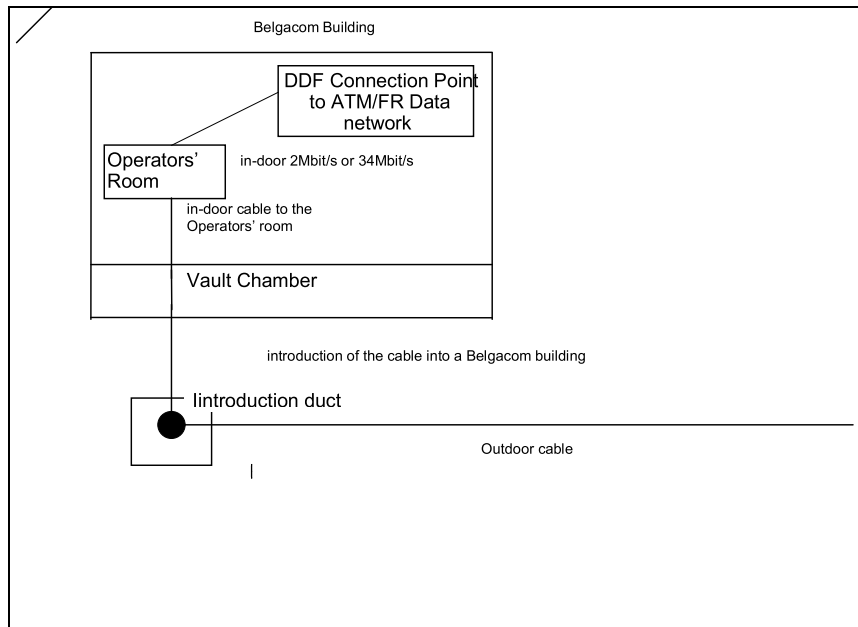


Fig. 5

16.4 General Conditions

~~139-141.~~ All Beneficiary transmission equipment shall comply with the Technical Specifications provided in Annex 2 – Section 2: Technical Specifications of the Access Line.

~~140-142.~~ The Beneficiary shall provide to its employees full information regarding the content of the rules to be respected regarding Belgacom-Sited Data Links.

16.5 Procedures

~~141-143.~~ The Beneficiary is responsible for determining the number of Belgacom-Sited Data Link Service that the Beneficiary requires. Belgacom does not make a representation that it will at all times be in a position to provide the full capacity ordered by the Beneficiary. In particular, it is not excluded that, taking into account possible evolutions in the future, Belgacom may be confronted with a high number of requests for the installation of additional collocation spaces in different buildings that would not allow Belgacom to respect all relevant timers. In these cases, Belgacom will have to inform the market and BIPT.

16.6 Prices

~~142-144.~~ The Beneficiary shall pay to Belgacom the installation and rental fees specified in Annex 6 for Belgacom-Sited Data Link Service.

Appendix B: Beneficiary Terms & Conditions

~~143-145.~~ Unless the Beneficiary is expressly authorized by Belgacom to do so, The Beneficiary is prohibited to bring any change to the public telecommunications infrastructure at the End User site, including the termination point. The Beneficiary will take good care of the Belgacom installations in the End User premises. The Beneficiary is responsible to ensure that its End User doesn't disturb the traffic on the Network nor put the xDSL-based service in danger by action or omission.

~~144-146.~~ The Beneficiary will ensure that equipment used at the End User premises does not negatively impact the Belgacom network. The equipment used by The Beneficiary at the End User premises must be conform to the applicable standardization and its interoperability with the Belgacom Central Office Equipment must have been demonstrated.

~~145-147.~~ The software version running on the DSLAM of Belgacom networks is the version 4.2. The ATU-C handles different standards and supports DSL modems conform to Belgacom UNI. The complete list of standards and supported modems can be found on:
http://www.belgacom.com/group/9/legal_technic/fr/network-specifications.html

List of common modems tested by Belcomlab according to Belgacom UNI standard:
<http://www.belcomlab.com/fr/default.htm>

~~146-148.~~ However, attention is drawn to the fact that an ATU-R is based on the mentioned standards does not guarantee full interoperability with the ATU-C of Alcatel up to service level since interoperability is still under investigation.

Appendix C: List of Access Areas and ATM Access Point

17 List of Access Areas

Access Area	Included Telephone Zones
Antwerpen:	03
Bruxelles:	02
Gent:	09 (*), 052, 053, 054, 055
Kortrijk:	050, 051, 056, 057, 058, 059
Liège:	04 (*), 019, 080 (*), 085, 086, 087
Leuven-Hasselt:	013, 014, 015, 016, 011, 012, 089
Mons-Charleroi:	065, 068, 069, 071, 060, 064, 067
Namur:	081, 082, 083, 084, 061, 063, 010

(*): For the sake of clarity, it is confirmed that the zone codes indicated above in the context of the present offer are limited to the numbers which identify fixed network termination points. In particular, 09 and 04 are respectively limited to the number series 092, 093 and 042, 043. As far as the code 080 is concerned, the numbers starting with 0800 are excluded.

18 List of ATM Access Points

City	Address	NCOW
Aalst	Ridderstraat 43	5321
Antwerpen - Berchem	Karel Coggestraat 2	3227
Antwerpen - Centrum	Lange Nieuwstraat 106	3224
Arlon	Avenue Jean-Baptiste Nothomb 40	6321
Ath	Rue Jean Jaurès, 11	6828
Brugge - Assebroek	Matmeers 2 A	5033
Brussels - Ixelles/Elsene	Rue Borrens - Borrensstraat 16	2646
Brussels - Etterbeek	Rue J. de Lalaing - J. de Lalaingstraat 36-40	2280
Brussels - Evere	Avenue des Anciens Combattants - Oudstrijderlaan 94	2726
Brussels - Linthout	Rue V. Lefèvre - V. Lefèvre 24-26	2732
Brussels - Marais	Rue du Marais - Broekstraat 72-74	2220
Brussels - Paille	Rue Lebeau - Lebeauststraat 2	2513
Brussels - Sacré-Coeur	Avenue A.J. Slegers - A.J. Slegerslaan 36	2770
Brussels - Schaarbeek	Rue Jan Blockx - Jan Blockxstraat 26-30	2215
Brussels - St-Gilles- /St. Gillis	Rue Steens - Steensstraat 11	2538
Brussels - Uccle	Rue Rodenbach - Rodenbachstraat 133	02
Brussels - Woluwe	Voordestraat 10	2725
Charleroi - Centre	Rue de la science 2	7127
Charleroi - Gilly	Sentier de la Limite 80	7141
Chimay	Rue Reine Astrid 5	6021
Ciney	Rue d'Omalius 67 B	8321
Dendermonde	Courtensstraat 22	5221
Diest	Ferd. Allenstraat 38	1333
Dinant	Rue Bribosia 9	8222
Durbuy	Chainrue 52	8621
Genk	Europalaan 27	8930
Gent - Centrum	Sint Nikolaasstraat 27	9223
Gent - Keizer Karel	Keizer Karelstraat 1	9265
Hasselt	Paardsdemerstraat 10	1127
Herentals	Molenvest 13	1421
Huy	Rue du Vieux-Pont 16	85
Ieper	Vooruitgangsstraat 1	5720
Jemelle	Rue Delvigne 76	8421
Kortrijk	Doorniksestraat 61-65	5622
La Louvière	Rue de la Concorde 17	6422
Leuven	Vismarkt 17	1621
Libramont	Rue des alliés 1	6122
Liège - Centre	Rue de l'université 30	4223
Liège - Grétry	Rue d'Harscamp 17	4349
Mechelen	Stationstraat 58	1540
Mons	Rue des fosses 7	6533
Namur	Rue Marie-Henriette 60	8172
Namur	Rue Rogier 2	8123
Ninove	Groenmarkt 42	5433
Nivelles	Place Albert 1	6722
Oostende	Hendrik Serruyslaan 18 A	5970
Roeselare	H. Consciencestraat 3-5	5120
Ronse	Politieke Gevangenerstraat 14	5521
Stavelot	Cour de l'hôtel de ville 3	8088
Tournai	Rue de la Tête d'Or 9	6922
Verviers	Rue Thil Lorrain 6	8733
Veurne	Pannestraat 1	5831
Waremmme	Rue Joachim 67	1932
Wavre	Rue de la Limite 2	1022

BROBA II ADSL & SDSL

Annex 1

General Terms & Conditions

General information

This document constitutes an integral part of the Belgacom Offer for Bitstream Access Services (BROBA II) communicated to the Belgian Institute for Post and Telecom (here-after the BIPT). It includes the general terms and conditions applicable to the provision of Bitstream Access to establish end-to-end Data Connectivity services that encompasses BROBA 2 ADSL Services and BROBA 2 SDSL Services (hereafter referred to as respectively as “BROBA 2 ADSL” and “BROBA 2 SDSL”). These Bitstream Access services are provided in conformity with the relevant laws and decrees in effect. The present Terms and Conditions shall remain applicable until they are replaced by other terms and conditions.

A distinction should be made between the following:

The Main Body

The Belgacom Reference for Bitstream Access Offer (BROBA II) that describes in broad terms the conditions of the Bitstream Access services offered by Belgacom as it has been communicated to the BIPT.

The Order Forms

The order forms list the information requested by Belgacom to enable it to provide respectively the BROBA 2 ADSL or BROBA 2 SDSL Services. It is signed by the Beneficiary or by his authorized agent. [An order request sent by the Beneficiary via electronic format according to the rules described in the Planning & Operations Manual will be considered as a valid order form signed by the Beneficiary.](#)

The General Terms and Conditions

The General Terms and Conditions comprehensively list the rights and obligations of Belgacom and the Beneficiary with regard to the provision of the Bitstream Access Services.

The Exchange Information

Information flow between Belgacom and Beneficiary

~~Approved-Submitted to by~~ the Belgian Institute for Postal Services and Telecommunications on ~~2008/0803/20082010~~
~~□ FILENAME ADSL_SDSL Annex 1 General terms and Conditions_100305.doc~~~~BROBA_Annex_1_GTC_050310.doc~~~~□ADSL_SDSL_Annex_1_General terms and Conditions_080701_080820.doc~~

The Technical Specifications

The technical conditions define the technical specifications and the quality standards for each type of Bitstream Access Service.

The Planning & Operations Manual

The Planning & Operations Manual describes the conditions of delivery of both the BROBA 2 ADSL and BROBA 2 SDSL Services.

The Operational Systems

~~Description of the Tools to be used for operational purposes~~

The Pricing and Billing

The Pricing and Billing indicates the rates and the billing and payment conditions respectively for the Belgacom BROBA 2 ADSL and BROBA 2 SDSL Services.

The Order Form, General Terms and Conditions, Main Body, the relevant sections of the Planning and Operations Manual, Price List, Technical Requirements, Exchange of Information, SLA, Improved SLA, [Operational Systems](#), Prepayment Conditions, Guaranteed Positions, [Escalation Procedure](#) and, if any, the specific terms and conditions agreed upon by the Parties constitute the Belgacom's reference offer for Bitstream Access (BROBA II) (hereinafter, the “BROBA II Reference Offer”).

With a view to the signature of the BROBA 2 ADSL or SDSL Contract, the BROBA II Reference Offer can be negotiated by the parties and does not substitute for the parties' will.

Except otherwise agreed by the parties, the BROBA 2 ADSL or SDSL Contract shall be adapted if the BROBA II Reference Offer is modified. This adaptation shall be in accordance with this BROBA II Reference Offer's modification.

Anyone may examine the General Terms and Conditions relating to the Bitstream Access Services, and the up-dated price lists as they are approved by BIPT and applicable at the time of consultation. These may be obtained either from Belgacom's Internet site or from Belgacom's Customer service department. The other Annexes are available on the Secured website of Belgacom and may be consulted further to the signature of a non-disclosure Agreement.

the technical, operational, billing, planning and financial conditions for the BROBA 2 SDSL as described in the Belgacom Reference Offer. The BROBA 2 SDSL Contract is concluded as mentioned in the first Chapter of the present General Terms and Conditions.

Glossary

The capitalized terms in the present General Terms and Conditions for Bitstream Access Services have the meaning as defined below:

BROBA 2 ADSL Contract Any agreement concluded between Belgacom and a Beneficiary following the negotiations between Belgacom and the Beneficiary on the basis of the present General Terms and Conditions, technical, operational, billing, planning and financial conditions for the BROBA 2 ADSL as described in the Reference Offer of Belgacom. The BROBA 2 ADSL Contract is concluded as mentioned in the first chapter of the present General Terms and Conditions.

BROBA II Reference Offer Has the meaning set out in the General Information.

Request The Beneficiary's demand concerning the delivery of a BROBA 2 ADSL or BROBA 2 SDSL Service as described in this Reference Offer.

BROBA 2 SDSL Contract Any agreement concluded between Belgacom and a Beneficiary following the negotiations between Belgacom and the Beneficiary on the basis of the present General Terms and Conditions,

Certified Technician

Any technician employed either by a Beneficiary or by one of Beneficiary's subcontractors, trained and certified by Belgacom in order to perform, in place of a Belgacom technician, the installation of BROBA 2 ADSL or SDSL lines.

Contract As the case may be a contract for a BROBA 2 ADSL line or BROBA 2 SDSL line.

Bitstream Access Services All the Services described in the Belgacom Reference Offer for Bitstream Access Services that are ordered by the Beneficiary.

Party Either Belgacom or Beneficiary.

Parties Collectively, Belgacom and Beneficiary.

Contract procedure

Request by the Beneficiary

1. In view of the offering of a Bitstream access based service to End-Users pursuant to the provisions of the Contract, the Beneficiary must submit his request for a Service to the Customer Service department of Belgacom by completing and signing the appropriate order form. When submitting an order request in electronic format, the Beneficiary will comply with the rules described in the Planning & Operations Manual. The

- ~~specific~~ terms and conditions for delivering the Services are described here-after.
2. The Beneficiary shall consult the general terms and conditions and, the relevant BROBA II Reference Offer as well as the list of technical requirements. These can be obtained from Belgacom's Internet site or by requesting them from Belgacom's Customer Service department.
 3. Belgacom may not refuse to execute the Beneficiary's request conform the BROBA II Reference Offer, without prejudice to the negotiations between Belgacom and the Beneficiary, except on one of the following grounds:
 - a) the Beneficiary or his authorized agent refuses to provide Belgacom with official documents to identify himself;
 - b) in an emergency situation (i.e., exceptional cases of *force majeure*), for the purpose of ensuring the safe operation of the network, after all necessary measures taken by Belgacom to ensure access to the service are without effect;
 - c) following the Beneficiary's failure to observe obligations arising from the present General Terms and Conditions for the use of the service, subject to the prior consent of the BIPT;
 - d) for the purpose of maintaining network integrity or the interoperability of the services or for any other technical reasons that make the delivery of unbundled service impossible;
 - e) the Beneficiary has refused to provide proof of the existence of the unconditional financial guarantee as specified in the provision Financial Guarantees ~~Financial Guarantees~~ here-under.
 4. In the event of a refusal on one of the grounds listed in article 3 above, Belgacom shall notify within 3 working days the Beneficiary of its decision and the grounds for the decision by ordinary mail. A copy will be sent to the BIPT in the same delay.

5. The Beneficiary may lodge an appeal against this decision by the procedure provided under the Dispute Resolution Procedure and in accordance with these General Terms and Conditions.

Conclusion, entry into force and duration of the Contract

6. The provision of the BROBA II ADSL or SDSL Service is subject to the conclusion of a Contract between Beneficiary and Belgacom according to the present General Terms and Conditions and the negotiations between the parties. The Contract is concluded when Belgacom has accepted in writing or via electronic way ("Validate" XML) the Order Form submitted by the Beneficiary.
7. Unless otherwise stipulated, the Contract takes effect on the day after the date on which the BROBA 2 ADSL or BROBA 2 SDSL Service (as described here-after) is made available to the Beneficiary. Belgacom shall confirm this date to the Beneficiary in writing, or via electronic way ("Done" XML).
8. The Service is made available to the Beneficiary for an indefinite term.

Services covered by these General Terms and Conditions

Bitstream Access – Data connectivity – ADSL (BROBA 2 - ADSL)

9. Belgacom shall provide to Beneficiary and maintain on behalf of Beneficiary Data Connectivity Services in accordance with BROBA 2 - ADSL Reference Offer and its Annexes and/or Appendixes.
10. Subject to the successful completion of testing as defined in and pursuant to the provisions of BROBA 2 - ADSL, the Parties will bring the Data Connectivity Services into service on the agreed Bringing Into Service Date. When Beneficiary chooses to have the line installed by one of his Certified Technicians, the Beneficiary alone decides upon the Bringing into Service

[Date and informs Belgacom of this date.](#)

11. The data connectivity between the respective networks of the Parties shall be implemented in accordance with the technical specifications of Access Line in Annex 2.
12. The Data Connectivity Service purchased by Beneficiary according to the foregoing will enable Beneficiary to define its own ADSL products and to market, distribute and sell under its name and on its behalf its own ADSL products towards End-Users. In this respect Belgacom will inform the Beneficiary of any modification of the technical specification, enabling a modification of the services offered, at the latest 3 months before the commercial launch by Belgacom of a commercial service based on these technical specifications.
13. For each End-User to whom Beneficiary will sell an ADSL product in accordance with the foregoing, Belgacom will, in accordance with and subject to the limitation set out in BROBA 2 - ADSL, install, implement and provide connectivity from the End-User premises up to the demarcation point between Belgacom network and Beneficiary network, as defined in BROBA 2 - ADSL. [If the Beneficiary chooses to install a specific BROBA 2 ADSL line with a Certified Technician, Belgacom will provide to the Beneficiary the exhaustive list of tasks to be performed in relation to the physical installation of this specific line, which tasks will all be executed by the Certified Technician chosen by the Beneficiary.](#)
14. Within the limits of what is permitted under the applicable regulatory framework, both Parties shall exchange appropriate operational information as provided in BROBA 2 - ADSL (including, in particular, maintenance contact numbers, network information, information required to comply with law enforcement and other security agencies of the government and such other information as the Parties shall mutually agree).

Bitstream Access – Data connectivity - SDSL (BROBA 2 - SDSL)

15. Belgacom shall provide to Beneficiary and maintain on behalf of Beneficiary Data Connectivity Services in accordance with BROBA 2 - SDSL and its Annexes and/or Appendixes.
16. Subject to the successful completion of testing as defined in and pursuant to the provisions of BROBA 2-SDSL the Parties will bring the Data Connectivity Services into service on the agreed Bringing Into Service Date. [When Beneficiary chooses to have the line installed by one of his Certified Technicians, the Beneficiary alone decides upon the Bringing into Service Date and informs Belgacom of this date.](#)
17. The data connectivity between the respective networks of the Parties shall be implemented in accordance with the technical specifications of Access Line in Annex 2.
18. The Data Connectivity Service purchased by Beneficiary according to the foregoing will enable Beneficiary to define its own SDSL products and to market, distribute and sell under its name and on its behalf its own SDSL products towards End-Users. In this respect Belgacom will inform the Beneficiary of any modification of the technical specification, enabling a modification of the services offered, at the latest 3 months before the commercial launch by Belgacom of a commercial service based on these technical specifications.
19. For each End-User to whom Beneficiary will sell an SDSL product in accordance with the foregoing, Belgacom will, in accordance with and subject to the limitation set out in BROBA 2-SDSL, install, implement and provide connectivity from the End-User premises up to the demarcation point between Belgacom network and Beneficiary network, as defined in BROBA 2-SDSL. [If the Beneficiary chooses to install a specific BROBA 2 ADSL line with a Certified Technician, Belgacom will provide to the Beneficiary the exhaustive list of tasks to be](#)

[performed in relation to the physical installation of this specific line, which tasks will all be executed by the Certified Technician chosen by the Beneficiary.](#)

20. Within the limits of what is permitted under the applicable regulatory framework, both Parties shall exchange appropriate operational information as provided in BROBA 2 - SDSL(including, in particular, maintenance contact numbers, network information, information required to comply with law enforcement and other security agencies of the government and such other information as the Parties shall mutually agree).

Obligations of the Parties

Bitstream Access – Data connectivity – ADSL (BROBA 2 ADSL)

Obligations of the Beneficiary

21. The Beneficiary is at all times fully responsible in particular for the following tasks in respect of the establishment of the connection between the Beneficiary network and the Network:

- To order an Access Line between Belgacom ATM Access Point and the Beneficiary Equipment (including Belgacom-sited Access Lines);
- To inform Belgacom immediately and in writing of any change that may have an impact on the Network integrity, or on the performance of other services delivered by Belgacom towards End-Users. The present rule does not imply that such changes can be made by the Beneficiary;
- To use the Network in conformity with the prevailing regulations on telecommunications and data protection and in conformity with the applicable law in general and especially the normal behaviour of a professional beneficiary;
- To ensure that its End-Users behave in a manner that is fully compatible with these elements and take also responsibility for such behaviour;
- To comply with the instructions (which are preliminary approved by the

BIPT) that Belgacom may issue to the Beneficiary from time to time to ensure the security and correct operation of the Network and of any other network or infrastructure used by Belgacom for the supply of the connection between the End-User premises and the demarcation point between the Network and the Beneficiary's network, or used in any other manner by Belgacom.

22. In respect of the necessary interventions of Belgacom related to connectivity between Belgacom and the Beneficiary, the latter will communicate in good faith to Belgacom, in relevant cases and in a sufficiently timely and complete manner, all information needed by Belgacom for performing repair on the ATM Virtual Path. Beneficiary may refuse to communicate confidential data for which Beneficiary motivates it is not relevant for the requested purpose. Belgacom may ask to BIPT the communication of this data if Belgacom can prove the need to know.

23. In respect of the offering of an ADSL based service to End-Users pursuant to the provisions of the Contract, [Beneficiary is responsible:](#)

- to communicate orders for ADSL connection of End-Users to Belgacom;
- [to communicate to Belgacom via the "Open Calendar" interface, as described in the Planning & Operations Manual, if the installation of the BROBA 2 ADSL line must be performed by a Belgacom technician or by a Certified Technician;](#)
- [in case of installation performed by a Certified Technician, to dispatch to the Certified Technician chosen by the Beneficiary all the operational informations needed to perform the installation of the BROBA 2 ADSL line;](#)
- [in case installation by Certified Technician is chosen by the Beneficiary, to be responsible for the installation of the Service;](#)
- to communicate [to Belgacom](#) the type of equipment present at the End-User premises in case the End-User has an ISDN line;
- to ensure accurate communication of End-Users information to Belgacom in accordance with the relevant provisions of the Contract;

- to ensure the marketing, selling, distribution of its own ADSL products based on these Terms and Conditions, as well as the billing and collection of the fees to be charged to End-User, without this affecting the Beneficiary's liability towards Belgacom;
- to communicate to Belgacom Network related problems;
- to ensure by the Beneficiary, or to have the latter impose on its End-User, the use of Premises Equipment (modem CPE) pursuant to the RTTE rules;
- to be the single and only point of contact of End-User with regard to the ADSL service offered by the Beneficiary to the End-User and abstain from redirecting this End-User towards Belgacom in any circumstance for any problem related to the ADSL service offered by the Beneficiary to the End-User on the concerned line except otherwise stated in the Annex SLA;
- to not modify Belgacom infrastructure and equipment at End User premises (as specified in appendix B of the Main Body), except in case of installation by Certified Technician and to the extent necessary to perform the installation tasks as explicitly foreseen in the tasks list communicated by Belgacom to the Beneficiary;
- to pay to Belgacom the prices pursuant to the Contract;
- to handle responsibility related to network/equipment issues that are non Belgacom related.

Obligations of Belgacom

24. In case of installation performed by a Certified Technician, Belgacom will provide to the Beneficiary all operational informations needed to perform the installation of the BROBA 2 ADSL line.

24:25. Belgacom will provide and maintain ADSL technology on behalf of the Beneficiary from the End-User premises up to the demarcation point between Belgacom network and the Beneficiary network. In this respect, Belgacom and Belgacom only will be entitled to carry out physical modifications to the Network.

25:26. Belgacom will not provide ADSL on behalf of the Beneficiary on a specific

End-User line and thus reject the Order of Beneficiary, if Belgacom has determined on the basis of a technical objective assessment that:

- (a) ADSL is not technically feasible over existing facilities;
- (b) ADSL will cause interference problems, according to the rules submitted to the BIPT or to the rules stated by the legal and regulatory framework, within the Network or other facilities. In this respect, ADSL is incompatible with:
 - some line transmission systems in the same cable bundle;
 - pair gain systems;
 (applicable rules are described in BRUO Spectrum Management)
- (c) Cable is spectrally saturated according to the rules submitted to the BIPT or to the rules stated by the legal and regulatory framework.
 (applicable rules are described in BRUO Spectrum Management)

26:27. In such cases of rejection, Belgacom will communicate to the Beneficiary:

- in case of inquiry, the reason why it has been rejected;
- in case of firm order, the type of rejection, i.e., definitive rejection or temporarily rejection.

On demand of the Beneficiary, Belgacom will communicate when and at what costs it can be remedied to the rejection; alternatives will be tested and proposed to the Beneficiary. In case the Beneficiary does not take the proposed solution by Belgacom, the study cost will be charged after approval by the BIPT.

The Beneficiary has the possibility to ask a detailed justification as well as verification with or without site visit, if necessary, in case where many rejections occur at a specific moment, in a specific place.

27:28. Belgacom shall respect all service levels, timers and other guarantees mentioned in the SLA-document or otherwise shall conform to the applicable penalties.

~~28.29.~~ Belgacom further reserves the right to reject requests for implementation of ADSL on behalf of the Beneficiary on a specific End User line based on wrong data.

Bitstream Access – Data connectivity - SDSL (BROBA 2 - SDSL)

Obligations of the Beneficiary

~~29.30.~~ The Beneficiary is at all times fully responsible in particular for the following tasks in respect of the establishment of the connection between the Beneficiary network and the Network:

- To order an Access Line between Belgacom ATM Access Point and the Beneficiary Equipment;
- To inform Belgacom immediately and in writing of any change that may have an impact on the Network integrity, or on the performance of other services delivered by Belgacom towards End-Users. The present rule does not imply that such changes can be made by the Beneficiary;
- To use the Network in conformity with the prevailing regulations on telecommunications and data protection and in conformity with the applicable law in general and especially the normal behaviour of a professional beneficiary.
- To ensure that its End-Users behave in a manner that is fully compatible with these elements and take also responsibility for such behaviour;
- To comply with the instructions (which are preliminary approved by the BIPT) that Belgacom may issue to the Beneficiary from time to time to ensure the security and correct operation of the Network and of any other network or infrastructure used by Belgacom for the supply of the connection between the End-User premises and the demarcation point between the Network and the Beneficiary's network, or used in any other manner by Belgacom.

~~30.31.~~ In respect of the necessary interventions of Belgacom related to connectivity between Belgacom and the Beneficiary, the latter will communicate in good faith to

Belgacom, in relevant cases and in a sufficiently timely and complete manner, all information needed by Belgacom for performing repair on the ATM Virtual Path.

Beneficiary may refuse to communicate confidential data for which Beneficiary motivates it is not relevant for the requested purpose. Belgacom may ask to BIPT the communication of this data if Belgacom can prove the need to know.

~~31.32.~~ In respect of the offering of an SDSL based service to End-Users pursuant to the provisions of the Contract, the Beneficiary is responsible:

- to communicate orders for SDSL connection of End-Users to Belgacom;
- to communicate to Belgacom via the "Open Calendar" interface, as described in the Planning & Operations Manual, if the installation of the BROBA 2 ADSL line must be performed by a Belgacom technician or by a Certified Technician;
- in case of installation performed by a Certified Technician, to dispatch to the Certified Technician chosen by the Beneficiary all the operational informations needed to perform the installation of the BROBA 2 ADSL line;
- in case installation by Certified Technician is chosen by the Beneficiary, to be responsible for the installation of the Service;
- to communicate to Belgacom the type of equipment present at the End-User premises in case the End-User has an ISDN line;
- to ensure accurate communication of End-Users information to Belgacom in accordance with the relevant provisions of the Contract;
- to ensure the marketing, selling, distribution of its own SDSL products based on these Terms and Conditions, as well as the billing and collection of the fees to be charged to End-User, without this affecting the Beneficiary's liability towards Belgacom;
- to communicate to Belgacom Network related problems;
- to ensure by the Beneficiary, or to have the latter impose on its End-User, the use of Premises Equipment (modem CPE) pursuant to the RTTE rules;

- to be the single and only point of contact of End-User with regard to the SDSL service offered by the Beneficiary to the End-User and abstain from redirecting this End-User towards Belgacom in any circumstance for any problem related to the SDSL service offered by the Beneficiary to the End User on the concerned line except otherwise stated in the Annex 5 SLA;
- to not modify Belgacom infrastructure and equipment at End User premises (as specified in appendix B of the Main Body), except in case of installation by Certified Technician and to the extent necessary to perform the installation tasks as explicitly foreseen in the tasks list communicated by Belgacom;
- to pay to Belgacom the prices pursuant to the Contract;
- to handle responsibility related to network/equipment issues that are non Belgacom related.

Obligations of Belgacom

33. In case of installation performed by a Certified Technician, Belgacom will provide to the Beneficiary all operational informations needed to perform the installation of the BROBA 2 SDSL line.

32-34. Belgacom will provide and maintain SDSL technology on behalf of the Beneficiary from the End User premises up to the demarcation point between Belgacom network and the Beneficiary network. In this respect, Belgacom and Belgacom only will be entitled to carry out physical modifications to the Network.

33-35. Belgacom will not provide SDSL on behalf of the Beneficiary on a specific End User line and thus reject the Order of Beneficiary, if a.o. Belgacom has determined on the basis of a technical objective assessment that:

33-1-35.1. SDSL is not technically feasible over existing facilities;

33-2-35.2. SDSL will cause interference, according to the rules communicated to the BIPT or to the rules stated by the legal and regulatory framework problems, within the Network or other

facilities. In this respect, SDSL is incompatible with:

- some line transmission systems in the same cable bundle;
- pair gain systems.

(applicable rules are described in BRUO Spectrum Management)

33-3-35.3. Cable is spectrally saturated according to the rules communicated to the BIPT or to the rules stated by the legal and regulatory framework.

(applicable rules are described in BRUO Spectrum Management)

36. In such cases of rejection, Belgacom will communicate to the Beneficiary:

- in case of inquiry, the reason why it has been rejected. By the end of the year, a web tool will ensure that the Beneficiary is correctly informed;
- in case of firm order, the type of rejection, i.e., definitive rejection or temporarily rejection.

On demand of the Beneficiary, Belgacom will communicate when and at what costs it can be remedied to the rejection; alternatives will be tested and proposed to the Beneficiary. In case the Beneficiary does not take the proposed solution by Belgacom, the study cost will be charged, after approval by the BIPT.

the Beneficiary has the possibility to ask a detailed justification as well as verification with or without site visit, if necessary, in case where many rejections occur at a specific moment, in a specific place.

35-37. Belgacom shall respect all service levels, timers and other guarantees mentioned in the SLA-document or otherwise shall conform to the applicable penalties.

36-38. Belgacom further reserves the right to reject requests for implementation of SDSL on behalf of the Beneficiary on a specific End User line based on wrong data.

Certified Technician

39. Belgacom allows the Beneficiary to perform the installation of the BROBA 2 ADSL and SDSL lines itself, via Certified Technicians, i.e. its own employees or employees of its subcontractor who are trained and certified by Belgacom. When the Beneficiary chooses to work with Certified Technician, the installation works will not be performed under instruction of Belgacom, but on behalf of Beneficiary itself, and at its own expenses.
40. Employees of Beneficiary and employees of Beneficiary's subcontractor may qualify as Certified Technician, if they fulfill the conditions described in the Specific Terms and Conditions relating to Certified Technician. In order to be certified, they will successfully follow training by Belgacom and sign the necessary confidentiality agreements.
41. Employees of Beneficiary's subcontractor will only be certified, if Beneficiary's subcontractor accepts the right of Belgacom to bring a direct claim against him for any damage caused by his employees to Belgacom, its employees, or third parties when installing the BROBA 2 ADSL or SDSL lines. The Beneficiary's subcontractor must also provide to Belgacom a "liability insurance" certificate of EUR 2.500.000 per claim and per year to cover his liability for any damages caused by his employees, acting as Certified Technician (see also art. 77).
42. Except for this right of direct claim of Belgacom against Beneficiary's subcontractor and a confidentiality agreement, no contractual relationship exists between Belgacom and Beneficiary's subcontractor.
43. The Beneficiary shall allow Belgacom access to its Certified Technicians (both its own employees as well as its subcontractor's employees) for technical discussions. Such direct contact shall, in no cases, be considered as creating a direct contractual link between Belgacom and these Certified Technicians, nor shall it create any responsibility of Belgacom for the acts of the Certified Technicians.
44. When the Beneficiary chooses to work with Certified Technician, he agrees to be responsible for all tasks related to the physical installation of the line (which are foreseen in the list of tasks provided by Belgacom to the Beneficiary for each particular line), and releases Belgacom of any responsibility in this respect. Also, Belgacom cannot be held responsible for incidents during delivery of the Data Connectivity Service after installation of the line, nor for any non compliance of the line with Technical Specifications, to the extent that these incidents/non compliance are caused by a wrongful installation by Certified Technician.
45. The Beneficiary guarantees that the Certified Technician will respect the rights and obligations applicable on the Beneficiary under the BROBA II Reference Offer (e.g. confidentiality obligation, liability).
46. The Beneficiary may only appeal upon Certified Technician for installation of the BROBA2 ADSL and SDSL lines, not for repair or maintenance. The exact scope of activities which may be performed by Certified Technicians is described in the Specific Terms and Conditions relating to Certified Technician.
47. The Certified Technician may lose its certification in any of the following events:
- he no longer fulfills the conditions for certification as described in the Specific Terms and Conditions relating to Certified Technician;
 - he repeatedly or seriously breaches the obligations applicable upon the Beneficiary under the BROBA II Reference Offer;
 - his work does not meet the quality standards, and repeatedly needs correction by Belgacom technician.
48. In case the installation of the BROBA 2 ADSL or SDSL line is not correctly performed by Beneficiary's Certified Technician, Belgacom will perform the necessary repair actions, at the expense of Beneficiary, without prejudice to Belgacom's right to claim compensation for any other damages.
49. The Beneficiary guarantees that the Certified Technician will respect the rights and obligations applicable on the Beneficiary under the BROBA II Reference Offer (e.g. confidentiality obligation, liability).

Financial Conditions

Billing and Payments

~~37:49.~~ In consideration for Bitstream Access Services provided by Belgacom under the Contract, Beneficiary shall pay the charges and fees provided in BROBA 2 and BROBA 2 SDSL.

Financial Guarantees

General Principle - Pre-payment

~~38:50.~~ Notwithstanding anything to the contrary in the Contract, in order to guarantee the payment by the Beneficiary of the prices due for Services provided by Belgacom that are invoiced on a monthly basis under the Contract, the Beneficiary will provide Belgacom with a monthly pre-payment based on the average of the monthly amount due by the Beneficiary. The amount of the pre-payment shall be based on the average of the invoices issued by Belgacom during three months for the Services ordered in accordance with the Contract. The amount of the pre-payment shall be reviewed every three months. The terms and conditions of this prepayment are described in Annex 8.

~~39:51.~~ Without prejudice to any other legal or contractual remedies and notwithstanding anything to the contrary in the Contract, in the event Beneficiary fails to pay in due time any undisputed amount due under the pre-payment conditions as defined in the present section and in Annex 8, Belgacom shall be entitled to execute the following alternatives until full payment is made:

- suspension of any SLA obligations that are not foreseen in the Basic SLA;
- refusal in writing of any new Order, including Migration Services, and excepted Cancellation and Deactivation;
- Suspension of the existing Services in accordance with article 98 hereafter.

Sufficient Creditworthiness

~~40:52.~~ This monthly pre-payment will not be required in the following circumstances.

~~41:53.~~ The Beneficiary has sufficient creditworthiness as evidenced by either of the following alternatives:

- the Beneficiary has obtained a “Ba2” rating or above for its debt (Moody’s); or
- the Beneficiary has obtained a rating similar to Moody’s “Ba2” rating, provided that (i) such rating is generally accepted by the market as giving similar reliability as Moody’s, (ii) such rating is reviewed and updated on a regular basis.

~~42:54.~~ In the event that the Beneficiary would lose the above described creditworthiness at some point in time (either through the loss of “Ba2” credit rating or similar, or upon the occurrence of any default or delay of payment), Beneficiary will have to provide Belgacom with a pre-payment or with another financial guarantee as defined in the present chapter within 10 working days of Belgacom’s request thereto.

Other Financial Guarantees

~~43:55.~~ The Beneficiary obtains an irrevocable and unconditional parent corporation guarantee for the debts incurred by the Beneficiary for the Services ordered in accordance with the Contract provided that such parent company is issued by a company that has sufficient creditworthiness as defined above. In the event that the Parent Company would lose the above described credit worthiness at some point in time, the Beneficiary will provide Belgacom with a pre-payment or with another financial guarantee as described in the present article within 10 working days of the request of Belgacom.

~~44:56.~~ The Beneficiary has constituted a Deposit on an escrow account with a reputable bank or financial institution established in the EU. The amount of that deposit will be equal to an estimate of three months of invoices due by the Beneficiary for the Services ordered in accordance with the Contract. Based on the actual evolution of the amounts due for the Services, the Beneficiary and Belgacom will have the right to

require an adaptation of the amount of the deposit every three months. Upon the request for adaptation of the amount of deposit, necessary steps will be taken to ensure adaptation within ~~three (3) to~~ working days. In case of default by the Beneficiary to pay sums due under the Contract, the sums deposited on the escrow account will accrue to Belgacom. The interests accrued on the escrow account will be payable to the Beneficiary. In the event the sums deposited are accrued to Belgacom, or if the amount of the deposit is not adapted despite Belgacom's request thereto, Beneficiary will provide Belgacom with a pre-payment or with another financial guarantee as defined in the present article within 10 working days of the request of Belgacom.

~~45-57.~~ The Beneficiary has provided Belgacom with a irrevocable and unconditional bank guarantee on first demand issued by a reputable bank or financial institution established in the EU. That bank guarantee will be issued for a minimum period of three years and for an amount equal to an estimate of three months of amounts due by the Beneficiary for the Services ordered in accordance with the Contract. Based on the evolution of the amounts due for the Services, Beneficiary and Belgacom will have the right to require an adaptation of the amount of the bank guarantee every three months. Upon the request for adaptation of the amount of bank guarantee, necessary steps will be taken to ensure adaptation within ~~three (3) to~~ working days. Upon expiration of the bank guarantee or after ~~the~~ Belgacom has called upon the bank guarantee, or if the amount of the bank guarantee is not adapted despite Belgacom's request thereto, the Beneficiary shall provide Belgacom with a pre-payment or with another financial guarantee as defined in the present article within 10 working days of the request of Belgacom.

Principles

Retail Pricing & Billing

~~46-58.~~ Beneficiary shall be responsible for the setting of the tariffs that Beneficiary will apply to the End-Users to whom Beneficiary will sell telecom service using the Bitstream Access Services (BROBA 2 ADSL and BROBA 2 SDSL) and for the billing and invoicing of such End-Users.

~~47-59.~~ Except as provided otherwise in the Contract or its Annexes, no deductions or reductions shall be made from the payment of any charges or fees due for the Services for any bad or unpaid debts or any unrecoverable claims (including, in particular, claims arising from fraud cases) that Beneficiary may have against End-Users or any other third parties in relation with these Services.

Branding

~~48-60.~~ The Parties agree not to offer any service under any brand, including any trademark, trade name or company name, of the other Party unless the use of the brand(s) of the other Party is explicitly provided under the Contract. Such use of the brand will then be strictly limited to the service at stake.

~~49-61.~~ Beneficiary shall offer telecom services to End Users under its own brand without any use of, or reference to Belgacom's brands.

~~50-62.~~ Notwithstanding the foregoing, Parties acknowledge that, as provided in BROBA 2 ADSL and in BROBA 2 SDSL, the installation of equipment on the site of the relevant End Users who have subscribed to an offering of Beneficiary, may, when relevant under the terms and conditions of BROBA 2 ADSL and in BROBA 2 SDSL, be realized by Belgacom personnel. Both Parties agree that Belgacom shall have no obligation to unbrand or rebrand its service technicians or trucks. Belgacom will act in accordance with its general standard of integrity that it has internally developed and enforced. In any case, Belgacom will not make any publicity or remarks to the detriment of the Beneficiary or its image. Belgacom must in all circumstances stay neutral, in accordance with the technical nature

of its intervention. Where Belgacom makes use of standard documents vis-à-vis users, it will submit these for prior approval by BIPT.

63. When Beneficiary chooses to have installation of the BROBA 2 ADSL or SDSL lines performed by Certified Technician, Beneficiary will see to it that the Certified Technician acts with integrity and makes no publicity or remarks to the detriment of Belgacom or its image.

User Terms and Conditions

51-64. Beneficiary shall cause the terms and conditions governing Beneficiary's contractual relationships with the End-Users to be compliant with the rules and principles set out in the Contract and its Annexes. Notwithstanding the above, nothing in the present Reference Offer can be construed as creating or evidencing a contractual relationship of any kind between Belgacom and Beneficiary's Users or as providing to Belgacom any right to consult the contracts signed between Beneficiary and its Users.

52-65. Beneficiary shall bear all the consequences of the breach of the above obligation.

Coordination between the Parties

Single Points of Contact

53-66. Beneficiary and Belgacom will both appoint an individual as their respective single point of contact ("SPOC") who will act, within its organization, as the other Party's contact person.

54-67. The SPOC of either Party will have full authority to act and decide on behalf of the respective Party on all technical and operational matters regarding the day-to-day management of the performance of their BROBA 2 and/or BROBA 2 SDSL Contracts. All the decisions taken by any working group constituted by the Parties during the performance of these BROBA 2 and/or BROBA 2 SDSL Contracts will need to be expressly

and formally validated by the SPOC of either Party to be binding on such Party. This validation (or refusal of validation) has to be given at the latest within three working days. The absence of response in this delay will be escalated. Except as otherwise expressly provided by the relevant Party, each Party's SPOC will have no authority to modify the conditions described in the Contract, or to act outside the day-to-day management of the performance of the Services. Notwithstanding the foregoing the SPOC of both Parties will be allowed to modify, Planning and Operations Document of the related service, by written amendment to this Agreement Services.

55-68. Each Party will be authorized to replace its SPOC by notice sent to the other Party. Such notice will have immediate effect.

Working Group

56-69. The Parties will be free to set up any other working group in charge of discussing and agree on any technical or operational issue as the Parties may deem fit in the performance of the Services.

Liability

General rules

57-70. Taking into account the nature of the respective activities of the parties, the risks and potential profits associated with these activities and the consideration obtained by each Party from the Contract, Parties expressly agree that their respective liability shall be limited as follows.

58-71. If either Party is held liable to the other Party (including such other Party's employee(s) and contractor(s)) under the Contract that liability shall be limited to the following:

- if such liability results from any personal injury or death incurred as a direct result of the non-performance of the relevant Party's obligations under the Contract, then such liability shall be only subject to the limitation provided in article 72;

- if such liability results from any conduct attributable to the relevant Party, which is, under Belgian law, characterized as being gross negligence (faute lourde – zware fout) or intentional negligence (dol – bedrog), then such liability shall be subject to no limitation, except as provided by law;
- if such liability results from any material damage, other than those referred to above, arising out of or in any way connected with the performance by the relevant Party of the Services or the breach of such Party's obligations under these Terms and Conditions, then the total amount which can be recovered from such Party for all acts or omissions shall, in no event, exceed an aggregate amount equal to EUR 1,250,000 (one million two hundred fifty thousand euro), subject to the limitation provided in article 72.

59-72. Neither Party shall be liable for indirect damages (pure and consequential), including without limitation loss of profit, loss of revenue, loss of data, loss of use, loss of savings, loss of goodwill, interruption of business or claim by third parties.

60-73. In the event of a complaint by a Beneficiary's User, the liability of Belgacom may only be questioned by the Beneficiary if Belgacom, or a person Belgacom is responsible for, is at fault.

61-74. In addition, and notwithstanding the above, each party will indemnify the other Party against any claim or loss related to the illegal use, or the use for illegal purpose of the Bitstream Access Services by the End User of one or the other Party.

Certified Technician

75. In addition, and notwithstanding the above, the Beneficiary will be held liable to Belgacom, its employees or third parties for damages caused by one of its Certified Technicians (Beneficiary's own employees, as well as Beneficiary's subcontractor employees), when performing the installation of the BROBA 2 ADSL or SDSL lines. The Beneficiary shall

indemnify and hold Belgacom harmless from any and all damage, costs or third party claims incurred as a result of any act or omission of Beneficiary's Certified Technician, including claims against Belgacom based upon art. 544 Civil Code ("burenhinder/troubles de voisinage").

76. If a Beneficiary chooses to install some or all of his Broba 2 ADSL or SDSL lines by one or several Certified Technician(s), he will have to provide to Belgacom, prior to his first request to have installation done by Certified Technician, a "liability insurance" certificate of EUR 5,000,000 per claim and per year to cover his liability for any damages caused by his employees or his subcontractors to Belgacom, its employees or third parties when provisioning the lines.

The insurance policy has to be contracted with a first class insurance company in an E.U. country and must be maintained during the total duration of the agreement between parties. The policy must contain the following provision : the suspension, cancellation or the end of the insurance policy will be opposable to Belgacom, 15 calendar days after the reception of a registered letter from the insurance company informing Belgacom of the end of the policy. At the expiry of the insurance certificate, the Beneficiary will be diligent in providing Belgacom an updated certificate, confirming the prolongation of the insurance policy.

77. The Beneficiary will also procure that its subcontractors, who wish to qualify certain of its employees as Certified Technician, accept the right of Belgacom to bring a direct claim against Beneficiary's subcontractor as to hold Belgacom harmless from any and all damage, costs or third party claims incurred as a result of any act or omission of the Certified Technicians employed by Beneficiary's subcontractor, including claims against Belgacom based upon art. 544 Civil Code ("burenhinder/troubles de voisinage"). In the event that damage is caused by Beneficiary's subcontractor, Belgacom can choose to bring a claim towards the

Beneficiary, or to Beneficiary's subcontractor, or to both.

The Beneficiary's subcontractor will provide to Belgacom a "liability insurance" certificate of EUR 2.500.000 per claim and per year to cover its liability for any damages caused by its employees, acting as Certified Technician, to Belgacom, its employees or third parties when provisioning the lines. The insurance policy has to be contracted with a first class insurance company in an E.U. country and must be maintained for the total duration of certification of any of Beneficiary's subcontractor employees. The policy must contain the following provision : the suspension, cancellation or the end of the insurance policy will be opposable to Belgacom, 15 calendar days after the reception of a registered letter from the insurance company informing Belgacom of the end of the policy. At the expiry of the insurance certificate, the Beneficiary's subcontractor will be diligent in providing Belgacom an updated certificate, confirming the prolongation of the insurance policy.

Force Majeure

62-78. Neither Party will be liable for any delay or failure to fulfil its obligations under the Contract arising from any event beyond its reasonable control, such as for instances but without limitation natural disasters and strikes (all such events being hereafter referred to as "Force Majeure").

63-79. The Party claiming Force Majeure shall as soon as possible send to the other Party a Notice of the Force Majeure. Such Notice shall contain adequate evidence of the occurrence and extent of the Force Majeure, as well as an estimate of the expected duration of the Force Majeure. As soon as practicable after receipt of such Notice, the Parties shall consult with each other in order to find an equitable solution to the problems and difficulties caused by the Force Majeure.

64-80. The Party claiming Force Majeure shall use all reasonable endeavours to minimise the consequences of such

Force Majeure, and to ensure, in as far as reasonably possible, the continuity of the services provided under the Contract and shall perform those of its obligations not affected by a Force Majeure. To the extent that a Party is prevented as a result of Force Majeure from providing one or several of the services or facilities to be provided under , the Contract, the other Party shall be released to the equivalent extent from its obligations to make payment for such services or facilities or complying with its obligations in relation thereto.

65-81. Upon cessation of the effects of the Force Majeure, the Party initially affected by such Force Majeure shall promptly notify the other Party of such cessation.

Accidents at work and Safety Rules

66-82. Each Party hereby undertakes to provide insurance cover against accidents at work for its own employees in conformity with the applicable legal requirements. Beneficiary also procures that its subcontractors provide insurance cover against accidents at work for their employees in conformity with the legal requirements. Each Party hereby renounces any possible claim against the other Party, and undertakes to procure that its insurer shall not pursue against the other Party, or against any third party for whose acts or omissions the other Party may be responsible, any claim relating to accidents at work. Beneficiary undertakes to procure that its subcontractors and subcontractor's insurer renounce any possible claim against Belgacom relating to accidents at work.

67-83. Each Party shall comply with safety practices and procedures reasonably applicable when entering the premises and installations of the other Party in order to carry out work (see, for Belgacom, safety rules and procedures in Specific Terms and Conditions relating to Certified Technician). Each Party undertakes to ensure that its personnel or its subcontractor personnel, while upon the premises

and installations of the other Party, will respect any internal rules and codes of conduct therein applicable, provided that such rules and/or codes shall have been made available to them in advance. Without prejudice to the provisions of the chapter relating to Liability [General rules or the chapter relating to Liability Certified Technician, depending on the situation](#), each Party shall indemnify and hold harmless the other Party for any and all damage, costs or expenses incurred as a result of any act or omission of a Party's personnel [or a Party's subcontractor personnel](#) while upon the premises and installations of the other Party.

Operational Matters

Operational Matters and Network Management

[68:84.](#) The Bitstream Access Services provided under the Contract shall be implemented and provided by the Parties in accordance with the technical specifications set forth in the Annex "Technical Specifications" and the operational rules and procedures contained in the Annex "Planning and Operations".

[69:85.](#) Both Parties shall cooperate to install and maintain reliable services. Both Parties shall exchange appropriate information as provided in the Annex Planning and Operations (including, in particular, maintenance contact numbers, network information, information required to comply with law enforcement and other security agencies of the government and such other information as the Parties shall mutually agree) to achieve this desired reliability.

[70:86.](#) Each Party shall apply sound network management principles by invoking network management controls to ease the operation of their respective systems and to alleviate or to prevent congestion. Each Party shall ensure that the network management controls are applied in such a way as to ensure that there is no discrimination in favour of that Party's own traffic.

Essential Requirements

[71:87.](#) The Parties shall ensure that the Essential Requirements, as defined and applicable under the regulatory framework, are adequately and sufficiently protected, in as far as the establishment, maintenance and operation of the services offered under the Contract are concerned.

[72:88.](#) It is acknowledged that the Contract and its Annexes and/or Appendixes (in particular, the Annexes BROBA 2 ADSL and BROBA 2 SDSL and the Annex "Planning and Operations" of the relevant service) contain a number of specific principles and rules that have been developed to ensure the protection of the Essential Requirements. Furthermore, the Parties shall consult with each other in order to ensure that the Essential Requirements are protected in an adequate and sufficient manner.

[73:89.](#) It is a condition for the provision by Belgacom of Bitstream Access Service under this Document that Beneficiary's request is not detrimental to the operation of the telecommunications networks and telecommunications services in question or to their integrity or interoperability, and that the protection of service and internal data, network equipment, software and stored data, including personal data, confidential information and privacy can be sustained.

[74:90.](#) The conditions for and restrictions on use applying at any time appear from the Annex 2, the "Technical specifications" Document.

[75:91.](#) Belgacom shall further be entitled to cause interruptions, disturbances or modifications of Belgacom's public network and services to the detriment of the supply of the services under the Contract in connection with measures that are deemed necessary for technical, maintenance and operating reasons taking into account the balance of the interests of both Parties or that are ordered by the regulatory authorities. Belgacom shall give in good faith Beneficiary the longest possible notice of interruptions,

disturbances and modifications, by any means it deems appropriate (e.g. via electronic communication) and state the reason for them.

new request without revealing the identity of the latter.

Suspension

Amendments and Revisions

General Principles

~~76-92.~~ Except as otherwise provided in the Contract or its Annexes, any agreement departing from the Contract or its Annexes shall only be valid if duly agreed upon in writing by the respective representatives of the Parties.

~~80-96.~~ In the event Beneficiary uses or allows the use of Services provided under the Contract in an illegal manner or for illegal purposes, or if Beneficiary by its action or omission causes, or could reasonably be expected to cause a damage to the working or the security of the telecommunication network of Belgacom, and Beneficiary fails to take appropriate measures in order to remedy to the situation within a period of thirty (30) days from the receipt of a Notice of Suspension sent by Belgacom, Belgacom will have the right to suspend the provision of some BROBA 2 ADSL and/or BROBA 2 SDSL Contracts or of the whole Bitstream Access Service.

Notwithstanding the foregoing, Belgacom will have the right to take proactive actions in order to protect the other xDSL lines prior to sending the above mentioned Notice in urgent cases (e.g.: if the resynchronization rate exceeds 50 resynchronization per day) where unstable lines disturb the transmission quality and link stability of other xDSL lines. Those actions could be a change in the line profile such as a reduction of the target bitrate, the lock of the xDSL port or the physical disconnection of the line. In that case, Belgacom will inform the BIPT and the parties involved about the suspension of the Services at the latest 24 hours after the suspension.

Term, Termination and Suspension

Term

~~77-93.~~ Beneficiary has the right to terminate one or more BROBA 2 and/or BROBA 2 SDSL contract as provided in the BROBA Reference Offer annexed to the Contract. Belgacom has the right to terminate one or more BROBA 2 and/or BROBA 2 SDSL contract on the grounds mentioned in Article 6octies, 1° of the Royal Decree of 22 June 1998 defining specifications on the conditions for the establishment and operation of public telecommunications networks, after approval by the BIPT.

~~78-94.~~ Without prejudice to the above, the Beneficiary must request the termination of the BROBA 2 ADSL and/or BROBA 2 SDSL Contract when the telecom services are cancelled for any reason whatsoever on a specific loop. Said termination request shall automatically give rise to the deactivation of the BROBA 2 ADSL or BROBA 2 SDSL Service on the line without delay.

~~79-95.~~ A BROBA 2 ADSL and/or BROBA 2 SDSL Contract shall automatically be terminated without prior notice to Beneficiary 1 upon the activation by Belgacom of another Service on the same line based on the valid migration request of either Belgacom retail or another Beneficiary 2 (see BRUO Annex K Migrations). Belgacom will further inform Beneficiary 1 of the

~~81-97.~~ Belgacom will have the right to suspend Bitstream Access Services in the event that it is requested to do so by an order of a court or a competent authority. Belgacom will inform Beneficiary as soon as possible of the cause of such suspension.

~~98.~~ Without prejudice to article 51, in the event that Beneficiary fails to pay outstanding invoice for any amount due under the BROBA II Reference Offer for a period of 15 calendar days as from the Due Date of the relevant invoice (invoice, preinvoice or final invoice), Belgacom shall, after having duly informed the BIPT, inform the Beneficiary via Notice sent at least 7

calendar days before the end of the above mentioned delay of 15 days, that if the default of payment is not cured:

- all BROBA Services will be suspended without further notice after the expiration of the above mentioned delay of 15 days as of the Due Date;
- all BROBA Services will be terminated without further notice after the expiration of a delay of 30 days as of the Due Date.

99. Article 98 does not apply to amounts duly disputed by the Beneficiary in writing, before the Due Date, including a clear summary of the grounds for the Dispute and the position of the Beneficiary as to this dispute.

100. In the event that Beneficiary fails to provide, renew, adapt or reconstitute the financial guarantee as provided in the chapter on Financial Guarantee here above, Belgacom shall be entitled, after having duly informed the BIPT,

- to suspend all BROBA Services without further notice if the default is not cured within a period of 15 days following written Notice;
- to terminate all BROBA Services without further notice if the default is not cured within a period of 30 days following the same Notice.

101. The provisions of this chapter on Suspension of the Services are without prejudice to any other right or claim for compensation to which the non-defaulting Party may be entitled to in the event of suspension of the services.

82. In the event that Beneficiary fails to pay outstanding invoice for any amount due under the Contract for a period of 15 calendar days as from the Due Date of the relevant invoice, or fails to provide, renew, adapt or reconstitute the financial guarantee as provided in the chapter on Financial Guarantee here above, Belgacom shall be entitled, after having duly informed the BIPT, to suspend the Services with immediate effect subject to a prior

Notice of Suspension sent at least 7 calendar days before the end of the above mentioned delay of 15 calendar days. This provision does not apply when disputed amounts are at stake.

Consequences of Suspension

83. The provisions in this chapter on Suspension of the Services are without prejudice to any other right or claim for compensation to which one of the Parties may be entitled to in the event of suspension of the Services.

Termination for Cause

84. Notwithstanding the provision on Dispute resolution procedure, in the event that either Party defaults in the payment of sums due for the Services offered under the Contract or is in default to provide a financial guarantee as provided in the relevant chapter here above and such default is not substantially cured within thirty (30) calendar days after written Notice of Termination is given specifying the default, then the non-defaulting Party may by giving notice to the other Party and after having duly informed the BIPT, terminate all the Bitstream Access Services with immediate effect. This provision does not apply when disputed amounts are at stake.

85. 102. In the event that either Party is declared bankrupt or enters into liquidation, then the other Party may terminate all the Bitstream Access Services, without any further legal or other procedures, by sending Notice of termination with immediate effect to the other Party.

Consequences of Termination

86. 103. The provisions in this chapter on Termination of the Services are without prejudice to any other right or claim for compensation to which the non-defaulting Party one of the Parties may be entitled to in the event of termination of the Services.

87. 104. In the case of termination of the Services for any reason, Belgacom shall be entitled to payment for all Services performed prior to such termination in accordance with the conditions that were applicable

between the parties at the time of termination.

~~88-105.~~ The provisions of the Contract which by their nature are determined to survive the termination of the Services (including, in particular but without limitation, the provisions on Confidentiality, ~~and~~ Applicable Law and Jurisdiction, shall remain in full force and effect after the termination.

Confidentiality

Confidential Information

~~89-106.~~ For the purpose of this Chapter, the term "Confidential Information" shall mean:

- information communicated by one Party (or from any of its Associated Companies) (the "Disclosing Party") to the other Party (or to its employees and advisors) (the "Receiving Party"), or obtained by the Receiving Party in connection with the performance of the Services, provided that such information is, at the time of its disclosure, reasonably designated "confidential" or with an equivalent term. If such information was disclosed orally, it shall constitute Confidential Information provided that the Disclosing Party informs the other Party at the time of such disclosure, that such information is confidential and that (i) a written notice containing a summary of the information disclosed orally and mentioning that such information is confidential, is issued by the Disclosing Party to the other within five Working Days from the date of disclosure, or (ii) such disclosure is recorded in minutes of a meeting that are designated, labelled or marked "confidential" or designated, labelled or marked with an equivalent term.
- Shall in any event be considered as Confidential Information, any information or data obtained regarding customers of the other Party, regarding customers of other licensed operators, or any other information or data which the Beneficiary or his subcontractor obtain via access to the tools which

Belgacom puts at the disposal of the Certified Technician.

~~90-107.~~ For purposes of these General Terms and Conditions, "Confidential Information" does not include:

- a. information that is properly and lawfully in the public domain otherwise than by breach of the Contract or any other obligation of confidence;
- b. information that was disclosed by a third party to the Receiving Party without restriction on disclosure or use, unless the Receiving Party knew or should reasonably have known that this information was acquired unlawfully or by a breach of contract or fiduciary relationship.

~~91-108.~~ Except as specified in writing, by the Disclosing Party at the time of disclosure, Confidential Information shall continue to be deemed as such until the end of a period of three (3) years after its initial communication under the Contract.

Non-Disclosure

~~92-109.~~ The Receiving Party shall refrain from disclosing the Confidential Information to any third party and shall use the Confidential Information only for the performance of the Services offered in accordance with the Contract. In addition, the Receiving Party shall take any reasonable measures to ensure the confidentiality of this information. In any event, the Receiving Party shall use efforts at least commensurate with those that such Party uses for protecting the confidentiality of its own Confidential Information.

~~93-110.~~ Notwithstanding the foregoing and without prejudice to the provisions regarding the Disclosure to Personnel, Advisors or Suppliers here-under, either Party shall be allowed to disclose the Confidential Information to third parties provided it has obtained the prior written consent of the other Party. Such written consent will be given case-by-case upon a discretionary basis. Such written consent shall only be valid and enforceable for the specific information listed therein. The

written consent to disclose Confidential Information shall identify the third party or parties to which the information can be disclosed and shall set forth the terms and conditions to which such disclosure is subject.

~~94.111.~~ The Disclosing Party shall remain free to disclose to any third party Confidential Information disclosed to the Receiving Party.

Disclosure to Personnel, Advisors or Suppliers

~~95.112.~~ A Receiving Party shall disclose the Confidential Information received from the other only to its directors, employees, suppliers, agents, advisors, contractors, sub-contractors, or resellers who have a need to know such information. Such Party shall ensure that such directors, employees, suppliers, agents, advisors, contractors, sub-contractors or resellers are bound by anthe obligations of confidentiality in respect of the Confidential Information, which is at least equivalent to the confidentiality obligation that are set forth in the Contract.

~~96.113.~~ Notwithstanding anything to the contrary in the foregoing provisions, the Receiving Party shall not disclose or use the Confidential Information, with the aim of providing commercial advantage to business divisions of the Receiving Party, or business divisions of the Receiving Party's Associated Companies, which are engaged in activities competing with the other Party.

~~97.~~ Either Party may disclose Confidential Information that they received from the other Party, to their suppliers or contractors provided and to the extent that such suppliers or contractors effectively require to have access to such information in order to supply the relevant goods and services. The Parties shall do whatever is necessary in order to impose on the suppliers or contractors which have obtained access to Confidential Information obligations to keep this information confidential, which are at least equivalent to the obligations imposed under the Contract.

114. The Beneficiary guarantees that the Certified Technicians, whom he uses for the installation of the BROBA 2 ADSL and SDSL lines, comply with the confidentiality obligations described herein, and he will see to it that his Certified Technicians do not divulge or use Confidential Information belonging to Belgacom or to other licensed operators, when performing installation services on behalf of the Beneficiary. The Certified Technicians will also conclude a confidentiality agreement with Belgacom directly before starting their training by Belgacom in order to obtain certification.

~~98.115.~~ Each Party shall be liable under the limitations provided in the Chapter relating to Liability here-above, for any unauthorized disclosure or use of the Confidential Information by its directors, employees, suppliers, agents, advisors, ~~or~~ contractors or subcontractors. The Party responsible for an unauthorized disclosure or use of the Confidential Information shall, in any event, take any reasonable measures (including but not limited to court proceedings) to mitigate the damage resulting there-from.

Disclosure Required by Law

~~99.116.~~ If the disclosure of Confidential Information to third parties is required by reason of legal, accounting or regulatory requirements beyond the control of the Receiving Party, the Receiving Party may disclose such information to the extent necessary to comply with such requirements. Without prejudice to the application of the foregoing, the Parties shall endeavour to ensure the confidential treatment of the Confidential Information by the third parties receiving such information as a result of such requirement.

~~100.117.~~ Without limitation to the generality of the foregoing, either Party will have the right to disclose Confidential Information to the BIPT, whenever required by law, or deemed reasonably necessary in the context of any proceedings or discussions held in front or with the BIPT. If any such disclosure of Confidential Information

is made, the Party communicating the information will ensure that the attention of the BIPT is properly drawn to the fact that the information is confidential and that the information needs to be kept confidential.

Dispute Resolution and Applicable Resolution

Dispute resolution procedure

~~104~~118. The SPOC shall, on an ongoing basis, attempt to solve any dispute, controversy or claim between the Parties concerning the interpretation, application and implementation of the present General Terms and Conditions and/or the Contract and its Annexes (a "Dispute") through discussions held in good faith.

~~102~~119. In the event that the Parties have been unable to solve any Dispute, then upon Notice of either Party, each of the Parties will appoint a designated senior business executive (other than their respective SPOC) whose task it will be to meet for the purpose of endeavouring to resolve the Dispute. Each Party shall ensure that their respective designated executive has sufficient authority or decision-making power concerning the matter at stake. The designated executives will meet as often as the Parties reasonably deem necessary in order to gather and furnish to the other all information with respect to the matter in issue which the Parties believe to be appropriate in connection with its resolution. Such executives will discuss the Dispute and will negotiate in good faith in an effort to resolve the Dispute without the necessity of any formal proceeding relating thereto.

~~103~~120. In the event the Parties fail to reach such a solution and/or settlement within fifteen (15) Working Days as from the receipt of the above Notice, they shall escalate the matter to a higher level within their respective organizations. Discussions at that level will be conducted as described in article 119. The Parties may, at any given escalation level, agree to extend the time limits described in this article and in article

119 when they consider it necessary in order to facilitate that an agreement be concluded on the subject-matter of the dispute.

~~104~~121. Except in the cases of urgency, as determined in good faith by the Party calling the Dispute, no formal proceedings for the resolution of a Dispute may be started until the earlier to occur of (a) a good faith conclusion by the designated executives that amicable resolution through continued negotiation of the matter in issue does not appear likely or (b) the Parties have failed to reach an agreement on the Dispute within 15 Working Days of the escalation of the Dispute as described in article 120.

~~105~~122. Without prejudice to the above and without prejudice to the rights of each Party in case of Dispute, each Party shall be entitled to call on the BIPT for a decision for disputes regarding the interpretation of the present General Terms and Conditions and/or its Annexes. In consideration of the legal framework, the then relevant BROBA Reference Offer and the then relevant BIPT advice on the BROBA, BIPT will take a decision.

Applicable Law and Jurisdiction

~~106~~123. The BROBA II Reference Offer and the contract and its Annexes shall be governed by Belgian law.

~~107~~124. Without prejudice to article 121, any dispute concerning the validity or the interpretation of the BROBA II reference Offer and the Contract, or the performance of the Bitstream Access Services, or of subsequent contracts derived here-from shall be finally submitted to the Courts of Brussels, Belgium. The above is without prejudice to the right of each of the Parties to submit the Dispute to the BIPT with a view to reach conciliation or to submit the Dispute to the Competition Council.

Miscellaneous

General Principles

~~108~~125. All the terms and conditions of this Agreement, including its Annexes

and/or Appendixes, are agreed upon by the Parties without prejudice to the rights and obligations that either Party may derive from the applicable provisions of the regulatory framework. The fact that either Party has agreed to any provision in this Agreement will not be construed as a renunciation by such Party to invoke (i) any right that such Party may derive from any imperative provision of the applicable regulatory framework or (ii) any obligation that may be imposed to the other Party pursuant to any imperative provision of the applicable regulatory framework.

~~109.126.~~ In the framework of the applicable Belgacom Reference Offer for Bitstream Access, should a conflict arise between the Main Body, and any or several Annexes, attachment or appendix to an Annex, the Main Body shall prevail, except for (a) Annex 1 - General Terms and Conditions, which will prevail over the Main Body unless otherwise specifically stated, (b) when otherwise agreed by the Parties, in writing or (c) when otherwise specifically stated in the Main Body or Annex, Attachment or Appendix. Should a conflict arise between Annex 1 - General Terms and Conditions and another Annex, attachment or an appendix to said other Annex, the Annex 1 - General Terms and Conditions shall prevail unless otherwise specifically stated. Should a conflict arise between an Annex and an attachment or an appendix to this Annex, the Annex shall prevail unless otherwise agreed by the Parties, in writing or otherwise specifically stated.

Notices – Address for Invoicing

~~116.127.~~ Unless stated otherwise in this Agreement, any Notice under this Agreement will be sent to the respective SPOC of the Parties, in writing and by registered mail or by fax confirmed by registered mail to the following respective addresses:

To Beneficiary:

***Beneficiary Full name

[Address]

Fax: [Fax]

Attention: ***

To Belgacom:

Belgacom N.V./S.A.

27 Bd Albert II

B-1030 Brussels

Fax: [Fax]

Attention: ***

Notwithstanding the foregoing, Parties shall send to each other invoices and credit notes by ordinary mail to the following addresses:

To Beneficiary:

***Beneficiary Full name

[Billing Address]

Attention: ***

To Belgacom:

Belgacom N.V./S.A.

[Billing Address]

Attention: ***

No Assignment

~~111.128.~~ Neither of the Parties is entitled to assign the Contract, in part or in its entirety, to any third party or to any other entity unless with the prior written approval of the other Party.

~~112.129.~~ No approval will be required for an assignment of the Contract in case of transfer to a successor, to which a transfer has taken place of, at least, the Assigning Party's activities

covered by the Contract. In such a case, the assigning Party shall immediately give Notice to the other Party of any such assignment permitted to be made under the Contract without requesting the other Party's consent.

~~113~~.130. Without prejudice to the foregoing, no assignment shall be valid unless the assignee agrees in writing to be bound by the provisions of the Contract and its Annexes.

Waiver

~~114~~.131. A failure by either Belgacom or Beneficiary to insist on the performance of any term of the Contract or to exercise any right or privilege hereunder shall not be construed as a continuing or future waiver of such term, condition, right or privilege. No waiver shall be valid unless it is in writing and signed on behalf of the Party making the waiver.

Fraud

~~115~~.132. The Parties accept to cooperate to the best of their respective abilities in order to prevent and eliminate any kind of fraud which involves Services provided under the Contract. If any of the Parties suspects such kind of fraud, the Parties shall co-operate in order to identify the origin of the fraud and to use any appropriate means in order to eliminate and prevent such fraud as soon as possible. For the purposes of the application of the present provision, fraud shall mean any manipulation of a communications network, including by Beneficiary connected to the network of one of the Parties, in order to obtain one or more telecommunication services without paying the proper charge for it, or to support other criminal activities (including, in particular, wiretapping, eavesdropping and gathering secret numbers).

~~116~~.133. It is explicitly acknowledged by the Parties that any cooperation in the context of the present provision will need to be in due compliance with the entire regulatory framework.

Independent Parties – Approvals

~~117~~.134. Each Party shall be responsible for obtaining and keeping in effect all approvals from, and rights granted by, competent authorities, other operators, and any other persons that may be required in connection with the performance of its obligations under the Contract. Each Party shall reasonably cooperate with the other Party in obtaining and maintaining any required approvals and rights for which other Party is responsible.

~~118~~.135. Each of the Parties is and shall remain at all times an independent contractor. Neither Party is authorized and neither of the Parties nor their employees, agents, ~~or~~ representatives or subcontractors shall at any time attempt to act or act on behalf of the other Party to bind the other Party in any manner whatsoever to any obligations. Neither Party nor its employees, agents or representatives shall engage in any acts which may lead any person to believe that such Party is an employee, agent, ~~or~~ representative or subcontractor of the other Party. Nothing in the Contract shall be deemed to constitute a partnership between the Parties.

BROBA II ADSL 2008

Annex 2

Technical specifications

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Introduction

This document describes the technical specifications of BROBA II. Note that additional information is available in the Main Body of this offer.

1. ATM NNI Tests for Belgacom Data Connectivity

1.1. General

1.1.1. Overview

1. The set of tests provided in this document has a sole purpose to test the ATM NNI interconnection for the following type of the Inter ATM Gateway Link:
 - E1 (2 Mbps)
 - E3 (34 Mbps)
 - STM1 (155 Mbps)

1.1.2. Planning: From ... to ...

2. Day 1: configuration checking and preparation of VBR VP connections
3. Day 2: VBR VP tests

1.1.3. Test locations

Belgacom
Address:
Telephone:

Beneficiary:
Address:
Telephone:

1.1.4. Contact persons for NNI tests

Operator	Belgacom	
name1		
Telephone	+32	
Fax	+32	
Email	@Belgacom.be	
name2		
Telephone	+32	
Fax	+32	
Email	@Belgacom.be	

1.2. ATM NNI TESTS on E1 (2 Mbps), E3 (34 Mbps) and STM1 (155 Mbps)

1.2.1. Test purpose

4. The following test scripts are testing the ATM transport service between the ATM network of Belgacom and the one of the Beneficiary.
5. The purpose of the tests is just to test the connectivity and to make sure that the ATM switch of Belgacom can interwork with the ATM equipment of the Beneficiary.

1.2.2. Test configuration

6. The figure here below depicts the setup that will be used for the tests to be worked out **for each access line** that must be brought into service.

Overview

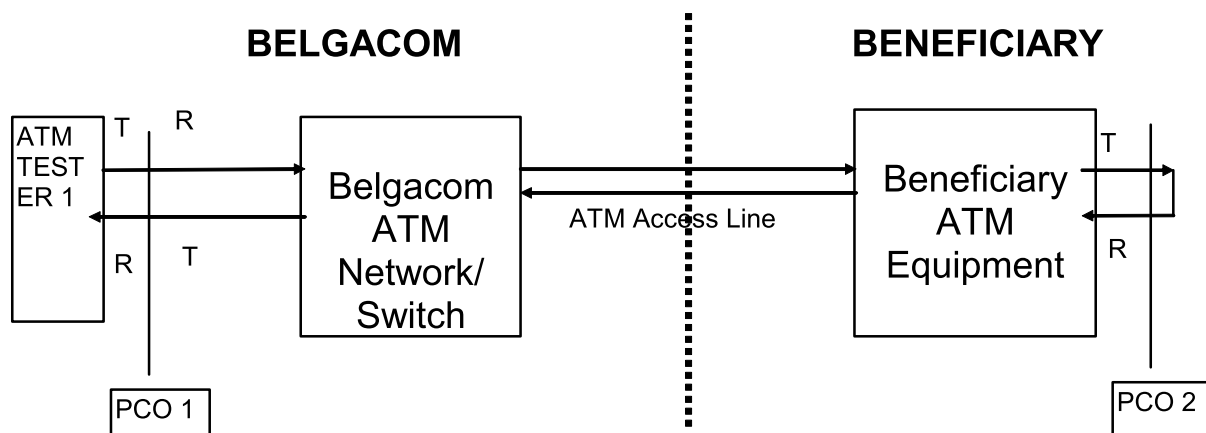


Fig. 1

ATM interfaces

7. The access lines are E1, E3 or STM1. The ATM mapping conforms to G.704/G.804/G.832 and I.432. Cell scrambling, HEC and idle cells are used as defined in I.432.
8. Interface at PCO 1 : STM1
9. Interface at PCO 2 : E1, E3 or STM1

1.2.2.1. Tests of Physical Connectivity

10. The following tests will be executed to test the physical level connectivity of the ATM access line

- a. Setup the physical connection
- b. Troubleshoot the physical connection if necessary
- c. Verify the link behavior in case of failure

Test	Description	Procedure	Verdict criteria	Pass	Comment
1a	Setup the physical connection	- Make the necessary connections between the 2 networks - Perform the necessary configuration on the devices at both sides - Verify that the link is active	Link is active = pass, go to step 1c. In case of fail, go to step 1b.		
1b	Troubleshoot the connection	- In case the link doesn't become active after correct connection and configuration, try to locate the failure in cooperation with the customer - Interrupt the link at the NTP. Put a loop at the NTP and verify that the Belgacom part is functioning properly. If not, repair until OK. - The customer is supposed to execute the same actions on its part.	Link becomes active = pass		
1c	Verify the link behavior in case of failure	- Disconnect the cable and/ or disable the port(s) of the link and verify that it becomes inactive - Reconnect the cable and/ or enable the port(s) of the link and verify that it becomes again active	Link does react correctly on failures = pass		

1.2.2.2. Tests of ATM interworking and link quality

11. For those tests, **ONE** ATM PVP will be configured on the ATM access line.
12. It is asked to the Beneficiary to loop the PVP on an interface on the same ATM equipment as the one on which the access line is connected to.
13. **Belgacom will use this PVP to send traffic and to compare it with the traffic which will come back.** This will allow Belgacom to make sure that both ATM switches can interwork and that the quality of the access line is acceptable before configuring real traffic on it.

14. The following Permanent Virtual Paths (PVP) will be used and tested out.

15. VPI allocation: VPI at PCO1 = VPI at PCO2 = VPI at access line port.

CoS	VPI	PCR (kbps)	CDVT (µs)	SCR (kbps)	MBS (cells)
VBR nrt	17	1024	804	1024	32

Test Procedure

Test	Procedure	Verdict criteria : Pass / Fail	Pass	Comment
1	- configure the PVP connection mentioned here above between PCO 1 and PCO 2. - The PVP will be policed according to the GCRA algorithm.	config accepted = pass otherwise fail		
2a	- configure ATM TESTER 1 to send traffic (CLP=0) at bit rates mentioned under PCR above, in continuous stream in the respective VPI. Use AAL1 payload. - configure ATM TESTER 1 to receive traffic in the respective VPI and count lost cells. - start sending traffic and continue for 1 hour	no lost cells = Pass otherwise fail		

1.2.2.3. Additional Test PVCs at Disposal of Beneficiary

16. Additionally to the tests that will be performed by Belgacom and described in the above paragraphs, Belgacom will configure 5 PVP connections on the access line and will loop them on an interface connected to a test switch. It is important to note that those PVP will **only** be provisioned during the tests of the **first access line**.

17. The PVP will be configured as described in the table here below and will be available for a duration of 20 working days. Policing will be made according to GCRA algorithm.

CoS	VPI	PCR	CDVT	SCR/MCR	MBS
CBR	17	1024	527	NA	32
VBR rt	18	1280	461	1280	32
VBR nrt	19	1536	530	512	32
VBR nrt	20	1728	470	864	32
UBR+	21	1920	420	480	32

18. Additional possibilities can be asked by the Beneficiary and will be charged €990 per half-day¹.
19. Additional possibilities, if asked for by the Beneficiary:
- AAL5 and AAL2 payload,
 - IP interconnectivity test on IP level between modem and BAS,
 - CBR testing.
- (Within 3 weeks following the receipts by Belgacom of a request from Beneficiary).

¹ Standard fee invoiced by Belcomlab

2. Technical Specifications of the Access Line

2.1. 2 Mbit/s

2.1.1. Introduction

20. This section of the Annex contains the technical specifications of the 2 Mbit/s Access Line of the Data Connectivity Offer. Basically, it's the intention of Belgacom and The Beneficiary to co-operate for the realisation of an end-to-end 2Mbit/s transparent access line between The Beneficiary equipment and Belgacom ATM Access Point. As the overall, end-to-end performance of this 2Mbit/s access line is well defined in the ETSI documents ETS 300418 and ETS 300247, this document only deals with the apportionment of these impairments between the Belgacom network and the Beneficiary's network connection.
21. The specifications of the 2 Mbps access line for the Data Connectivity (WDC) are based on a generic model as shown hereafter.

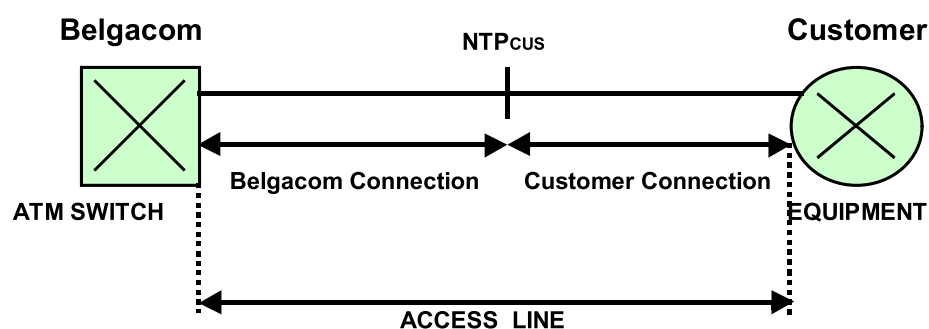


Fig. 2

22. The connection of Belgacom is presented to the Beneficiary's network connection via the Beneficiary's Network Termination Point (NTP_{CUS}). This NTP_{CUS} comprises all physical connections and their technical access specifications that form part of the Belgacom transmission network. In some cases the NTP is presented by means of an electrical equipment referred to as the Network Termination Unit (NTU). For the description of the 2 Mbit/s Access Line of the WDC service, the NTU is considered as being contained within the Belgacom connection.

2.1.2. Connection characteristics

2.1.2.1. Transfer rate

2.1.2.1.1. Access line timing

23. Provision of the circuit timing is the responsibility of Belgacom within the limits of 2048kbit/s $\pm$ 50 ppm as specified by ITU-T Recommendation G.703.

2.1.2.1.2. Information transfer rate

24. The Belgacom connection of WDC 2 Mbit/s access line is capable of transferring an information rate of 2048kbit/s $\pm$ 50 ppm in each direction.

2.1.2.2. Information transfer susceptibility

25. The Belgacom connection of WDC 2 Mbit/s access line is capable of transferring unrestricted digital information.

2.1.2.3. Structure

26. The Belgacom connection of WDC 2 Mbit/s access line shall not be structured by Belgacom; the full bit rate of 2048kbit/s shall be available to The Beneficiary for unrestricted digital information transfer.

2.1.2.4. Establishment of communication

27. Establishment or release of the Belgacom connection of WDC 2 Mbit/s access line shall not require any protocol exchange or other intervention at the NTPcus by the Beneficiary.

2.1.2.5. Symmetry

28. The Belgacom connection of WDC 2 Mbit/s access line shall be symmetrical, i.e. each direction of transmission shall have the same nominal characteristics, although the actual values shall be independent.

2.1.2.6. Connection configuration

29. The Belgacom connection configuration is point-to-point.

2.1.2.7. Network performance

2.1.2.7.1. Transmission delay

30. The one way delay through the Belgacom connection shall be less than $(5 + 0.01G)$ ms, where G is the geographical distance in kilometres.

2.1.2.7.2. Jitter

31. The maximum jitter at the output port of the NTPcus as well as the input jitter tolerance at the NTPcus shall be as specified in ITU-T Recommendation G.823.

2.1.2.7.3. Slip

32. Slip occurs at a point between two parts of a communication link that are operating at similar but not identical bit rates (plesiochronously); the Belgacom connection of the WDC 2 Mbit/s access line complies with ITU-T Recommendation G.822 which specifies controlled slip objectives.

2.1.2.7.4. Performance level

33. Basically, Belgacom and the Beneficiary have to co-operate in order to be able to guarantee the overall end-to-end error performance level of the WDC 2048kbit/s access line as specified in paragraph 5.1.7.4 of ETS 300 247. The method of apportionment for the end-to-end error impairments between The Beneficiary and Belgacom shall be based on the model mentioned in ITU-T Recommendation G.826.

2.1.2.8. Network interface presentation

2.1.2.8.1. Physical characteristics

34. The physical connection arrangements for the standard NTPcus of the Customer-sited WDC 2 Mbit/s access line (120 Ohms version of the G.703-interface) are provided by means of a RJ45 socket and with contact assignments as specified in the table below.

contact	network interface
1 & 2	transmit pair
3	shield reference point
4 & 5	receive pair
6	shield reference point
7	unused
8	unused

The transmit pair is the output from the Belgacom network connection to Belgacom's ATM switch or to the Customer's network connection.

The receive pair is the input from the ATM switch or the Customer's network connection to the Belgacom network connection.

35. At the NTPcus and with the agreement of the Beneficiary, two alternative means of connection may be provided as an option for the Customer-sited access line, i.e.:
- by means of a hardwired connection (120 Ohms version of the G.703-interface), by using insulation displacement connectors;
 - by means of two 1,6/5,6 coax-connectors (75 Ohms-version of the G.703-interface), by using one coaxial pair in each transmission direction.

36. The physical connection arrangements for the standard NTP_{cus} of the Belgacom-sited WDC 2 Mbit/s access line are provided by means of two 1,6/5,6 coax-connectors (75 Ohms-version of the G.703-interface), by using one coaxial pair in each transmission direction.

2.1.2.8.2. Electrical characteristics

37. The electrical characteristics of the NTP_{cus} of the 2 Mbit/s WDC access line are in accordance with paragraph 4.2 of ETS 300 418.

2.1.2.8.3. Safety

38. Regarding the safety, the NTP_{cus} complies with paragraph 4.3 of ETS 300 418.

2.1.2.8.4. Overvoltage protection

39. Regarding the overvoltage protection, the NTP_{cus} complies with paragraph 4.4 of ETS 300 418.

2.1.2.8.5. ElectroMagnetic Compatibility (EMC)

40. The network interface presentation fulfils to the EMC requirements which are imposed under the EMC Directive 89/336/EEC.

2.1.2.9. Terminal equipment

41. For connection to the NTP_{cus} of the WDC 2048kbit/s access line, the terminal of the Beneficiary has to be approved to CTR12.
42. At the NTP_{cus} the Beneficiary has to provide Belgacom with a grounding connection point. This grounding connection point should be easily accessible, located near the NTP_{cus}, and shall enable Belgacom to attach a 4 mm² (minimum section) ground cable with lug, bolt and washer. The characteristics of the grounding connection point provided by the Beneficiary must be conform to article 69 of the actual RGIE²; this grounding point shall have a resistance value not exceeding 30 Ohms.

² RGIE: Règlement Général des Installations Electriques

2.1.2.10. Definitions, Symbols and Abbreviations

2.1.2.10.1. Definitions

43. For the purpose of these technical specifications, the following definitions apply:
44. Background block error ratio
The ratio of errored blocks over all blocks within a specified measuring period, where neither are counted during unavailability periods nor during severely errored seconds.
45. Errored block
A block with one or more bit errors.
46. Errored second
A one-second period with one or more errored blocks.
47. Network Termination Point (NTP)
All physical connections which form part of the BELGACOM telecommunications network and which are necessary for access to and efficient communication through the Belgacom network connection.
48. Severely errored second
A one-second period which contains at least 30% errored blocks or at least one severely disturbed period.
49. Slip
One or more extra or missing consecutive unit intervals in the bit stream. Slip occurs at a point between two pieces of the communication link that are operating at similar but not identical bit rates (plesiochronously). If a piece of equipment is transmitting data at a rate X towards another piece of equipment which is operating at a rate Y, then depending on whether X is greater or less than Y, there will be either a loss of, or a gain of data at the received piece of equipment. The addition or loss of bits in a bit stream is referred to as slip.

2.1.2.10.2. Symbols and abbreviations

50. For the purpose of these technical specifications, the following abbreviations apply:

<u>CRC-4:</u>	Cyclic Redundancy Check-4 bit.
<u>CTR:</u>	Common Technical Regulations.
<u>DCE:</u>	Data Circuit-terminating Equipment.
<u>DTE:</u>	Data Terminal Equipment.
<u>ES:</u>	Errored Seconds.
<u>ITU:</u>	International Telecommunication Union.
<u>NTP</u>	Network Termination Point.
<u>ppm:</u>	Parts per million
<u>RGIE:</u>	Règlement Général des Installations Electriques.
<u>SES:</u>	Severely Errored Seconds.
<u>UI:</u>	Unit Interval.

2.2. 34 Mbit/s

2.2.1. Introduction

51. This section of the Annex contains the technical specifications of the 34Mbit/s Access Line of the Data Connectivity Offer. Basically, it's the intention of Belgacom and the Beneficiary to co-operate for the realisation of an end-to-end 34Mbit/s transparent access line between The Beneficiary equipment and Belgacom ATM Access Point. As the overall, end-to-end performance of this 34Mbit/s access line is well defined in the ETSI documents ETS 300418 and ETS 300247, this document only deals with the apportionment of these impairments between the Belgacom network and the Beneficiary's network connection.
52. The specifications of the 34 Mbit/s access line for the Data Connectivity (WDC) are based on a generic model as shown hereafter.

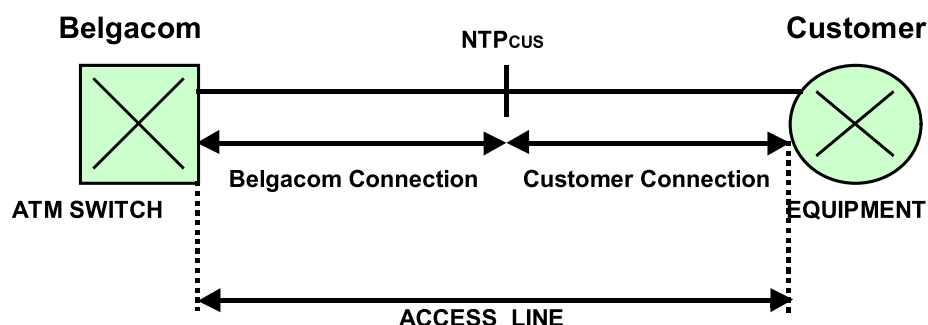


Fig. 3

53. The connection of Belgacom is presented to the Beneficiary's network connection via the Beneficiary's Network Termination Point (NTP_{CUS}). This NTP_{CUS} comprises all physical connections and their technical access specifications that form part of the BELGACOM transmission network. In some cases the NTP is presented by means of an electrical equipment referred to as the Network Termination Unit (NTU). For the description of the 34 Mbit/s Access Line of the WDC service, the NTU is considered as being contained within the Belgacom connection.

2.2.2. Connection characteristics

2.2.2.1. Transfer rate

2.2.2.1.1. access line timing

54. Provision of the circuit timing is the responsibility of Belgacom within the limits of 34,368kbit/s $\pm$ 20 ppm as specified by ITU-T Recommendation G.703.

2.2.2.1.2. information transfer rate

55. The Belgacom connection of WDC 34 Mbit/s access line is capable of transferring an information rate of 34,368kbit/s $\pm$ 20 in each direction.

2.2.2.2. Information transfer susceptance

56. The Belgacom connection of WDC 34 Mbit/s access line is capable of transferring unrestricted digital information.

2.2.2.3. Structure

57. The Belgacom connection of WDC 34 Mbit/s access line shall not be structured by BELGACOM; the full bit rate of 34,368kbit/s shall be available to The Beneficiary for unrestricted digital information transfer.

2.2.2.4. Establishment of communication

58. Establishment or release of the Belgacom connection of WDC 34 Mbit/s access line shall not require any protocol exchange or other intervention at the NTPcus by the Beneficiary.

2.2.2.5. Symmetry

59. The Belgacom connection of WDC 34 Mbit/s access line shall be symmetrical, i.e. each direction of transmission shall have the same nominal characteristics, although the actual values shall be independent.

2.2.2.6. Connection configuration

60. The Belgacom connection configuration is point-to-point.

2.2.3. Network performance

2.2.3.1. Transmission delay

61. The one way delay through the Belgacom connection shall be less than $(5 + 0.01G)$ ms, where G is the geographical distance in kilometers.

2.2.3.2. Jitter

62. The maximum jitter at the output port of the NTPcus as well as the input jitter tolerance at the NTPcus shall be as specified in ITU-T Recommendation G.823.

2.2.3.3. Performance level

63. Basically, Belgacom and the Beneficiary have to co-operate in order to be able to guarantee the overall end-to-end error performance level of the WDC 34 Mbit/s access line as specified in paragraph 5.1.7.4 of ETS 300 687. The method of apportionment for the end-to-end error impairments between The Beneficiary and Belgacom shall be based on the model mentioned in ITU-T Recommendation G.826.

2.2.4. Network interface presentation

2.2.4.1. Physical characteristics

64. The physical connection arrangements for the standard NTPcus of the WDC 34 Mbit/s access line (75 Ohms version of the G.703-interface) shall consist of two 1.6/5.6 coax-connectors (one coaxial pair in each transmission direction) complying with IEC 169-13.

2.2.4.2. Electrical characteristics

65. The electrical characteristics of the NTPcus of the 34 Mbit/s WDC access line are in accordance with ITU-T Recommendation G.703 (75 Ohms).

2.2.4.3. Safety

66. Regarding the safety, the NTPcus complies with paragraph 4.3 of ETS 300 418.

2.2.4.4. Overvoltage protection

67. Regarding the overvoltage protection, the NTPcus complies with paragraph 4.4 of ETS 300 418.

2.2.4.5. ElectroMagnetic Compatibility (EMC)

68. The network interface presentation fulfils to the EMC requirements which are imposed under the EMC Directive 89/336/EEC.

2.2.5. Terminal equipment

69. For connection to the NTPcus of the WDC 34 Mbit/s access line, the terminal of the Beneficiary has to be in accordance with ETS 300 689, taking into account that:
- Belgacom is offering the transparent, unstructured leased line service;
 - The physical connection arrangements shall preferably consist of two 1,6/5,6 coax-connectors (one coaxial pair in each transmission direction) complying with IEC 169-13.
 - At the NTPcus and with the agreement of the Beneficiary, the BNC connector may be provided as an option for the Customer-sited access line.

70. At the NTP_{cus} the Beneficiary has to provide Belgacom with a grounding connection point. This grounding connection point should be easily accessible, located near the NTP_{cus}, and shall enable Belgacom to attach a 4 mm² (minimum section) ground cable with lug, bolt and washer. The characteristics of the grounding connection point provided by the Beneficiary must be conform to article 69 of the actual RGIE³; this grounding point shall have a resistance value not exceeding 30 Ohms.

2.2.6. Definitions, Symbols and Abbreviations

2.2.6.1. Definitions

71. For the purpose of these technical specifications, the following definitions apply:
72. Background block error ratio
The ratio of errored blocks over all blocks within a specified measuring period, where neither are counted during unavailability periods nor during severely errored seconds.
73. Errored block
A block with one or more bit errors.
74. Errored second
A one-second period with one or more errored blocks.
75. Network Termination Point (NTP)
All physical connections which form part of the BELGACOM telecommunications network and which are necessary for access to and efficient communication through the Belgacom network connection.
76. Severely errored second
A one-second period which contains at least 30% errored blocks or at least one severely disturbed period.

2.2.6.2. Symbols and abbreviations

77. For the purpose of these technical specifications, the following abbreviations apply:

<u>CRC-4:</u>	Cyclic Redundancy Check-4 bit.
<u>CTR:</u>	Common Technical Regulations.
<u>DCE:</u>	Data Circuit-terminating Equipment.
<u>DTE:</u>	Data Terminal Equipment.
<u>ES:</u>	Errored Seconds.
<u>ITU:</u>	International Telecommunication Union.
<u>NTP:</u>	Network Termination Point.

ppm: Parts per million

³ RGIE: Règlement Général des Installations Electriques

<u>RGIE:</u>	Réglement Général des Installations Electriques.
<u>SES:</u>	Severely Errored Seconds.
<u>UI:</u>	Unit Interval.

2.3. STM-1

2.3.1. Introduction

78. This section contains the technical specifications of the STM-1 Access Line of the Data Connectivity. Basically, it's the intention of Belgacom and the Beneficiary to co-operate for the realisation of an end-to-end STM-1 transparent access line between Beneficiary equipment and Belgacom's ATM switch.
79. The specifications of the STM-1 (155 Mbit/s) access line for the Data Connectivity are based on a generic model as shown hereafter.

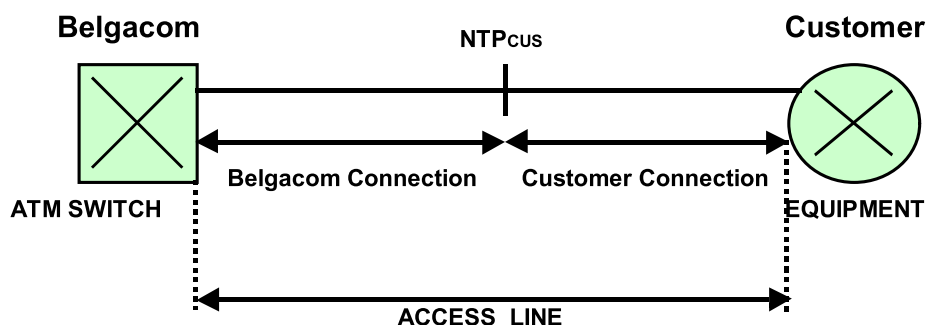


Fig. 4

80. The connection of Belgacom is presented to the Beneficiary's network connection via the Beneficiary's Network Termination Point (NTP_{CUS}). This NTP_{CUS} comprises all physical connections and their technical access specifications that form part of the BELGACOM transmission network. In some cases the NTP is presented by means of an electrical equipment referred to as the Network Termination Unit (NTU). For the description of the STM-1 (155 Mbit/s) Access Line of the Data Connectivity service, the NTU is considered as being contained within the Belgacom connection.

2.3.2. Available interface

81. The SDH STM-1 electrical interface complies with ITU-T specification G.707, G.783, G.703, G.957, G.825 and ETSI standards ETS 300 147, 300 232, DE/TM 01015

82. The STM-1 optical interface is also available. For Belgacom-sited access line, the physical connection arrangements shall exclusively consist of an Optoclip2 connector. For Customer-sited access line, Belgacom can deliver the line on other optical interfaces.

2.3.3. Mechanical/physical: External STM-1 electrical connector

83. The provision of the DDF is the Beneficiary's responsibility, the connectors are provided by Belgacom. The DDF has to be delivered with a panel with 2-times (transmission / reception) 2 holes for each link, one for the link connection, the other for the measurements. These connectors are H shaped CEI169-13 1.6/5.6 75 Ohm, with 25mm between axes. At both Belgacom's equipment and the Belgacom side of the Beneficiary distribution frame, the electrical cables will be equipped with 75 ohms coaxial connectors conform with standard 169-13 IEC-75-15/16 ohms-connector type 1,6/5,6, for Belgacom-sited access lines. For Customer-sited access line Belgacom can also deliver this on BNC connectors. For the distribution frame side, it will have the following properties:
- With contact of the socket (female) type,
 - Fixed connector (straight) for a panel mounting (bulkhead),
 - Maximum thickness of the panel is 3mm,
 - Latching system: to screw.
84. The jumpers with male sockets will be provided by the Beneficiary.

2.3.4. Electrical characteristics

85. The STM-1 electrical interface complies with the G.703 specification.
86. The jitter and wander on the signal presented at the input of the G.703 interface should be within the limits specified in G.825. The jitter and wander on the signal presented at the output of the G.703 interface should be within the limits specified in G.783.

2.3.5. Functional

87. The STM-1 interface complies with the G.707, G.783 specifications and ETS 300 147 standard.
88. ATM on STM1 is only defined for VC4.

2.3.5.1. Regenerator and Multiplex Section overhead

A1-A2	Frame alignment bytes are required
J0	Path Trace, if used, as defined in ETS DE/TM 01015-1-1 §7.1. The APId (Access Point Identifier) transmitted by J0, shall use the 15 byte format. The value of APId will be defined later.
B1	BIP-8 calculation is required
D1-D12	Not used
B2	BIP-24N calculation is required

K2	Used for MS-AIS and MS-FERF, renamed MS-RDI (Remote Defect Indication), detection
M1	MS-REI is required based on block calculation as defined G.707 Ap VII or not used
S1	Not used

89. All bits/bytes not mentioned here above have to be disregarded by the equipment. This means that the correct functioning may not depend on them.

3. VP Connectivity between Belgacom DSLAM and Beneficiary

90. The specific configuration described hereafter concern elements still under test. Some of the information is still subject to change after approval by the BIPT.

3.1. VP connectivity between DSLAM and OLO ATM switch

91. Following figure presents the Data Connectivity solution using VP connectivity between Belgacom DSLAM and Beneficiary ATM switch.

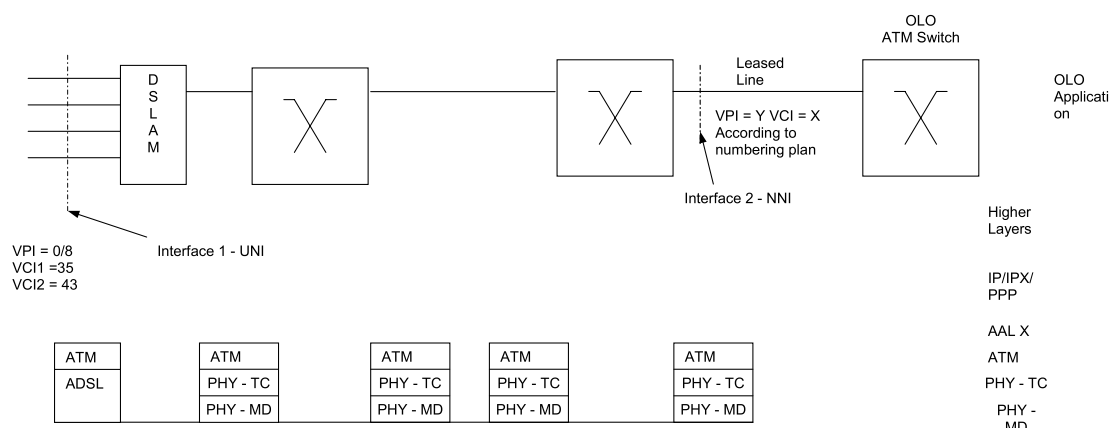


Fig. 5

General Description:

92. For Beneficiary, following connection numbering rules apply:
- VP connectivity is configured in each DSLAM for each connected Beneficiary.
 - DSLAM VC numbering per ADSL line (10 VC per line) is According to following table:

VPI range	0-4095
VCI rule	$(\text{port}-1)+32+(X-1)*2000$

93. In the above table
- X is the number the VC defined on the end user line (X= 1 to 10)
 - VPI range refers to range offered at interconnection point between Belgacom ATM switch and Beneficiary ATM switch
 - VCI range refers to VCI configured on the DSLAM network side and transparently transported up to the interconnection point

94. UNI/NNI interface are according to ITU-T I.361 Specification "B-ISDN ATM layer specification".

3.1.1. Interface 1 Specification – UNI

3.1.1.1. DSLAM Profiles Configuration

95. VP/VC configuration

According to Alcatel documentation only a restricted range of VCI values can be used at DSLAM client side

96. The values chosen are:

VCI Values:

- VCI1 = 35 (if one VC per line)
- VCI2 = 36 (for the second VC on the same line)
- VCI3 = 37 (for the third VC on the same line)
- VCI4 = 38 (for the forth VC on the same line)
- VCI5 to VC10 numbering depends on the technical situation.

97. The traffic descriptor applied on the connection will be those defined by the operator.

98. The CoS of a VC on the DSLAM has to be of the same type, or lower, than the VP or VC requested in the ATM network : VBR rt VP or VC (ATM) can content CBR or VBR rt VC or lower (DSLAM) and VBR nrt VP or VC (ATM) can only content UBR+ or VBR nrt VC (DSLAM).

99. The CDVT values used by the DSLAM for the CBR traffic descriptor are conforming to table :

UNI		
Peak information rate kbit/s	PCR (cell/s)	CDVT μs
256	604	1516
320	755	1252
384	906	1076
448	1057	950
512	1208	856
576	1359	782
640	1510	724
704	1661	676
768	1812	636
832	1963	602
896	2114	573
960	2265	548
1024	2416	526
1088	2567	506
1152	2717	489
1216	2868	474
1280	3019	460
1344	3170	447

1408	3321	436
1472	3472	425
1536	3623	416
1600	3774	407
1664	3925	399
1728	4076	391
1792	4227	384
1856	4378	378
1920	4529	372
1984	4680	366
2048	4831	361
2112	4982	355
2176	5133	351
2240	5284	346
2304	5434	342

The above-mentioned CDVT values are not definitive, nor fixed in their pre-definition, but can still be reviewed punctually as a result of a motivated request⁴ of a Beneficiary.

In some cases⁵ Beneficiary can change the CDVT values. Belgacom has to consider the motivated request from the Beneficiary and can the refuse to implement the requested CDVT values in virtue of a motivation exclusively based on technical problems as well as when these modifications have damaging consequences on the network integrity. In this case, Belgacom has to propose an alternative solution acceptable for the Beneficiary and for information for the BIPT. Belgacom has to answer to the Beneficiary's questions within a delay of 10 working days with a copy to the BIPT.

3.1.2. Interface 2 Specification – NNI

100. VP is configured in ATM Switch with following parameters:

3.1.2.1. Configure ATM VPC Path – Guidelines

101. ATM Parameters:

- Endpoint A = VPI value
- Endpoint B = VPI value
- VP Application = PVP
- Connection Type = pt to pt symmetrical
- Service Category = CBR, rt-VBR, nrt-VBR, UBR+
- Alarm Surveillance = Enable/Disable (on OLO request)
- Sustained Info rate (kbps) = SCR
- Peak Info Rate (kbps) = PCR

102. ATM Traffic

- Service Category = CBR, rt-VBR, nrt-VBR, UBR+, nrt-VBR
- Traffic Descriptor = PIR_0+1/SIR_0 for nrt-VBR
- Traffic Descriptor = PIR_0+1 ; MIR_0+1 for UBR +

⁴ With the exception of the CBR context

⁵ With the exception of the CBR context

- Traffic Descriptor = PIR_0+1/SIR_0+1 for rt-VBR
- Traffic Descriptor = PIR_0+1 for CBR
- Traffic Policing = Tag on SIR_0, discard on PIR_0+1, discard on SIR_0+1
- PIR_0+1 = see Product Definition
- MBS_0 = MBS_0+1 = 32
- SIR_0 = see Product Definition
- SIR_0+1 = see Product Definition

103. VPi / VCi numbering range:

- VP Switching

E3 VPI: 1 -4095 all range is available
STM1 VPI: 1 -4095 all range is available

- VC Switching

E3 VPI range: 0-255 (the max number of VPI could be restricted to 16 on some type of cards)
VCI range: 32-1023. Max. number of connections on a E3 port = 2045 - (2 * number of VPI used in VC switching)

STM1 VPI range: 0-255
VCI range: 32-8191. Max. number of connections on a STM1 port = 4092 - (2 * number of VPI used in VC switching)

104. For different bit rates following table gives the correct CDVT values.

CDVT for Nrt-VBR, UBR:

PCR (Kbit/s)	PCR (c/s)	CDVT(μs)	BtB cells E3	BtB cells STM1
256	604	3288	3	2
320	755	2625	3	2
384	906	2184	3	2
448	1057	1868	3	2
512	1208	1632	3	2
576	1359	1448	3	2
640	1510	1300	3	2
704	1661	1180	3	2
768	1812	1080	3	2
832	1963	995	3	2
896	2114	922	3	2
960	2265	859	3	2
1024	2416	804	3	2
1088	2567	770	3	2
1152	2717	730	3	2
1216	2868	680	3	2
1280	3019	640	3	2
1344	3170	620	3	2
1408	3321	580	3	2
1472	3472	560	3	2

1536	3623	530	3	2
1600	3774	510	3	2
1664	3925	500	3	2
1728	4076	470	3	2
1792	4227	450	3	2
1856	4378	440	3	2
1920	4529	420	3	2
1984	4680	410	3	2
2048	4831	405	3	2
2000	4717	400	3	2
3000	7076	260	3	2
4000	9434	250	3	3
5000	11793	250	4	4
6000	14151	250	5	4
7000	16510	250	6	5
8000	18868	250	7	5
9000	21227	250	8	6
10000	23585	250	9	7
11000	25944	250	10	7
12000	28302	250	11	8
13000	30661	250	13	9
14000	33019	250	15	10
15000	35378	250	16	10
16000	37736	250	18	11
17000	40095	250	21	12
18000	42453	250	23	13
19000	44812	250	26	13
20000	47170	250	29	14
21000	49529	250	33	15
22000	51887	250	37	16
23000	54246	250	43	17
24000	56604	250	49	17
25000	58963	250	57	18
26000	61321	250	66	19
27000	63680	250	79	20
28000	66038	250	95	21
29000	68397	250	118	22
30000	70755	250	154	23
31000	73114	250	213	24
32000	75472	250	334	24
33000	77831	250	718	25
34000	80189	250	na	26

105. The above-mentioned CDVT values are not definitive, nor fixed in their pre-definition, but can still be reviewed punctually as a result of a motivated request⁶ of a Beneficiary.

⁶ With the exception of the CBR context

106. In some cases⁷ Beneficiary can change the CDVT values. Belgacom has to consider the motivated request from the Beneficiary and can the refuse to implement the requested CDVT values in virtue of a motivation exclusively based on technical problems as well as when these modifications have damaging consequences on the network integrity. In this case, Belgacom has to propose an alternative solution acceptable for the Beneficiary and for information for the BIPT. Belgacom has to answer to the Beneficiary's questions within a delay of 10 working days with a copy to the BIPT.

CDVT for CBR and rt-VBR connections

CDVT for CBR & rt-VBR				
PCR (Kbit/s) or PIR (Kbit/s)	PCR (c/s)	CDVT(s)	BtB cells E3	BtB cells STM1
256	604	1520	1	1
320	755	1255	1	1
384	906	1079	1	1
448	1057	953	2	2
512	1208	858	2	2
576	1359	784	2	2
640	1510	726	2	2
704	1661	677	2	2
768	1812	637	2	2
832	1963	603	2	2
896	2114	574	2	2
960	2265	549	2	2
1024	2416	527	2	2
1088	2567	507	2	2
1152	2717	490	2	2
1216	2868	475	2	2
1280	3019	461	2	2
1344	3170	448	2	2
1408	3321	437	2	2
1472	3472	426	2	2
1536	3623	417	2	2
1600	3774	408	2	2
1664	3925	400	2	2
1728	4076	392	2	2
1792	4227	385	2	2
1856	4378	379	2	2
1920	4529	372	2	2
1984	4680	367	2	2
2048	4831	361	2	2
2000	4717	365	2	2
3000	7076	309	3	3
4000	9434	281	4	3
5000	11793	264	4	4

⁷ With the exception of the CBR context

6000	14151	252	5	4
7000	16510	244	6	5
8000	18868	238	6	5
9000	21227	234	7	6
10000	23585	230	8	6
11000	25944	227	9	7
12000	28302	224	10	7
13000	30661	222	12	8
14000	33019	220	13	8
15000	35378	218	14	9
16000	37736	217	16	10
17000	40095	216	18	10
18000	42453	215	20	11
19000	44812	214	22	11
20000	47170	213	25	12
21000	49529	212	28	12
22000	51887	211	32	13
23000	54246	211	36	14
24000	56604	210	41	14
25000	58963	209	47	15
26000	61321	209	55	16
27000	63680	208	65	16
28000	66038	208	79	17
29000	68397	208	99	18
30000	70755	207	127	18
31000	73114	207	176	19
32000	75472	206	275	20
33000	77831	206	592	20
34000	80189	206	NA	21
All higher	Rates:	206		

107. The above-mentioned CDVT values are not definitive, nor fixed in their pre-definition, but can still be reviewed punctually as a result of a motivated request⁸ of a Beneficiary.

108. In some cases⁹ Beneficiary can change the CDVT values. Belgacom has to consider the motivated request from the Beneficiary and can the refuse to implement the requested CDVT values in virtue of a motivation exclusively based on technical problems as well as when these modifications have damaging consequences on the network integrity. In this case, Belgacom has to propose an alternative solution acceptable for the Beneficiary and for information for the BIPT. Belgacom has to answer to the Beneficiary's questions within a delay of 10 working days with a copy to the BIPT.

109. The CDVT values specified by Belgacom have been determined in the framework of a European ATM pilot project to which Belgacom participated actively together with 16 other European telecom operators.

⁸ With the exception of the CBR context

⁹ With the exception of the CBR context

110. Even if those values are not strictly speaking exactly the same as the ones that can be calculated from the ITU-T I.371 specification, they are very close to it.

3.2. Appendix – SDH interface

This chapter describes SDH interface.

3.2.1. SDH card functions and features

- 111. STM1 cards transport cells between the switching fabric and the STM1 network.
- 112. STM1 cards are installed in Low Speed or Dual Peripheral shelves. The cards provide a single-port UNI/NNI interface at a transmission rate of 155.52 Mb/s. STM1 cards support 4096 PVP connections on each port. There are two versions for each STM1 card; see tables below for a list of the cards. STM1-1 cards have 4 k cell buffering capacity STM1-2 cards have 32 k cell buffering capacity.
- 113. The Alcatel 7470 system supports automatic protection switching or 1+1 redundancy STM1 cards. For information about slot configuration for STM1 see Alcatel documentation.

3.2.2. STM1 card

- 114. The Alcatel 7470 system supports STM1 Electrical cards. These cards are designed for short-range applications using 75 ohm coaxial cables of up to 136 m (450 ft) in length. The back of each card provides a single electrical interface. You use a single-port BNC MAU, which has one transmit and one receive connector, to connect the electrical interface to the ATM network.
- 115. Belgacom ATM Switch supports STM1 electrical card type 1 and type 2.

3.2.3. SDH card types

- 116. Next table lists the part numbers of the SDH cards.

Table: SDH card part numbers

Card type	Buffer capacity	Part number
STM1-1 Electrical	4 k	90-2305-44
STM1-2 Electrical	32 k	90-4909-24

3.2.4. SDH card connectors

- 117. The BNC connection is through a BNC MAU that connects to the back of the card.

3.2.5. SDH card specifications of the STM1 electrical card of the Alcatel 7470 switch

118. Following table lists the specifications for SDH cards.

Table: Specifications for SDH cards

Specification	Description
STM1 Electrical interface	The specification is SDH Criteria for Electrical Interface, standard I.432.
Maximum range: Electrical	120 m (432 ft)
Free run accuracy	The card has a free run accuracy of 20 c/m 4.7 cpm (Stratum 3).
Storage temperature	-40C to 70C (-40F to 158F)
Operating temperature	5C to 40C (41F to 104F)
Relative humidity	5% to 85% non-condensing

4. Characteristics of Cabling - Transmission properties of the access network

4.1. Generalities

- 119. A subscriber loop consists of sections of twisted pairs cables of different gauges. All the sections are buried and connected together by means of electrical joints, called splices, directly placed in the ground or sometimes in a manhole.
- 120. In the ideal situation, the Access Network has a star configuration with the feeder cable bundles going from the main distribution frame to the street cabinet. From the street cabinet, via distribution cables and drop wires, the wire pairs are terminated at the NTP (Network Termination Point) in the individual customer sites. The reality shows that cable arrangements leads sometimes to a meshed structure in the feeding network.
- 121. Each telecom cable consists of a number of copper conductors grouped in quads; these quads can be arranged in bundles or in layers, depending on the type of cable.

4.2. Physical characteristics of the cables

- 122. A conductor can be isolated by a layer of paper (in the old generation cables) or synthetic material, usually polyethylene.
- 123. Most of the conductors have a 0.5 mm or 0.6 mm diameter; distant customers however needs to be connected via conductors of 0.8 and 1.0 mm; 2000 pairs cables going out of the central office are sometimes made of 0.4 mm conductors.
- 124. In paper insulated cables, the conductors are surrounded by a lead sheath, generally protected by armouring and polyethylene sheath.
- 125. In plastic insulated cables used in the distribution network, the conductors are surrounded by a polyethylene sheath.
- 126. In plastic insulated cables used in the feeding network, the conductors are surrounded by an aluminium screen, a polyethylene internal sheath, an armouring and a polyethylene external sheath.
- 127. The plastic cables are in the majority of the cases longitudinally waterproof.

4.3. Electrical characteristics of the cables

128. The table below gives some typical characteristics of the access network cables [figures given by the cable manufacturers or by measurements in the field]

Diameter	LR	KC	A800	A40.000	A150.000	A300.000
0.4 mm	275	55	2.0	7.5	11.5	14.5
0.5 mm	180	50-55	1.3	6	9	11
0.6 mm	123	38.5-46	1.0	4	6	8
0.8 mm	69	38.5	0.7	2.5	4	5.5

LR = Loop Resistance in ohm/km

KC = average Kilometric Capacity in nF/km (it depends on the type of cable)

A800 = Attenuation measured at 800 Hz in dB/km

A40.000 = Attenuation measured at 40.000 Hz in dB/km

A150.000 = Attenuation measured at 150.000 Hz in dB/km

A300.000 = Attenuation measured at 300.000 Hz in dB/km

NB: the attenuation values are conditional. The reader must note that these figures are given for cable. A loop is made of several pieces of cables and then additional attenuation and reflections due to the splices and the different cable gauges will occur.

129. The insulation resistance between the 'a' and 'b' wires of a pair (without terminal equipment) or between wire and earth is supposed to be at least 750 kohms.

BROBA II ADSL-2008

Annex 3

Exchange of Information

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1. Introduction

1. This Annex describes the exchange of information between Belgacom and the Beneficiary in the context of the Broba II ADSL offer.
2. The content of this annex is subject to modification, especially when changes occur at process level. More information is available in Appendix 4: Planning and Operations.

2. Required information by both parties

2.1. Information to be provided by Belgacom to any interested party

- MTS installation guide
- JAVA classes of MTS
- DTDs files
- XML Content [Description](#) manual
- Example of XML files for each DTD
- Rejection codes
- Offer names
- Encryption keys
- Certificate and software for the encryption and signature
- Excel file for the repair
- Belgacom SPOC for the Broba II ADSL
- FUT manager
- Login & password for [LLU II](#) inquiry web tool
- Belgacom SPOC for the XML back-up procedure
- On demand, Belgacom will provide
 - The list of MDF (LEXs, LDCs, KVDs), Local Buildings and ATM Access Points with their addresses and, if any, the Lambert coordinates, the maps with the geographical coverage, the names and zip codes of the municipalities, the local nets covered by the MDFs with repartition, the streets with the ranges of house numbers, the link between the MDF and the numbering plan PQ, detailed repartition of the LDCs where the copper cables can be extended to the MDF_LEX and those where it is not possible.
 - The repartition of ATM Access Points per Access Area and the link between each LEX (LDC, KVD, if any) with its first ATM Access Point.
 - For each LEX (LDC, KVD, if any), information of the existence of DSLAMs with their type and, if there is no DSLAM, the installation planning until end of the year.
 - For each LEX (LDC, KVD, if any), information of the existence of ADSL2+ enabled DSLAMs and, when applicable, the installation planning.
 - The list of KVD's where Belgacom will not be able to deliver ADSL2+ on the depending loops.
 - The information on the number of free pairs per LEX (LDC, KVD, if any), the average length of the pairs and the presence of disturbing equipment, if any.

- The information on cables in service.
- Information concerning the methodology used by Belgacom for the pair selection in the framework of a Bitstream access.
- [Detailed IT protocol of the project "Open Calendar".](#)
- [Detailed IT protocol of the project "Certified Technician".](#)
- [Technical specifications of the interface "Open Calendar".](#)
- [User guide for the interface "Open Calendar".](#)
- [Process flows of the projects "Open Calendar" and "Certified Technician".](#)
- Before the signature of a contract, Belgacom will provide the Beneficiary with this information :
 - Update of the previously communicated information, if relevant;
 - Refinement of the geographical coverage;
 - Result of pair selections made by other Beneficiaries and Belgacom (anonymous information);
 - Possibly, answer to precise questions of the Beneficiary if he finds it convenient;
- After the effective signature of a contract, Belgacom will provide the Beneficiary with this information:
 - The results of the pair quality tests for specific cases (with mention of the name of the end user) have to be provided by Belgacom after signature of the contract.
 - Belgacom will provide the Beneficiary with detailed information on DSLAM
 - * In case of migrations and for the concerned Lex (LDC, KVD, if any)
 - * In case of motivated and reasonable operational requests from the Beneficiary.

2.2. Information to be provided by the Beneficiary to Belgacom

- Phone number and person to contact in case of repair problems
- Beneficiary SPOC for the Broba II ADSL
- E-mail address for the ordering (test and production if separate)
- List with contact people
- Encryption keys
- Beneficiary SPOC for the XML back-up procedure
- Forecasts of the end-user line quantities, as described in annex 4 – Planning and Operation.

3. Processes

3.1. FUT

3. After the contract signature, Belgacom recommends the Beneficiary to follow a Friendly User Test in order to let the Beneficiary get acquainted with the processes and systems used for ordering the services in this offer. The Friendly User Test is mandatory.
4. Belgacom provides support to guide the Beneficiary through the electronic ordering process with its first orders. A Belgacom FUT manager will coordinate a number of tests, including testing the exchange of messages through the electronic messaging interface and bringing into service a limited number of Beneficiary Friendly Users.
5. Each of the Parties will need to agree on the date of successful completion of the Friendly User Testing Phase. The FUT phase should cover at least a period of 10 working days.
6. The FUT Phase is executed at one ATM Access Point, linked to at maximum two LEX's (LDC, KVD, if any): one local, one zonal or interzonal. The number of 'Friendly' End Users (to be provided by the Beneficiary) is set at 24 per Beneficiary.

3.2. Ordering Access Line

7. Before the Beneficiary can submit an order for the activation of ADSL on a specific End User line, an Access Line needs to be in service in the relevant Access Area.
8. The Beneficiary contacts the Belgacom SPOC to order an Access Line. Belgacom does make a test to verify the feasibility of the installation. In case it is not feasible, Belgacom communicates the cost and timing for implementation.
9. Belgacom will confirm the receipt of every firm order. When the installation of the Access Line is complete, Belgacom will confirm it to the Beneficiary.

3.3. Ordering Bandwidth

10. Before the Beneficiary can submit an order for the activation of ADSL on a specific End User line, Virtual Paths needs to be in service between each DSLAM¹ located in the Lex (LDC, KVD, if any) from which the End User depends and the Belgacom ATM Access Point to which the Beneficiary is connected.

¹ Only applicable to the DSLAMs listed on the Operator Personal Page of the NWS secured website.

3.3.1. Bandwidth Allocation

11. Once the Access Line is in place, the Beneficiary will be able to order bandwidth between each DSLAM² located in the LEX (LDC, KVD, if any) in which the Beneficiary wants to connect End Users and the Belgacom ATM Access Point to which the Beneficiary is connected.
12. The communication process between the Beneficiary and Belgacom is based on SMTP Mail for the transfer, an ACK/NACK protocol and a message file in attachment with a predefined format.
13. The Beneficiary prepares the file in the predefined XML format, signs it, encrypts it, attaches it to a mail and sends it to the mailbox of Belgacom. The e-mail address for Broba II ADSL is llu.car@belgacom.be.
14. When the VP is created by Belgacom, the Beneficiary will receive an electronic message (done message) with all the necessary information in order to configure the related VP at his side of the network.

3.3.2. Capacity Change

15. The Beneficiary can request, within the limits of the VP specifications mentioned in this offer:
 - For an upgrade of the total bandwidth he ordered between a specific DSLAM located in a Lex (LDC, KVD, if any) and the ATM Access Point to which he is connected;
 - For a modification of the bandwidth's allocation amongst the different VPs within a specific Lex (LDC, KVD, if any).
16. Firm orders of bandwidth modification shall be done through the use of an XML order as described in the XML content description documents available on the NWS secured site. Orders are sent via the secured electronic messaging system. There is one request per XML order.
17. When the VP has been modified by Belgacom, the Beneficiary will receive an electronic message (done message) with all the necessary information in order to make the modification of the related VP at his side of the network.

3.4. Ordering ADSL on a specific End User line

18. Once the Access Line and the VPs are in place, the Beneficiary will be able to send orders to Belgacom to activate ADSL on a specific End User Line.

~~19. The communication process between the Beneficiary and Belgacom is based on SMTP Mail for the transfer, an ACK/NACK protocol and a message file in attachment with a predefined format.~~

² Only applicable to the DSLAMs listed on the Operator Personal Page of the NWS secured website.

~~20.19. The Beneficiary prepares the file in the predefined XML format, signs it, encrypts it, attaches it to a mail and sends it to the mailbox of Belgacom. The e-mail address for Broba II ADSL is llu.car@belgacom.be. The communication process of the orders of End User line is further detailed in Annex 4 Planning & Operations, section 7 "Ordering ADSL on a specific End User line".~~

~~21.20.~~ Belgacom will communicate the technical details to the Beneficiary when the ADSL has been activated on the line. The Beneficiary will receive an electronic message (done message) when the implementation has been completed.

3.5. Repair

~~22.21.~~ Belgacom will be responsible for the repair of the PSTN/ISDN Belgacom Services offered to the End User. The Beneficiary is responsible for the repair of the Broba II ADSL Service for which he has the control and is responsible to filter all non-network related problems.

~~23.22.~~ For fault reporting, the Beneficiary will contact Belgacom by e-mail. The e-mail address to be used by the Beneficiary is llu.car@belgacom.be. After having performed a first diagnostic, the Beneficiary will send an excel file with the description of the problem to this address.

Phone number: 0800/91 480
Fax number: 02/512 78 96

~~24.23.~~ Belgacom could possibly contact the Beneficiary for the repair (e.g. in case a disconnection of the End User is needed; need of additional information to perform the repair).

~~25.24.~~ Belgacom will give feedback to the Beneficiary during the repair. The result of the repair activities will be reported by Belgacom to the Beneficiary immediately upon repair.

~~26.25.~~ Escalation procedure: reference is made to the escalation template Broba II ADSL SDSL 2007. Escalation Template.

	Customer Service	Product Management	Account Management	Repair management	Complaint Handling	Billing
Level 1	Administrators	Product Manager	Account Manager	Repair Dpt e-mail	Complaints Dpt e-mail	Billing & Collecting Dpt
Level 2	CS Back-end Manager	Product Line Manager	Account Line Manager	Repair Dpt Phone Number	Quality Team Meeting	Billing & Collecting Manager
Level 3	CS Director	LLU Director	Sales Director	Technical Center Manager	Senior Committee	Billing & Collecting Director

3.6. Inquiries

27.26. The Beneficiary can obtain through the LLU Inquiry tool the confirmation whether the requested service as described in this offer is available. The inquiry tool is available on the public Internet and is accessible through a login and password. The inquiry tool is fully separated from the ordering process.

28.27. The Beneficiary can also request a check of an individual End User line prior to the request for activation. This request is called an "XML inquiry". The exchange of information between Belgacom and the beneficiary is described in the Annex 4, section 7.

4. Points of contact

See escalation procedure on the Broba II web site.

BROBA II SDSL 2008

Annex 3

Exchange of Information

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1. Introduction

1. This Annex describes the exchange of information between Belgacom and the Beneficiary in the context of the Broba II SDSL 2007 offer.
2. All information and descriptions concerning the ATM part of this offer included in this document are related to SDSL in VC switching mode. For VP switching, reference is made to the BELGACOM Reference Offer for Bitstream Access - BROBA II ADSL Annex 3 Exchange of Information.
3. The content of this annex is subject to modification, especially when changes occur at process level. More information is available in Appendix 4: Planning and Operations.

2. Required information by both parties

2.1. Information to be provided by Belgacom to any interested party

- MTS installation guide
- JAVA classes of MTS
- DTDs files
- XML Content [Description](#) manual
- Example of XML files for each DTD
- Rejection codes
- Offer names
- Encryption keys
- Certificate and software for the encryption and signature
- E-mail address for ordering
- Excel file for the repair
- Belgacom SPOC for the Broba II SDSL
- Technical Belgacom contact for the synchronization in setting up VP's and/or VC's
- FUT manager
- Login & password for [LLU](#) inquiry web tool
- Belgacom SPOC for the XML back-up procedure
- On demand, Belgacom will provide
 - The list of MDF (LEXs, LDCs, KVDs), Local Buildings and ATM Access Points with their addresses, and, if any, de Lambert coordinates, the maps with the geographical coverage, the names and zip codes of the municipalities, the local nets covered by the MDFs with repartition, the streets with the ranges of house numbers, the link between the MDF and the numbering plan PQ, detailed repartition of the LDCs where the copper cables can be extended to the MDF_LEX and those where it is not possible.
 - The repartition of ATM Access Points per Access Area and the link between each Lex (LDC, KVD, if any) with its first ATM Access Point.

- For each LEX (LDC, KVD, if any), information of the existence of DSLAMs with their type and, if there is no DSLAM, the installation planning until end 2006.
- The information on the number of free pairs per LEX (LDC, KVD, if any), the average length of the pairs and the presence of disturbing equipment, if any.
- The information on cables in service.
- Information concerning the methodology used by Belgacom for the pair selection in the framework of a Bitstream access.
- [Detailed IT protocol of the project "Open Calendar".](#)
- [Detailed IT protocol of the project "Certified Technician".](#)
- [Technical specifications of the interface "Open Calendar".](#)
- [User guide for the interface "Open Calendar".](#)
- [Process flows of the projects "Open Calendar" and "Certified Technician".](#)
- Before the signature of a contract, Belgacom will provide the Beneficiary with this information:
 - Update of the previously communicated information, if relevant;
 - Refinement of the geographical coverage;
 - Result of pair selections made by other Beneficiaries and Belgacom (anonymous information);
 - Possibly, answer to precise questions if he finds it convenient;
- After the effective signature of a contract, Belgacom will provide the Beneficiary with this information:
 - The results of the pair quality tests for specific cases (with mention of the name of the end user) have to be provided by Belgacom after signature of the contract.
 - Belgacom will provide the Beneficiary with detailed information on DSLAM
 - * In case of migrations and for the concerned Lex (LDC, KVD, if any)
 - * In case of motivated and reasonable operational requests from the Beneficiary.

2.2. Information to be provided by the Beneficiary to Belgacom

- Phone number and person to contact in case of repair problems
- Beneficiary SPOC for the Broba II SDSL
- Technical Beneficiary contact for the synchronization in setting up VP's and/or VCs
- E-mail address for communication of VP configuration
- E-mail address for the ordering (test and production if separate)
- List with contact people
- Encryption keys
- Beneficiary SPOC for the XML back-up procedure

3. Processes

3.1. FUT

4. After the contract signature, Belgacom recommends the Beneficiary to follow a Friendly User Test in order to let the Beneficiary get acquainted with the processes and systems used for ordering the services in this offer. The Friendly User Test is mandatory.
5. Belgacom provides support to guide the Beneficiary through the electronic ordering process with its first orders. A Belgacom FUT manager will coordinate a number of tests, including testing the exchange of messages through the electronic messaging interface and bringing into service a limited number of Beneficiary Friendly Users.
6. Each of the Parties will need to agree on the date of successful completion of the Friendly User Testing Phase. The FUT phase should cover at least a period of 10 working days.
7. The FUT Phase is executed at one ATM Access Point, linked to at maximum two Lex's (LDC, KVD, if any): one local, one zonal or interzonal. The number of 'Friendly' End Users (to be provided by the Beneficiary) is set at 24 per Beneficiary.

3.2. Ordering Access Line

8. Before the Beneficiary can submit an order for the activation of SDSL on a specific End User line, an Access Line needs to be in service in the relevant Access Area.
9. The Beneficiary contacts the Belgacom SPOC to order an Access Line. Belgacom makes a test to verify the feasibility of the installation. In case it is not feasible, Belgacom communicates the cost and timing for implementation.
10. Belgacom will confirm the receipt of every firm order. When the installation of the Access Line is complete, Belgacom will confirm it to the Beneficiary.

3.3. Ordering Bandwidth

3.3.1. Bandwidth Allocation

11. The Beneficiary contacts the Belgacom SPOC to order bandwidth between a DSLAM located in the Lex (LDC, KVD, if any) in which the Beneficiary wants to connect an end user and the Belgacom ATM Access Point to which the Beneficiary is connected.

12. The Beneficiary in the order form sent to the Belgacom SPOC will specify the bandwidth of the VC and the corresponding parameters.
13. When Belgacom has created the VC, the Beneficiary is provided with all the necessary information in order to configure the related VC at his side of the network.
14. The Beneficiary is requested to deliver to Belgacom a technical Beneficiary contact for the synchronization in setting up VCs.

3.3.2. Capacity Change

The Beneficiary can request, within the limits of the VC specifications mentioned in this offer,
a modification of the bandwidth's allocation of its different VCs within a specific Lex (LDC, KVD, if any).

The Beneficiary will complete and send an order form to the Belgacom SPOC. The order form will contain the LEX (LDC, KVD, if any) references and capacity per VC. Orders for all Lex's (LDC, KVD, if any) need to be included in the same order form. Capacity orders by the Beneficiary are targeted at a maximum recurrence of 10 working days.

When Belgacom has modified a VC, the Beneficiary is provided with all the necessary information in order to make the modification of the related VC at his side of the network.

3.4. Ordering SDSL on a specific End User line

15. Once the Access Line is in place, the Beneficiary will be able to send orders to Belgacom to activate SDSL on a specific End User Line.
16. The communication process of the orders of End User line is further detailed in Annex 4 Planning & Operations, section 7 "Ordering SDSL on a specific End User line".
- ~~16. The communication process between the Beneficiary and Belgacom is based on SMTP Mail for the transfer, an ACK/NACK protocol and a message file in attachment with a predefined format.~~
- ~~17. The Beneficiary prepares the file in the predefined XML format, signs it, encrypts it, attaches it to a mail and sends it to the mailbox of Belgacom. The e-mail address for Broba II SDSL is llu.car@belgacom.be.~~
- 18.17. Belgacom will communicate the technical details to the Beneficiary when the SDSL has been activated on the line. The Beneficiary will receive an electronic message (done message) when the implementation has been completed.

3.5. Repair

- 19-18. The Beneficiary is responsible for the repair of the Broba II SDSL Service for which he has the control and is responsible to filter all non-network related problems.
- 20-19. For fault reporting, the Beneficiary will contact Belgacom by e-mail. The e-mail address to be used by the Beneficiary is broba.repair@belgacom.be, with phone 0800/91 480 and backup fax 02/512 78 96. After performing a first diagnostic, the Beneficiary will send an excel file with the description of the problem to this address.
- 21-20. Belgacom could possibly contact the Beneficiary for the repair (e.g. in case a disconnection of the End User is needed; need of additional information to perform the repair).
- 22-21. Belgacom will give feedback to the Beneficiary during the repair. Belgacom will report the result of the repair activities to the Beneficiary immediately upon repair.

1. Escalation procedure: reference is made to the escalation template Broba II ADSL SDSL 2007.
Escalation Template.

	Customer Service	Product Management	Account Management	Repair management	Complaint Handling	Billing
Level 1	Administrators	Product Manager	Account Manager	Repair Dpt e-mail	Complaints Dpt e-mail	Billing & Collecting Dpt
Level 2	CS Back-end Manager	Product Line Manager	Account Line Manager	Repair Dpt Phone Number	Quality Team Meeting	Billing & Collecting Manager
Level 3	CS Director	LLU Director	Sales Director	Technical Center Manager	Senior Committee	Billing & Collecting Director

3.6. Inquiry

- 23-22. The Beneficiary can obtain through an Inquiry web tool the confirmation whether the requested service as described in this offer is available. The inquiry tool is available on the public Internet and is accessible through a login and password. The inquiry tool is fully separated from the ordering process.

4. Points of contact

Llu.car@belgacom.be: Ordering of SDSL on specific End User line
Repair: broba.repair@belgacom.be
Address web for inquiry: Inquiry
Belgacom SPOC

BROBA II ADSL ~~2008~~

Annex 4

Planning and Operations

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1. Introduction

1. This annex describes the Planning and Operations principles, related to the provisioning and repair of the Broba II ADSL Service.
2. Both parties will use at any time their best efforts to ensure an adequate level of service provisioning both between the Parties and towards the End Users concerned.
3. In the event that difficulties or problems arise in respect of Planning and Operations, the Parties will perform all necessary co-operation and consultation with a view to developing appropriate and workable solutions.
4. All relevant technical documentation, order forms, forecasting forms if any can be retrieved at the secured part of the website for this offer.

2. Acronyms

ACK	Acknowledged
ADSL	Asymmetric Digital Subscriber Line
BGC	Belgacom
CA	Certification Authority
CSD	Customer Support Desk
DC	Data Connectivity
DES	Data Encryption Standard
FUT	Friendly User Testing
ISDN	Integrated Service Digital Network
LEX	Local Exchange
LS	Loop Service
LSD	Loop Service Deactivation
LSR	Loop Service Request
MDF	Main Distribution Frame
MIME	Multipurpose Internet Mail Extensions
NACK	Not Acknowledged
PSTN	Public Switched Telecommunications Network
QoS	Quality of Service
SOR	Statement Of Requirements
SPOC	Single Point Of Contact
VP	Virtual Path

3. Exchange of information

5. This chapter includes some communication guidelines in order to ensure a good interchange of information and to define an effective communication channel that focuses on both improving the comprehension and execution of the processes.

3.1. Single Point Of contact

6. Both Parties will appoint a member of its staff as Single Point Of Contact for Broba II ADSL. This person, referred to as "SPOC", will be in charge of all matters regarding the day-to-day management of the performance of this offer. In particular, all forecasts and firm orders must be submitted by registered mail to the SPOC of Belgacom, unless noticed otherwise.

3.2. Preliminary Exchange of Information for the initial setting up

7. Without prejudice to what is stated above, it is recommended that the Beneficiary provides a Statement Of Requirements (SOR) to Belgacom as early as possible in any discussions between The Beneficiary and Belgacom. The SOR is sent by registered mail to the SPOC of Belgacom. After the receipt of the SOR, Belgacom shall notify to the Beneficiary its observations, if any, concerning the SOR. In particular, when appropriate, Belgacom may request additional information to complete the information contained in the SOR but Beneficiary may address a motivated request to BIPT to get the permission not to give certain information asked by Belgacom. For more information on the SOR, reference is made to Appendix A of this document.

3.3. Implementation Committee

8. The Implementation Committee is a meeting between both parties to supervise, discuss and examine at a general level technical and operational application of this offer, in particular, the implementation of the respective obligations of the Parties, as described in this offer.
9. The Implementation Committee will meet at least on a quarterly basis. Each Party will be entitled to call additional meetings within reasonable notice, as may be necessary. Each Party will be represented at the Implementation Committee by its SPOC accompanied by any staff as deemed necessary by the relevant Party.
10. In addition to the Implementation Committee, the Parties will be allowed to request for the set-up of any other bilateral working group in charge of discussing and agreeing on any technical or operational issues, including more specialized members on the specific topic.

4. Ordering Access Line

4.1. General

11. Before the Beneficiary can submit an order for the activation of ADSL on a specific End User line, an Access Line needs to be in service in the relevant Access Area.
12. Firm orders of Access Line, between a BGC ATM Access Point and Beneficiary's equipment, shall be done through the use of the specific templates provided in Appendix E of this document. Templates will be considered as valid only when they are properly completed. In case data is missing or is not correct, the template will be rejected. In the latter case, Belgacom will indicate the reasons of rejection on the template. All firm orders will be submitted by fax to the SPOC of Belgacom for BROBA II.
13. Irrespective of the terms and conditions stated below, Belgacom reserves the right to reject orders if the volumes requested by the Beneficiary are not in line with reasonable market demands. In the event of such a rejection, Belgacom will provide the Beneficiary with the reasons for the rejection and the Parties will need to enter into a good faith discussion for finding a solution to deal with the difficulty that has arisen.

4.2. Ordering procedure

14. The Beneficiary can order its Access Line through a firm order. A firm order consists of the requested Access Line, per type of service (Appendix E). Together with the firm order, the Beneficiary includes the date when he wants the Access Line to be ready.
15. The Beneficiary is notified that in very exceptional situations, the theoretic delays may be escalated :
 - In case of periods of large demands at once that could not be foreseen,
 - In an emergency situation (i.e., exceptional cases of *force majeure*),
 - In situations of lightning and any other natural disasters that causes damage to the Belgacom network.
16. When the installation of the Access Line is complete, Belgacom will confirm it to the Beneficiary.

5. Ordering Bandwidth

5.1. Bandwidth Allocation

5.1.1. General

17. The Beneficiary will order bandwidth between each DSLAM¹ sited in a LEX/LDC in which the Beneficiary wants to connect End Users and the Belgacom ATM Access Point to which the Beneficiary is connected. Belgacom does the set-up and the configuration of the VP's, between the DSLAM's from which the End Users depend and the Beneficiary equipment, on behalf of the Beneficiary.
18. Firm orders of bandwidth per DSLAM shall be done through the use of an XML order² as described in the XML content description documents available on the CWS secured site. Orders will be considered as valid only when they are properly completed. In case data is missing or is not correct, the order will be rejected. In the latter case, Belgacom will indicate the reasons of rejection on the reject. Orders are sent via the secured electronic messaging system. For more detailed information on the ordering process via XML, as described in appendix C of this document reference is made to the Belgacom Wholesale secured website – Regulatory information – BROBA - Information on ordering. and in the corresponding XML content description documents. There is one request per XML order. XML with encrypted XML files is the standard procedure.
19. Irrespective of the terms and conditions stated below, Belgacom reserves the right to reject orders if the volumes requested by the Beneficiary are not in line with reasonable market demands. In the event of such a rejection, Belgacom will provide the Beneficiary with the reasons for the rejection and the Parties will need to enter into a good faith discussion for finding a solution to deal with the difficulty that has arisen.

5.1.2. Prerequisites

20. An access line with sufficient available capacity has to be implemented between a Belgacom ATM Access Point and the Beneficiary equipment.

5.1.3. Ordering procedure

21. The Beneficiary can order a VP through a firm order. A firm order consists of the requested VP with its associated parameters (bandwidth, PCR, SCR, QoS, VP Type³, ..)".
22. The Beneficiary is notified that in very exceptional situations, the theoretic delays may be escalated:

¹ Only applicable to the DSLAMs listed on the Operator Personal Page of the CWS secured website.

² However, a back-up plan has been defined in case of problems. Firm orders of bandwidth per LEX shall be done through the use of the specific templates provided in Appendix E of this document. All firm orders will be submitted by fax to the SPOC of Belgacom for BROBA II. An electronic version of the filled order template will also be send to the SPOC of Belgacom.

³ Each beneficiary must choose the VP type of each of its VP within a set of 12 values predefined by Belgacom. The values predefined by Belgacom have no intrinsic meaning.

- In case of periods of large demands at once that could not be foreseen,
 - In an emergency situation (i.e., exceptional cases of “*Force Majeure*”).
23. When the Beneficiary sends an order to activate the ADSL on an End User line, Belgacom will provide the Beneficiary with all the necessary information in order to configure the related VP at the Beneficiary’s side of the network, when the validate XML is sent back to the OLO.
24. The Beneficiary is requested to deliver Belgacom with a technical Beneficiary contact for the synchronization in setting up VP’s. The Beneficiary will need to communicate Belgacom the Virtual Path identifier (Vpi) at his side of the network.

5.2. Capacity Change

5.2.1. General

25. The Beneficiary can request, within the limits of the VP specifications mentioned in this offer (VP type and VP minimum dimensioning),
- For an upgrade of the total bandwidth he ordered between a specific DSLAM located in a LEX/LDC and the ATM Access Point to which he is connected
 - For a downgrade of the total bandwidth he ordered between a specific DSLAM located in a LEX/LDC and the ATM Access Point to which he is connected
 - For a modification of the bandwidth’s allocation amongst the different VPs within a specific LEX/LDC.
26. Firm orders of bandwidth modification shall be done through the use of an XML order as described in the XML content description documents available on the CWS secured site. Orders will be considered as valid only when they are properly completed. In case data is missing or is not correct, the order will be rejected. In the latter case, Belgacom will indicate the reasons of rejection on the reject. Orders are sent via the secured electronic messaging system. [For more detailed information on the ordering process via XML, reference is made to the Belgacom Wholesale secured website – Regulatory information – BROBA - Information on ordering, as described in appendix C of this document](#) and in the corresponding XML content description documents. There is one request per XML order.
27. Belgacom reserves the right to reject orders if the volumes requested by the Beneficiary are not in line with reasonable market demands. In the event of such a rejection, Belgacom will provide the Beneficiary with the reasons for the rejection and the Parties will need to enter into a good faith discussion for finding a solution to deal with the difficulty that has arisen.

5.2.2. Prerequisites

28. The order is relative to an existing VP and must contain its correct identification (cfr all informations specified in the XML content description document for VP ordering).

5.2.3. Ordering procedure

29. The Beneficiary can ask to modify the existing parameters of its VPs through a firm XML order. A firm order consists of the requested VPs’ parameters per LEX/LDC, per VP.

30. The Beneficiary is notified that in very exceptional situations, the theoretic delays may be escalated:
- In case of periods of large demands at once that could not be foreseen,
 - In an emergency situation (i.e., exceptional cases of *force majeure*).
31. When a VP is modified by Belgacom, the Beneficiary will be provided with all the necessary information in order to configure the related VP at his side of the network.

5.3. Capacity Cancellation

5.3.1. General

32. The beneficiary can request the cancellation of an existing VP.
33. Firm orders of bandwidth cancellation shall be done through the use of an XML order as described in the XML content description documents available on the CWS secured site. Orders will be considered as valid only when they are properly completed. In case data is missing or is not correct, the order will be rejected. In the latter case, Belgacom will indicate the reasons of rejection on the reject. Orders are sent via the secured electronic messaging system. [For more detailed information on the ordering process via XML, reference is made to the Belgacom Wholesale secured website – Regulatory information – BROBA - Information on ordering, as described in appendix C of this document](#) and in the corresponding XML content description documents. There is one request per XML order.
34. Belgacom reserves the right to reject orders if the volumes requested by the Beneficiary are not in line with reasonable market demands. In the event of such a rejection, Belgacom will provide the Beneficiary with the reasons for the rejection and the Parties will need to enter into a good faith discussion for finding a solution to deal with the difficulty that has arisen.

5.3.2. Prerequisites

35. The order is relative to an existing VP and must contain its correct identification.
36. The VP for which the cancellation is requested must be free of Vc's.

5.3.3. Ordering procedure

37. The Beneficiary can ask the cancellation of its VPs through a firm XML order. A firm order consists of the requested VPs' parameters per LEX, per VP.
38. The Beneficiary is notified that in very exceptional situations, the theoretic delays may be escalated:
- In case of periods of large demands at once that could not be foreseen,
 - In an emergency situation (i.e. exceptional cases of *force majeure*).

6. Inquiries

39. The Beneficiary can obtain through the LLU Inquiry Tool the confirmation whether the requested service as described in this offer is available. The inquiry tool is available on the public Internet and is accessible through a login and password. Multiple login's are possible. The inquiry tool is fully separated from the ordering process. This includes that the inquiry results on the website does not deliver an option to order the activation of ADSL on a End User line.
40. By input of the End User's dial number and the requested service, the LLU Inquiry Tool will return information on the availability of the service. For Broba without voice lines, the Beneficiary will provide the correct address information.
41. An utilisation manual of the LLU Inquiry Tool is available on the Belgacom Wholesale Personal Page (Regulatory Information/BROBA) describing the functionalities of this tool, the input needed and providing all needed explanations to interpret correctly its output.
42. The Beneficiary can also request a check of an individual End User line prior to the request for activation. This request is called an "XML inquiry". The exchange of information between Belgacom and the Beneficiary follows the rules defined in the Section 7 of this document.

7. Ordering ADSL on a specific End User line

7.1. Ordering via the Open Calendar Interface

43. The ordering process can be decomposed into 2 phases:

Phase 1: Negotiation phase

Negotiation is only possible by use of the Open Calendar interface. It allows the Beneficiary to introduce all parameters for the requested ordered product to

- get an overview of the workorders needed to provision the line
- get the available time slot
- indicate whether the installation is to be executed by a Certified Technician or not
- select the suitable timeslot according to the requirement of the enduser and start the ordering process.

The Beneficiary does not need to send an additional order via the classical XML way (No BGCIN).The order is automatically generated in the Belgacom ordering systems by the Open Calendar interface.

Phase 2: Order confirmation

This phase starts by the sending by Belgacom of a validate XML message via the classical xml way ("validate" or "reject" xml). This XML contains the final confirmation of the information exchanged via the Open Calendar interface. If the information exchanged during phase 1 should be modified, this is notified to the OLO by this "Validate" or "Reject" XML.

44. The follow-up of the order is performed by use of the Hold , Cancel , Amend , Reject Done message exchanged via the classical XML interface as described in the chapter Ordering via XML.

45. Reference is also made to the Belgacom Wholesale secured website – Regulatory information – BROBA - Information on ordering, for more detailed information on the ordering process via the Open Calendar interface in the following documents:

- Process documentation on Open Calendar interface
- technical documentation on Open Calendar interface

7.2. Ordering via xml

7.2.1. Generals

46. All exchange of information between Belgacom and the Beneficiary will be done through an electronic system. In case of problems of the electronic system, reference is made to steps as described in the backup plan for ordering included in Appendix D.

47. Orders can be placed through the use of an electronic ordering system via xml directly or through the use of the Open Calendar interface as described above.

48. Reference is also made to the Belgacom Wholesale secured website – Regulatory information – BROBA - Information on ordering, for more detailed information on the ordering process via XML.

49. The communication process between Beneficiary and Belgacom is based on SMTP Mail for the transfer, an ACK/NACK protocol and a message file in attachment with a predefined format.

50. The messages that are exchanged between the Beneficiary and Belgacom are encrypted and signed by the sender. Each message contains one order form in attachment that is coded in

XML. Technical Info and the order forms for XML ordering are included on the secured website.

51. The Beneficiary prepares the file in the predefined XML format, signs it, encrypts it, attaches it to a mail and sends it to the mailbox of Belgacom. The e-mail address for BROBA II is WDC@belgacom.be.
52. In the framework of BROBA with voice an existing end-to-end PSTN or ISDN line with Belgacom is a prerequisite.

7.1.General

- ~~43.All exchange of information, with the exception of the inquiry, between Belgacom and the Beneficiary will be done through an electronic system. More details are described in Appendix C.~~
- ~~44.The communication process between the Beneficiary and Belgacom is based on SMTP Mail for the transfer, an ACK/NACK protocol and a message file in attachment with a predefined format.~~
- ~~45.The messages that are exchanged between the Beneficiary and Belgacom are encrypted and signed by the sender. Each message contains one order form in attachment that is coded in XML.~~
- ~~46.Only Beneficiaries who have signed the “Agreement for the provisioning of Bitstream Access in the local loops of Belgacom” will obtain the encryption keys in order to sign and encrypt the message. This will enable the Beneficiary to test the messaging system.~~
53. The Beneficiary prepares the file in the predefined XML format, signs it, encrypts it, attaches it to a mail and sends it to the mailbox of Belgacom. The e-mail address for BROBA II is WDC@belgacom.be.
- ~~48.The order forms for the messages described below will be available in XML format. The Beneficiary will receive the XML templates for the Broba II ADSL Service. To facilitate the Beneficiary to dimension its systems, the XML templates are delivered with DTD files, that describe the nature of the data fields (length, type, ...). The details and overview of the valid values that need to be included in the electronic XML templates are described in the XML Content Manual. The XML data files and the XML content manual will be available through the secured part of the Broba II ADSL website and through the SPOC if necessary.~~
- ~~49.Electronic messages will be exchanged between Belgacom and the Beneficiary to manage the orders.~~
- 50.XML with encrypted XML files is the standard procedure. However, a back-up plan has been defined in case of problems. More information on the back-up procedure is available in Appendix D.

7.2.7.2.2. Definitions

7.2.7.2.2.1. Type of Messages

- Acknowledge Message
- Order Message: message to initiate the creation of a new order
- Action Message: message to ask for a precise action on an existing order
- Answer Message: message sent to give an answer to an Order Message or Action Message

All possible messages are explained below and described in detail (on xml level) in the BROBA II XML Content Description Manual, which can be found on the Belgacom secured website - Regulatory Information – BROBA – Documentation on ordering.

7.2.7.2.2.2. Acknowledge Messages

54:54. For any message exchanged between Belgacom and The Beneficiary, an acknowledge message (ACK/NACK) is sent to confirm

- The message has been received
- The message has been decrypted
- The signature has been successfully validated.

52:55. NACK is sent if decryption or signature check does fail. NACK will contain the reason of rejection.

53:56. If no ACK nor NACK message is received by the sender, the sender is supposed to send again the message. The order is not further processed by Belgacom.

54:57. If an ACK is received by the Beneficiary, this does not automatically mean that the order will be provisioned. The order could still be rejected.

7.2.7.2.2.3. Order Messages

55:58. An Order can be:

INITIATED BY THE BENEFICIARY

- PROVIDE NEW: the activation of a complete new Broba II ADSL Service
- CEASE: the deactivation of a Broba II ADSL Service
- CONVERT – cease part and provide part: conversion of his own existing BROBA II ADSL product or another type of product towards a (another) BROBA II ADSL product
- PROVIDE CHANGE OWNER: transfer of ownership of an existing xDSL belonging to another Beneficiary (Belgacom end-user customer included) with or without conversion of the existing product
- CHANGE: Modification of the existing BROBA II ADSL product (add/remove/delete VC – change line profile – change switching mode)

INITIATED BY BELGACOM DUE TO AN ACTION OF ANOTHER BENEFICIARY OR FROM THE END-USER CUSTOMER ON HIS VOICE SERVICE

- CEASE CHANGE OWNER : launched as a consequence of a validated PROVIDE CHANGE OWNER of another Beneficiary, or an action of the end-user-customer of Belgacom
- MOVE – cease part and provide part: launched as a consequence of a MOVE of the voice of the end-user-customer; the BROBA II ADSL product will be moved along if technical possible.
- CONVERT – cease part and provide part: launched as a consequence of
 - Change of technology of the voice of the end-user-customer from PSTN to ISDN and vice versa
 - A cease or an export of the voice; the BROBA II ADSL with voice will be converted into a BROBA II ADSL without voice
 - A new connection or an import of the voice; the BROBA II ADSL without voice will be converted into a BROBA II ADSL with voice
- CEASE (for technical reasons): launched as a consequence of an action on the voice part - e.g. move/conversion of the voice – while the BROBA II ADSL product can not be re-established in the new situation due to technical reasons

7.2.4.7.2.2.4. Action Messages

56:59. An Action Message can be:

INITIATED BY THE BENEFICIARY

- AMEND: this message can be sent by the Beneficiary to change the Due Date of an existing order
- CANCEL: this message can be sent by The Beneficiary to cancel an existing order.

INITIATED BY BELGACOM

- HOLD: this message can be sent by Belgacom to inform The Beneficiary that Belgacom will not perform the service at Due Date. due to technical reasons; due to absence of the end-user-customer; a new Due Date is communicated to The Beneficiary in this message

57:60. These action messages apply only on pending orders sent by the Beneficiary to Belgacom.

7.2.5.7.2.2.5. Answer Messages

58.61. An Answer Message can be:

- **REJECT**: after the ACK was sent by Belgacom for a certain message, this message may however show some problems that will prevent Belgacom to treat the request correctly:
 - The message contents (file attachment) does not respect predefined format
 - The message does not contain predefined values
 - The message does not respect precedence rules
 - The message refers to a non existing order
 - The new order does not pass through administrative validations: pending order, unknown or non activated Directory Number, non PSTN/ISDN-BA installation, bad payer, ...
 - The new order does not pass through technical validations: no pair available, distribution pairs absent, ...

The rejection message contains at least one, if possible more, rejection codes to inform the Beneficiary of all reasons for rejection so that sender can send again the message and minimise the retry cycle. If rejected, the order does not exist anymore. If The Beneficiary wants to retry, he will have to issue again the same demand, but through a new order.

- **VALIDATE**: this message confirms that the order will be executed on the given due date; Belgacom will provide the Beneficiary with all the necessary technical information in order to configure the related VP at the Beneficiary's side of the network; the message includes the circuit-id.
- **DONE**: this message confirms the execution of the order, the field intervention for service activation is completed.
- **FAIL**: this message is sent when it is not possible for Belgacom to succeed in providing the service with existing infrastructure; the order has not been executed. The message contains the appropriate codes to inform The Beneficiary about the reason(s) for failing. After this message the order is considered as not existent and is removed out of the ordering system.
- **CANCELLED – AMENDED**: those messages confirm the action messages, CANCEL and AMEND

7.3.7.2.3. Description of specific ordering procedures

59.62. A working day for order purposes is considered as being from: 8h00 - 16h30, excluding Saturday, Sunday, Belgian and Belgacom holidays.

60.63. The timers mentioned in the other parts of the Contract and used in the order provisioning process are expressed in working days at the first working day after an acknowledgement has been sent. The number of days of delay starts at the first day after the day the timer limit was passed.

7.2.4. Small Network Adaptations

64. Beneficiary has the possibility to indicate 'SNA not allowed' when ordering. If 'SNA not allowed' is flagged when ordering, Belgacom will send a reject of the order should the need for a SNA be established at any point in the provisioning phase.

65. In case the order is not flagged 'SNA not allowed', the process is as follows:

61. In case of Small Network Adaptations:

a. If a Small Network Adaptation need is detected during the order validation,

Belgacom will notify this into the XML VALIDATE message by communication in the remark type SmallNetworkAdaptations the word "NEEDED".

b. If a SNA need is detected during provisioning,

Belgacom will create a HOLD message where a new appointment date will be proposed and with in the remark type SmallNetworkAdaptations the word "NEEDED".

In both cases, the Beneficiary can then contact its End User for further negotiations.

The Beneficiary will be enabled till the day before the Due Date (DD-1) to cancel its request. If there is no cancellation, the SNA will be considered as accepted by the Beneficiary and realized as such.

~~This type of communication will at first be done on a case by case basis. Belgacom will inform the Beneficiary in good faith, as soon as possible, of modifications of the current ordering procedures relating to these Small Network Adaptations.~~

7.2.5. Rush provisioning

66. Rush Provisioning is the delivery of the implementation of a new line in minimum 3 working days and maximum 5 working days (subject to the conditions of the point below).

67. The rush provisioning is subject to all conditions of regular provisioning, including the presence of the required connectivity to the Belgacom network before ordering. An order is considered as a Rush Provisioning Service when the Beneficiary asks this explicitly to Belgacom.

68. Rush Provisioning will be always during working hours.

69. Rush Provisioning is offered as a service when resources can be found to perform the necessary tasks. In case Belgacom cannot perform the works in the delay requested, Belgacom will continue the provisioning as a default order. Belgacom will inform in that case the Beneficiary

70. Any delay for a Rush Provisioning Process put in place by Belgacom, for instance absence of User on the Customer Requested date, will entitle Belgacom to charge the Beneficiary with 50% of the Rush Provisioning Fee. In any case the process will continue and a new Customer requested Date will be settled following default procedures (Hold & Change Date)

71. The standard order will be submitted by XML, possibly by the means of the Open Calendar interface. The Beneficiary will in a first phase call (phone) Belgacom to prioritize this order and confirm by e-mail to Car LLU. The Beneficiary is requested to specify the exact date requested for the provisioning: the Service Required Date (SRD). If the rush order has been accepted, Belgacom will provide the Beneficiary with the committed RFS date and the data service identifier (Circuit ID), by using the default validation service through XML.

72. Per line for which rush provisioning is requested, the installation fee is doubled.

7.2.6. Escalations

- 73. An escalation can be requested in case of Belgacom Fault (e.g. Missed Appointment)
- 74. The Beneficiary will in a first phase call (phone) Belgacom to prioritize the order and confirm by e-mail to Car - LLU. Belgacom will verify this request, and handle it in a manual escalation mode if the request for escalation is justified.
- 75. An escalation order has no additional cost.

8. Forecasting of orders

Forecasting of orders shall be done by the procedure as described in Appendix B.

9. Fault Reporting and Repair

~~62~~76. This section describes the responsibilities of Belgacom and The Beneficiary in fault reporting and repair.

~~63~~77. Belgacom will be responsible for the repair of the PSTN/ISDN Belgacom Services offered to the End User.

~~64~~78. The Beneficiary is responsible for the repair of the Broba II ADSL Service for which he has the control and is responsible to filter all non-network related problems.

9.1. Points of Entry for Complaint

~~65~~79. In case of repair, two points of contact between the Beneficiary and Belgacom have been identified according to the type of problem:

- e-tool for repair tickets
- The National Call Center (also referred to as NCC) for the reporting of faults at VP level and Access Line level.
- The address "080093122@belgacom.be" for the reporting of faults at End User level.

9.2. Fault Reporting on Broba II ADSL

~~66~~80. It is always the Beneficiary that

- 1) Reports faults in the Broba II ADSL Access;
- 2) Receives own End Users' fault reports before reporting faults to Belgacom. Belgacom will not take calls directly coming from End Users of the Beneficiary Broba II ADSL Access;
- 3) Handles own End Users' fault reports before reporting faults to Belgacom.

~~67~~81. It is the Beneficiary's responsibility to check that there is sufficient ground to assume that the fault is with Belgacom.

~~68~~82. The Beneficiary has to execute a synchro test via the e-tool before filing a repair ticket. If e-tool is not available, repair ticket can be introduced without synchro-test. In this case, lack of synchro-test can not be cause of wrongful repair request.

9.3. Beneficiary's liabilities in connection with fault reporting

~~69~~83. For fault reporting, the Beneficiary will contact Belgacom by e-mail or via the web. The e-mail address to be used by the Beneficiary is 080093122@belgacom.be. The Beneficiary will send an excel file with the description of the problem to this address.

Phone number: 0800/93 122

Fax number: 02/512 78 95

~~70:84.~~ The Beneficiary will test the concerned faulty equipment before sending the excel file to Belgacom to ensure that the fault is attributable to Belgacom. The Beneficiary is responsible for transmitting all necessary information requested by Belgacom. Beneficiary will therefore transmit to Belgacom an excel file with information related to the problem. In the following cases the trouble ticket creation will be rejected:

- Information in the Excel sheet is incomplete
- More than one ticket is sent in the e-mail

~~71:85.~~ The Beneficiary will possibly communicate to Belgacom:

- Measurements from equipment on the Beneficiary's side that can help in solving the fault (if available).
- Contact point and phone number of the End User during office hours (in case an intervention is required at the End User side).
- Hours of availability of End User (in case an intervention is required at the End User side).

~~72:86.~~ It is always the Beneficiary that receives own End Users' fault reports regarding the Broba II ADSL Access Services before reporting faults to Belgacom. In case Belgacom receives fault reports regarding the Broba II ADSL Service, Belgacom will refer the End User to the Company with whom he has signed an agreement.

~~73:87.~~ When the Beneficiary receives a fault from one of his End Users for Broba II ADSL, the Beneficiary performs a first diagnostic.

- In case the issue does not require a Belgacom intervention, the Beneficiary manages the issue and contacts the End User once the issue is solved and closed.
- On the opposite, if the issue requires a Belgacom intervention (typically for network issues), the Beneficiary continues the issue resolution process with Belgacom.

~~74:88.~~ Important note: The Beneficiary must clearly specify to the End User that the PC and modem must be left "on" in order to let the possibility to Belgacom to perform all the actions required to identify and fix the issue.

9.4. Belgacom's liability in connection with fault reporting

~~75:89.~~ Belgacom starts the fault localization and performs repair activities during working hours.

~~76:90.~~ The Beneficiary recognizes that:

- if necessary, the Beneficiary is required to disconnect the terminal equipment at the End User site upon Belgacom's request to carry out its proper measurements;
- Belgacom can request to the Beneficiary a timeframe for disconnecting the Broba II ADSL Service at the MDF to the Beneficiary colocation facilities so as to be able to carry out the necessary measurements. Refusal from The Beneficiary to do so will imply that Belgacom is not in a position to verify the lines and can be considered as wrongful repair request;
- The Beneficiary's repair request must relate to the type of service for which the Broba II ADSL Service has been ordered;
- During the repair process the Beneficiary may submit additional information in respect of a specific repair request, cancel a repair request or change a repair request on the same end-user BROBA II ADSL access.

- ~~77~~91. _____ Belgacom reports the result of the repair activities to the Beneficiary immediately upon repair;
- ~~78~~92. _____ Any follow-up feedback requested by the Beneficiary, either during the repair period, after additional tests and rejection or acceptance of the repair action, or once the fault is fixed, will be taken care of through the repair team for Broba II ADSL;
- ~~79~~93. _____ In any case of planned maintenance and repair that can affect the Broba II ADSL Service, Belgacom shall inform the Beneficiary.
- ~~80~~94. _____ In case the Beneficiary contacts Belgacom by phone about an ongoing repair action, Belgacom will inform the Beneficiary of the current repair status.

9.5. Special conditions in connection with Repair

- ~~81~~95. _____ When the End User connects equipment (on its side) that is not compliant with the requirements set out in the Main Body or equipment that causes disturbances for Belgacom and/or for other Beneficiaries in the cables, Belgacom is entitled to disconnect the Broba II ADSL Service after prior notification of the Beneficiary, following the RTTE directive.
- ~~82~~96. _____ In fault situations where the responsibility for the fault cannot immediately be placed, and where Belgacom makes co-coordinated efforts with one or more Beneficiaries, settlement is made or arranged after conclusion of the Repair. Service interruptions due to modifications and maintenance are not included in the SLA and Improved SLA on service availability, at the condition that it is done on a non-discriminatory basis and for the normal management of the network.
- ~~83~~97. _____ If Belgacom repair services conclude that a complaint is related to a low performance of a line with unstable synchro (profile out of range according to the deployment curve), the Belgacom repair team starts the “fallback profile” process. This process can be further explained to the Beneficiaries during dedicated Technical meetings.

9.6. Repair Request and Feedback

VP and access line level

- ~~84~~98. _____ The Beneficiary's requests for Repair at VP level and Access Line level will be answered by the NCC. Communication in repair will be through phone. The NCC representatives will however not accept direct calls from the End User.
- ~~85~~99. _____ Any follow-up feedback given to the Beneficiary, either during the repair period, after additional tests and rejection or acceptance of the repair action, or once the trouble is fixed, will be through CSD, again insuring continuity and consistency.

End User level

- ~~86~~100. _____ The Beneficiary's requests for Repair at End User level (DSLAM level) will be answered by “080093122@belgacom.be”. Communication in repair will be through e-mail. No direct calls from the End User will be accepted.

87.101. The Beneficiary has to provide the circuit ID that was provided in the End User line provisioning process. The Beneficiary repair request must relate to the type of service for which this line has been ordered. If the reported problem does not match the service ordered by the Beneficiary as documented, the repair request will be rejected. During the repair process the Beneficiary may also submit additional information for a specific complaint, cancel a complaint or change a complaint.

88.102. It may during repair appear necessary for the Belgacom representative to contact the End User. The Beneficiary will therefore transmit to Belgacom the contact point of the End User and his phone number together with the repair request. In case contact with the End User is necessary for repair and the Beneficiary failed to give this information, the repair request may be rejected.

89.103. Any follow-up feedback given to the Beneficiary, either during the repair period, after additional tests and rejection or acceptance of the repair action, or once the trouble is fixed, will be through "080093122@belgacom.be", again insuring continuity and consistency.

90.104. The escalation procedure document for the repair can be found on the Broba II web site.

9.7. Wrongful repair request

91.105. In case of a repair request where the fault was not caused by Belgacom and Belgacom has performed work for that repair request, useless costs are made by Belgacom. To encourage the Beneficiary to perform a check first on the loop and on the connected equipment, Belgacom will bill an incentive fee to the Beneficiary. There will be an indication of the trouble ticket reference and the cause of the wrongful repair.

10. Phases in the provisioning of the Broba II ADSL Service

~~92:106.~~ The way of provisioning the Broba II ADSL Service to the Beneficiary will evolve according to the following 2 successive Phases: Friendly User Testing Phase and Full Commercial Phase

10.1. Friendly User Testing Phase

~~93:107.~~ During the Friendly User Testing phase, later referred to as FUT, Belgacom will introduce and support the Beneficiary to get acquainted with the processes and systems in scope of the Broba II ADSL Service.

~~94:108.~~ Each of the Parties will have to agree on the date of successful completion of the Friendly User Testing Phase. The FUT phase should cover a period of 10 working days.

~~95:109.~~ The FUT Phase is executed at one ATM Access Point, linked to at maximum two LEX's: one local, one zonal or interzonal. The number of 'friendly user' End Users (to be provided by the Beneficiary) is set at 24 per Beneficiary.

10.2. Full Commercial Phase

~~96:110.~~ The Full Commercial Phase will entirely be based on Beneficiary's forecasts for the Broba II ADSL Service - provided the Beneficiary follows and respects the forecasting rules applicable between the Parties - and on the firm orders transmitted by The Beneficiary. Firm orders given by the Beneficiary must be reasonable and progressive in order to avoid that the order intake services of Belgacom are overloaded by large amounts of initial orders.

Appendix A: Statement of requirements, template for the Beneficiary

1. General

97:111. This appendix includes a non-exhaustive list of items that should be included in the Statements of Requirements (SOR). This template is only a guideline. It is the freedom of both parties to discuss the content of the SOR.

2. Basic information

2.1. Registered name and address of Customer

Customer name :
Address :
Postal code and city :
Country :
Telephone number :
Fax number :
VAT registration number:
Trade register (*) :

2.2. Confidentiality agreement

98:112. The Parties can choose to sign a confidentiality agreement as part of the SOR. The statements included in this agreement are to be determined by the parties

2.3. Key Contacts list

3. Key project dates

	Date required by Beneficiary	Indicative dates from Belgacom
Requested date to start Friendly User Test		
Requested bringing into service date of BROBA II ordering		

4. BROBA II Products and Services Customer wishes to obtain from Belgacom

99:113. Please indicate what services you wish to obtain from Belgacom in scope of Broba II ADSL.

(SD = Service Description)

Name	Interest
Broba II ADSL with Voice on PSTN	Yes/no
Broba II ADSL with Voice on ISDN	Yes/no
Broba II ADSL with Voice on PSTN with Telecom Installation	Yes/no
Broba II ADSL with Voice on ISDN with Telecom Installation	Yes/no
Broba II ADSL without Voice	Yes/no
Small Network Adaptations	Yes/no

Appendix B: Description of the Forecasting Process

1. General Principles

~~100-114.~~ This chapter describes the forecast process. The forecasts are prerequisites for the respect of SLA on Slot Availability by Belgacom, mandatory to guarantee to respond to orders placed during the provisioning period and to respect the repair timers. ~~This is~~ Forecasts are needed to help Belgacom to plan a reasonable capacity to fulfil customer's demand.

~~101-115.~~ Beneficiaries are guaranteed that Belgacom will set-up the necessary resources for the period concerned to meet its market needs, ~~independent of the needs of other Beneficiaries. In addition, the forecast entitles the Beneficiary to the conditions for delays determined in the Service Level Agreement.~~

~~102-116.~~ For the orders exceeding the forecasts (orders in 'overrun') no guarantee on Slot Availability will be offered and they will be carried out, as soon as possible, according to the remaining capacity available. ~~If the forecasted volumes cannot be installed, Beneficiary will be informed within 30 working days and parties will cooperate to find the most acceptable solution.~~

2. Submission Confirmation of forecasts by the Beneficiary

~~103-117.~~ The Beneficiary shall submit on a monthly basis to Belgacom a rolling forecast for the service concerned, at the requested level of detail. Forecasted volumes will be provided by month. Belgacom will propose an individual forecast to each Beneficiary exceeding order volumes of 50 orders per month, based on actual ordered volumes of the last 6 months. This forecast will be elaborated per month, per customer visit / no customer visit (all products BRUO, BROBA and WBA combined) and per subarea. The Beneficiary is requested to confirm or modify this forecast, at the latest one month prior to the first forecasted period in time. If no confirmation or modification is received by that time, Belgacom will consider the proposed forecasted volumes as confirmed. The Beneficiary is responsible for the accuracy of the forecast. ~~Orders for which the installation will be executed by a Certified Technician are not taken into account.~~

~~104-118.~~ Forecast modifications or confirmations must be sent to the SPOC of Belgacom as indicated in this offer. ~~The submission of the forecasts will be done not later than one month prior the start of first forecasted period in time.~~ Forecasting shall be done through the use of the templates provided by Belgacom. These templates will only be considered as valid when they are properly completed. In case data is missing or is not correct, the forecast will be rejected (within 5 working days following its reception). In the latter case, the reasons of rejection will be indicated on the template by Belgacom.

~~105-119.~~ For the three first series of forecasts ~~submitted by the Beneficiary~~, both Parties will enter into good faith discussions about the submitted forecasts and the feasibility to implement the forecasts concerned.

3. Processing of Forecasts

~~106-120.~~ The forecasting system in scope of this offer is ~~split in 2 parts~~ to cover the specific needs of the divisions “Planning & Field Operations” & “Customer Operations” of Belgacom for the provisioning of the BROBA ADSL Services. ~~Both parts consist on rolling forecasts of validated orders (new lines, change owner & convert included), with monthly submissions.~~

- ~~The first part, spread over one year, must be volumes (new lines, change owner and convert included) are established by sub-area/area zone and ventilated by product (BROBA II ADSL, BROBA II Reach Extended ADSL2 and ADSL2+, each of them with and without voice wov). The months 1 to 6 are binding. The months 7 to 12 are indicative. After a 4 month learning curve following the start of the new NTP process, a split per installation type (with or without customer visit), all products BRUO, BROBA and WBA combined, instead of per product type (with or without voice) will be required. Orders for which the installation will be executed by a Certified Technician are not taken into account in the forecast.~~
- ~~The second part, spread over 6 months, must be established by telephone zone, by product (BROBA II ADSL, BROBA II Reach Extended ADSL2 and ADSL2+, without split with or without voice. This part of the forecasts is indicative, except for ADSL2+ for which the forecast is binding.~~
- ~~The forecasted volumes are the number of orders defined by the following actions: PROVIDE NEW and PROVIDE CHANGE OWNER, and for which a VALIDATE message will be sent by Belgacom in the forecasted month. The orders defined by the action PROVIDE CONVERT are indicated in a dedicated table.~~

	Geographic name	Telephone zone
Sub-area 1.1	“West” Vlaanderen	050, 051, 056, 057, 058, 059
Sub-area 1.2	“Oost” Vlaanderen	09, 052, 053, 054, 055
Sub-area 2.1	“Antwerpen”	03, 015
Sub-area 2.2	“Vlaams-Brabant” & Limburg	011, 012, 013, 014, 016, 089
Area 3	Brussels	02
Area 4	Hainaut & Brabant wallon	010, 060, 064, 065, 067, 068, 069, 071, 081
Area 5	Liège, Namur & Luxembourg	04, 019, 061, 063, 080, 082, 083, 084, 085, 086, 087

~~121.~~ Once modified or confirmed (possibly by default) by all concerned Beneficiaries at the first working day of each month, the forecasted volumes are globalized by Belgacom into one basket. Capacity reservation, and calendar dimensioning, is done accordingly to fit the needs of the entire market.

4. Deviations between successive forecasts

~~107-122.~~ The volumes forecasted at month M will be compared with the volumes forecasted at month M-1. For each forecasted month common to the 2 successive forecasts, the maximum deviation between the successive forecasts of this month at month M and at month M-1 will

be - 30 % to + 30 % (or 10 lines for “Planning & Field Operations” and 50 lines for “Customer Operations”).

~~106.~~ The table below shows the allowed deviations between 5 months of 2 successive forecasts (the 6 last months must be filled in only for the “Customer Operations” forecast and are indicative).). The same deviation of 30 % is applicable for month 2 till month 5.

~~107.~~ Month	1	2	3	4	5	6	Indicative						
Month 0	A ₀	B ₀	C ₀	D ₀	E ₀	F ₀	G ₀	H ₀	I ₀	...	...	...	...
Month 1	B ₁	C ₁	D ₁	E ₁	F ₁	G ₁	H ₁	I ₁	...	...	...	...	...
Month 2	C ₂	D ₂	E ₂	F ₂	G ₂	H ₂	I ₂	...	...	...	...	...	...

- B₁ between B₀ - 30 % and B₀ + 30 %
- C₁ between C₀ - 30 % and C₀ + 30 %
- D₁ between D₀ - 30 % and D₀ + 30 %
- E₁ between E₀ - 30 % and E₀ + 30 %
- F₁ between F₀ - 30 % and F₀ + 30 %
- G₁ new entry value (reference for subsequent deviation)

~~108.~~ If the Beneficiary submits forecasts which are higher than the effective number of orders placed, the difference between forecasted volumes and effective orders will be used as reference to lower the volume for which the SLA will be applicable in the subsequent month. Moreover, in case of repeated over forecasting, Belgacom reserves the right to invoice the Beneficiary in proportion to the estimated unused operational resources.

5. Deviations between forecasted volumes and actual volumes

5.1. Underrun

- ~~123.~~ Underrun occurs when actual ordered volumes are below forecasted volumes. Any underrun mechanism applies to the entire globalized volume of orders of the entire market.
- ~~124.~~ A reasonable underrun of the forecasted volumes can be absorbed by Belgacom and has no direct consequences for the Beneficiary. A reasonable underrun is considered to be no more than a 20% deviation of the forecasted volume, considered on a monthly basis. In case of severe underrun (i.e. more than 20%) and in case this underrun was caused by a single Beneficiary who excessively increased the volume proposed by Belgacom, Belgacom reserves the right to limit the allowed modification for the forecast of the following 3 months for that Beneficiary to a level deemed necessary by Belgacom.

5.2. Overrun

- ~~125.~~ Overrun occurs when actual ordered volumes are above forecasted volumes. Any overrun mechanism applies to the entire globalized volume of orders of the entire market.
- ~~126.~~ As from the first order exceeding the globalized forecasted volume, independently of which Beneficiary might be the cause of this overrun, all orders of all Beneficiaries for the remainder of the month will be considered ‘in overrun’, and will receive timeslots from the general Belgacom calendar.

~~Appendix C: Setting up of the electronic messaging system~~

~~109. For any changes which may have a significant impact on the system (new types of messages or new exchange process), Beneficiaries shall be notified at least 6 months in advance with a high level description of the impact and with a structure of the documentation. Belgacom will provide detailed impact and documentation 3 months prior start of the modifications.~~

~~110. For smaller changes, Beneficiaries shall be notified at least 3 months in advance with a high level description of the impact and with a structure of the documentation. Belgacom will provide detailed impact and documentation 1 month prior start of the modifications.~~

~~111. The BIPT will be informed in any case.~~

~~112. Concerning the periods of notice, the BIPT can allow exceptions~~

~~4. Provisioning of order templates~~

~~113. The order form XML templates are provided in advance to The Beneficiary.~~

~~5. Provisioning of encryption keys~~

~~114. Only Beneficiaries who have signed this offer will obtain the encryption keys in order to sign and encrypt the message. As soon as The Beneficiary and Belgacom reach an agreement on the start date for Broba II ADSL ordering, the Belgacom encryption keys will be provided to the Beneficiary but it is the responsibility of the Beneficiary to get its own certificate from a Certification Authority and to provide it to Belgacom. All messages that are sent to the WDC e-mail address before the start date for Broba II ADSL ordering for that Beneficiary will be ignored.~~

~~115. Belgacom advises the Beneficiary to use one of the following Certification Authorities, recognized in Belgium :~~

- ~~– PersonalSign 3 Pro™ Certificate
(http://www.globalsign.net/digital_certificate/personalsign/index.cfm)~~
- ~~– Certipost E-Trust Primary CA for Normalised certificates
(http://www.certipost.be/en/article.php?id_article=26)~~

~~6. General Concept of the electronic messaging system~~

~~116. The communication process for the Broba II ADSL Service between The Beneficiary and Belgacom is based on SMTP Mail for the transfer, a simple Ack-Nack protocol and attachment files with a predefined XML format.~~

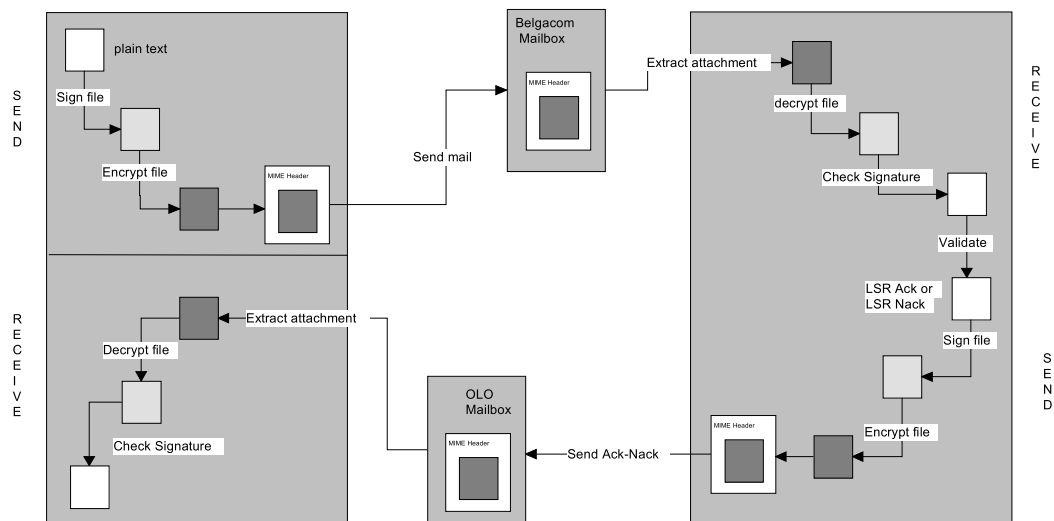


Fig-5

117. The sender prepares the attachment file in the predefined XML format, signs it, encrypts it, attaches it to an e-mail and sends it to the other Beneficiary's mailbox (agreed e-mail address).

118. At the other side the attachment is extracted, decrypted and the signature is verified. After successful reception of the attachment file, an LSR Ack message is sent back to the originator of the e-mail. In case of non-conformity of the attachment, a LSR Nack message is sent back to the originator of the e-mail.

119. All information exchanged must be encrypted and signed. The reason for the encryption is that since the information travels over the Internet it must be made sure that others than the addressee will not be allowed to read or modify the attachment file. The information in the attachment file is considered to be confidential. The reason for the electronic signature is that we must be sure that the sender can be authenticated and can act in the name of The Beneficiary. All these steps will be discussed in further detail in the next chapters.

7. Mail Format

7.1. General

120. All e-mails sent must be compliant with the MIME 1.0 standards and use following character set: us-ascii.

121. The content of the subject field is "LSR", "LSR Ack" or "LSR Nack".

122. Each e-mail must contain one and only one attachment (the actual data file in XML format and the triple DES key are incorporated into one file).

123. Only two e-mail layouts are accepted:

- 1) Multipart mixed:

~~Content-Type: multipart/mixed;~~

~~—Followed by the body part:~~

~~Content-Type: text/plain; charset=us-ascii~~

~~Content-Transfer-Encoding: **base64**~~

~~And the attachment:~~

~~Content-Type: application/octet-stream; name=WDC_ID999999999_yyyymmdd_nnnnnn.xml~~

~~Content-Transfer-Encoding: **base64**~~

~~Content-Disposition: attachment; name=WDC_ID999999999_yyyymmdd_nnnnnn.xml~~

~~The body part of the e-mail is not used, but the format is accepted, since some e-mail tools always generate a body part, even though no body text is supplied.~~

~~2) Only the attachment:~~

~~Content-Type: application/octet-stream; name=WDC_ID999999999_yyyymmdd_nnnn.xml~~
~~Content-Transfer-Encoding: **base64**~~

~~Content-Disposition: attachment; name=WDC_ID999999999_yyyymmdd_nnnn.xml~~

~~Important Note: As shown in the example above, the value for Content-Transfer-Encoding must be base64.~~

7.2. Belgacom e-mail addresses

~~124. The e-mail address to be used by The Beneficiary for the sending of the Broba II ADSL Service related e-mails is WDC@belgacom.be~~

~~125. Identification of the sender will be based on the certificate and not on the 'from:' field. It is however advised to fill in the 'from' address with a proper value.~~

~~126. Only ONE e-mail address and ONE certificate per Beneficiary is allowed. In a similar way the e-mails to The Beneficiary will be sent to ONE and only ONE e-mail address. This e-mail address must be communicated to Belgacom together with the certificates.~~

7.3. Mail attachment naming

~~127. The name of the attachment file is constructed as follows:~~

WDC_ID999999999_yyyymmdd_nnnnnn.xml

~~Where:~~

~~WDC: _____ Start identifier for all Broba II ADSL messages~~

~~ID999999999: _____ Belgacom Customer ID of The Beneficiary.~~

~~yyymmdd: _____ Date of the request~~

~~nnnnnn: _____ Unique sequence number of the request~~

Incorrect named attachment file will be rejected.

Example:

WDC_ID0000573521_20001207_000015.xml

8. Electronic encryption and signature

8.1. Technical implementation

Sign attachment

128. The first step is to sign the attachment file with the sender's private key (PKCS #12 format).

The result is the signed data. It is stored in a PKCS #7 file, which includes:

- the attachment file
- the signature of the sender
- the sender's certificate
- the CA's primary certificate
- the CA's root certificate

129. The CA (Certifying Authority) is responsible for delivering the certificate and the accompanying keys.

130. The PKCS #12 file contains both the private keys of the client and the client's certificate.

Encrypt attachment

131. According to the PKCS #7 standard, the file is encrypted with a secret session key. It results in an encrypted signed data file. The secret session key is encrypted with the public key of the receiving server. Both the encrypted signed data PKCS #7 file and the encrypted secret key are incorporated into one file and are sent to the receiver.

Decrypt attachment

132. Each Encrypted file includes:

- the encrypted secret key
- the encrypted signed data object

133. The receiver decrypts the secret key file with its private key. The result is a file containing the secret key generated by the sender. With this decrypted secret key, the receiver can decrypt the encrypted (Triple DES) signed data (PKCS #7) object. It results in a decrypted signed data (PKCS #7) object.

Check Signature

134. The decrypted signed data (PKCS #7) object contains:

- the attachment file

- the signature of the sender
- the sender's certificate
- the CA's primary certificate
- the CA's root certificate

135. Once the decryption phase is ended, the check of the signature and of all the certificates of the signature of the sender can start. The receiver checks the signature contained in the PKCS #7 file thanks to the public key of the sender. The receiver also checks the certification chain of the signature.

136. The receiver directly fetches the CA's root certificate of the sender from the CA.

137. This certificate is introduced in the certification chain contained into the PKCS #7 file. The client's certificate of the sender must match with the CA's primary certificate of the sender, which one in its turn must match, with the CA's root certificate of the sender fetched by the receiver.

138. If the certification chain is kept, the signature is removed from the PKCS #7 file. The result is a plain text file.

8.2. Software

139. Belgacom will deliver to The Beneficiary a certificate and software for the encryption and signature. Also Belgacom delivers the documentation on the usage and installation of the provided software. Belgacom does NOT deliver packages like JAVAMail or the Java Activation Framework. They should be retrieved from the SUN Microsystems website, because The Beneficiary must agree with the linked copyrights. The software will be delivered in such a form that Beneficiary can install it and use it. Further integration in the own IT system is the responsibility of The Beneficiary.

8.3. Certificate

140. Each involved party must ask a Certificate. The Certificate binds the identity (for example Name and E-mail address) to a Public Key. The proof of binding is contained within the Certificate so that anyone in possession of a Certificate can satisfy himself or herself that the identity with in the Certificate is indeed bound to the accompanying Public Key.

141. Beneficiaries are free to choose a certificate from another vendor but it must fulfil the same conditions as above.

142. Every Beneficiary must transit its certificate to Belgacom. The Beneficiary must also inform Belgacom regarding the Certification Authority used.

9. Message overview

9.1. Summary of messages

Message name	From	To
Attachment handling messages		
LSR Ack	Customer	BGC
LSR Naek	Customer	BGC
LSR Ack	BGC	Customer
LSR Naek	BGC	Customer

9.2.Attachment handling messages

LSR Ack

- 143.The LSR Ack message sent by the receiver is the proof for the sender that the attachment file was received and validated according to the encryption and digital signature definition, without any errors. It does NOT give any information on the contents nor the format of the attachment file (individual requests).
It is the responsibility of the sender to make sure a LSR Ack is received for each sent e-mail.

LSR Naek

- 144.The LSR Naek message is sent if the received attachment file can not be validated according to the encryption and digital signature definition. If the sender receives this LSR Naek message he knows the receiver did NOT handle the attachment file. It is up to the sender to find out the problem, correct it and if necessary resend it. In case of a LSR Naek, a manual intervention is needed to solve the problem. In case of reception of non-signed attachment files no LSR Naek message is sent since the identity of the sender can not be guaranteed. These e-mails and attached files are removed from the system.

10.Communication Standards

10.1.SMTP Standard

- 145.The objective of Simple Mail Transfer Protocol (SMTP) is to transfer e-mail reliably and efficiently.
- 146.SMTP is independent of the particular transmission subsystem and requires only a reliable ordered data stream channel.
- 147.An important feature of SMTP is its capability to relay e-mail across transport service environments. A transport service provides an inter-process communication environment (IPCE). An IPCE may cover one network, several networks, or a subset of a network. It is important to realize that transport systems (or IPCEs) are not one-to-one with networks. A process can communicate directly with another process through any mutually known IPCE. Mail is an application or use of inter-process communication. Mail can be communicated between processes in different IPCEs by relaying through a process connected to two (or more) IPCEs. More specifically, mail can be relayed between hosts on different transport systems by a host on both transport systems.

~~148.~~ See RFC 821, SIMPLE MAIL TRANSFER PROTOCOL, Jonathan B. Postel, August 1982 for a detailed description of SMTP.

~~10.2.~~ MIME standard

~~149.~~ Multipurpose Internet Mail Extensions defines a message representation protocol specifying considerable detail about US-ASCII message headers, and leaves the message content, or message body, as flat US-ASCII text. This set of documents, collectively called the Multipurpose Internet Mail Extensions, or MIME, redefines the format of messages to allow for:

- ~~textual message bodies in character sets other than US-ASCII;~~
- ~~an extensible set of different formats for non-textual message bodies;~~
- ~~multi-part message bodies;~~
- ~~textual header information in character sets other than US-ASCII.~~

~~150.~~ Related Documents:

~~RFC 2045:~~ Multipurpose Internet Mail Extensions Part One: Format Of Internet Message Bodies
Freed & Borenstein, November 1996

This document specifies the various headers used to describe the structure of MIME messages.

~~RFC 2046:~~ Multipurpose Internet Mail Extensions Part Two: Media Types, Freed & Borenstein,
November 1996

This document defines the general structure of the MIME media typing system and defines an initial set of media types.

~~RFC 2047:~~ Multipurpose Internet Mail Extensions Part Three:

This document describes extensions to RFC 822 to allow non-US-ASCII text data in Internet mail header fields.

~~RFC 2048:~~ This document specifies various IANA registration procedures for MIME-related facilities.

~~RFC 2049:~~ The fifth and final document, RFC 2049, describes MIME conformance criteria as well as providing some illustrative examples of MIME message formats, acknowledgements, and the bibliography.

See <http://www.rfc-editor.org/>

~~10.3.~~ DES (Data Encryption Standard)

~~151.~~ The Data Encryption Standard specifies a cryptographic algorithm that converts plaintext to ciphertext using a key, a process called encryption. The same algorithm is used with the same key to convert ciphertext back to plaintext, a process called decryption. The DES consists of 16 "rounds" of operations that mix the data and key together in a prescribed manner using the fundamental operations of permutation and substitution. The goal is to completely scramble the data and key so that every bit of the ciphertext depends on every bit of the data

and every bit of the key (a 56-bit quantity for the DES). After sufficient "rounds" with a good algorithm, there should be no correlation between the ciphertext and either the original data or key.

152. The DES uses 16 rounds for several reasons. First, a minimum of 12 rounds was needed to sufficiently scramble the key and data together; the others provided a margin of safety. Second, the operation of 16 rounds would return the key back to its original position in an electronic device for the next use when used in accordance with the published algorithm. Third, numerous "rounds" were needed to keep an analyst or adversary from working simultaneously forward and backward and "meeting in the middle" with a solution.

See <http://security.isu.edu/isl/des.html> for more information.

10.4. PKCS #7: Cryptographic Message Syntax Standard

153. This standard describes a general syntax for data that may have cryptography applied to it, such as digital signatures and digital envelopes.

See <http://www.rsasecurity.com/rsalabs/pkcs/pkcs-7/> for a detailed description of the standard.

11. Certificate procedure

11.1. General procedure

- 4) Apply for a certificate to certification authority.
- 5) Provide the public key in a DER format to Belgacom.
- 6) Provide your WDC e-mail address to Belgacom (via Interconnect Manager)
- 7) Install the **Belgacom Certificate** on your system. This you will need to verify signatures and to encrypt files.
- 8) Install the in point 3 described software.
- 9) Integrate the process in your own ICT systems.
- 10) Perform tests (see below)

11.2. Software requirements

154. Following software will be delivered by Belgacom :

MMT API containing: jerypto classes and Cipher classes (This API contains methods for the encryption, decryption, signing and verifying of signature).

155. A set of classes implementing the API and to be tailored to the specific needs:

DECRYPTFILE.JAVA	: DECRYPT SPECIFIED FILE
ENCRYPTFILE.JAVA	: ENCRYPT SPECIFIED FILE
SIGNFILE.JAVA	: SIGN SPECIFIED FILE
VERIFYFILE.JAVA	: VERIFY AND EXTRACT SIGNATURE ON SPECIFIED FILE
SENDMAIL.JAVA	: SEND SPECIFIED FILE AS ATTACHMENT USING JAVAMAIL.
READMAIL.JAVA	: EXTRACT THE ATTACHMENT FROM A MAIL AND SAVE IT TO A FILE (USES JAVAMAIL)

156. Some of the above-described classes use JAVAMail functionality. The JAVAMail software and related classes must be retrieved from the WebPages of SUN Microsystems (license agreement)

~~Java Virtual Machine software version SUN JAVA 1.3~~
~~javamail.jar : JavaMail API Version 1.1.3~~
~~activation.jar : Java Activation Framework Version 1.0.1~~

These 2 should **only be installed if the SendFile and ReadMail classes are used**. If the files are included as attach in an ordinary mail system, they're not needed.

157. In case the ldap class from the MMT API is used, following software is also mandatory:

~~ldap.jar : Java Naming and Directory Interface Version 1.2~~
~~providerutil.jar : Java Naming and Directory Interface Version 1.2~~
~~jndi.jar : Java Naming and Directory Interface Version 1.2~~

12.E-Mail software

158. This document serves as a guideline to implement the electronic communication solution, using the software delivered by Belgacom. It explains installation and implementation concepts without going into detail on the technical level for the different IT platforms. It is not the purpose of this document to give you a plug-and-play solution, but it helps you in creating the minimal environment needed for the Secure Mail communication.

12.1. JDK Software

159. Download the correct JDK 1.3 software kit depending on the platform you will be working on (Solaris and PC can be found on the site of SUN (<http://www.java.sun.com/j2se/1.3/>), for other platforms see the web site of your vendor).

160. Install the JDK software according to the accompanied installation notes.

Please remember to set your PATH (and CLASSPATH, but ~~classpath~~ option is preferred in Java 1.3) variables after the installation.

12.2. Javamail and Java Activation Framework (optional)

161. Download the JavaMail and Java Activation Framework software kit that can be Solaris and PC can be found on the site of SUN.

JavaMail V1.1.3:
http://www.java.sun.com/products/javamail/javamail_1_1_3.html

Activation Framework V1.0.1:
<http://java.sun.com/products> => select JavaBeans Activation Framework

and install the software according to the accompanied installation notes.

12.3. MTM API

162. Here 2 possibilities exist;

1. Using jar files:

- create a directory to store the jar files (preferably, but not necessary, a subdirectory of the JDK directory).
- unzip the MTM API zip file into this directory:
 - CypherDecrypt.jar
 - CypherEncrypt.jar
 - Jcrypto.jar
 - Ldap.jar (**only needed in certificate validation is performed**)
 - SignatureSign.jar
 - SignatureVerify.jar

- add each jar (with the directory path) to the CLASSPATH.

2. Using classes files:

- create a directory (classes subdirectory) to store the classes (preferably, but not necessary, a subdirectory of the JDK directory).
- unzip the MTM API zip file into this directory.
- unzip each individual jar file (using the jar utility, Winzip or any other unzip utility following the PKWARE definition) into class files in the classes directory. The extract will automatically created all needed subdirectories
- delete the jar files.
- add the classes subdirectory to the CLASSPATH

163. Now you should have three subdirectories in your classes directory namely:

- be
- jcrypto
- Meta-inf.

164. During the unzipping the file 'manifest.mf' in the directory Meta-inf can be overwritten, since this includes only information on the jar files and therefore will not be needed when storing the individual classes.

12.4. API Documentation

165. Create a subdirectory in the JDK/docs subdirectory and unzip the API doc zip file. The starting point is tree.html.

12.5. Set of classes implementing the API

166. Unzip the zip file with the extra classes file into the classes subdirectory (if option 1 in the previous step was chosen, the subdirectory must first be created and the directory must be added into the CLASSPATH variable).

12.6.Implementation

167.Depending on the level of automation in your IT systems one of following options can be implemented.

- The classes can be integrated into a shell or batch script implementing an error handling mechanism.
- A user interface can be developed which calls the appropriate classes in the right order and can present file selection via File selection boxes.
- Each individual step can be executed manually. See next chapter for n section.
- ...

168.Modify the classes if needed and compile them (javac <name of class>). The class files must be put on the classes directory.

169.The order of calling is following:

- The sending process:
 - SignFile (see parameter list in the source file)
 - EncryptFile (see parameter list in the source file)
 - SendFile ~~or~~ include the resulting file as an attachment in your mailtool.
- The receiving process:
 - ReadMail ~~or~~ save the attachment using a mailtool
 - DecryptFile (see parameter list in the source file)
 - VerifyFile (see parameter list in the source file)

170.Important note: The Readmail class expects a single mail file as input. The class is unable to extract individual mail from the mailbox. The easiest solution to this is auto forwarding your mails to individual files with unique names.

12.7.Execution

171.If the CLASSPATH variable is set correctly, execution of the different classes is performed with the following command : java classname (without .class extension) [input parameters list]

172.e.g. java SignFile <name and location of the plain text file to be signed> < name and location of private key> <name and location signed file> <name and location of password file>

173.in the other case provide the ~~classpath~~ option followed by the needed jars.

Appendix C: Forecasting templates for BRUO, BROBA and WBA End User Line orders

1. Remarks:

- M_i refers to the month in which the forecasting templates are submitted.
- All quantities (M_1 to M_{12}) are incremental values.

“Customer Operations” Forecast

Forecasting Template for BRXX and WBA Orders

Customer reference:

Edition:

Split: With or Without customer visit

Reception date:

<u>Telephone Zone</u>	<u>M_1</u>	<u>M_2</u>	<u>M_3</u>	<u>M_4</u>	<u>M_5</u>	<u>M_6</u>	<u>M_7</u>	<u>M_8</u>	<u>...</u>	<u>M_{12}</u>
<u>Sub-area 1.1</u>										
<u>Sub-area 1.2</u>										
<u>Sub-area 2.1</u>										
<u>Sub-area 2.2</u>										
<u>Area 3</u>										
<u>Area 4</u>										
<u>Area 5</u>										

Appendix D: XML Back-up procedure

1. General

~~176.127.~~ The back-up plan should be seen as an abnormal operational mode, which will cause extra costs, resources and processes for order handling, both at Belgacom and Beneficiary side.

~~177.128.~~ In the interest of both parties, back-up operational mode will always be an exception and should be as short as possible. If unavoidable and in a spirit of good partnership:

- First focus of both parties will be to solve the problem and return as soon as possible to the normal operational mode (standard encrypted XML procedure). Both parties will closely co-operate together to achieve this goal. SPOCS will be assigned at Beneficiary and Belgacom side to this purpose and facilitate the communication during the back-up procedure.
- Both parties to continue service will do best effort. However volumes and lead times of the 'normal operational mode' can't be guaranteed.
- The back-up operations mode won't be subject to any cost recuperation by one party from another, but focus will be instead on 'make things work'.

~~178.129.~~ In case there is no XML-procedure in place or if this procedure is not sufficient nor effective for a particular process (e.g. migrations) all orders can be given by fax, letter, e-mail

2. Back-up procedure

~~179.130.~~ The back-up procedure consist out of different steps:

Phase 1: Assignment of Beneficiary and Belgacom SPOCs for back-up procedure

~~180.131.~~ Together with the signing of a contract, parties will exchange the names and co-ordinates of their SPOC for this back-up procedure.

Phase 2: Fault detection

~~181.132.~~ A '**general system error**' is detected in the normal operational mode by at least one of the parties.

~~182.133.~~ This can be:

- At the level of the XML transfer:
One of the parties is unable to create/send/receive/decrypt/... XML files
- At the level of the message transfer:
One of the parties doesn't receive Ack/Nack messages, which leads to the suspicion that the other party receives none of his messages.

~~183.134.~~ An Ack/Nack message should be received within 4 hours after sending of a message to the other party. However accidentally an Ack/Nack message may be lost, e.g. on the Internet or in the IT-systems of the receiving party. Care should therefore be taken to jump to the

conclusion the Message Transfer System is not working properly because of a 'general system error', based on the loss of only one or a limited number of Ack/Nack message.

~~+84-135.~~ General remark: Problems, which don't assume a general system error, will always be solved **on a case-by-case basis**, without triggering a back-up procedure. An example of such problem, which doesn't assume a general system error, may e.g. be the sporadic loss of Ack/Nack messages by one Beneficiary, while the system is working properly for all other Beneficiaries.

~~+85-136.~~ The SPOCs will commonly assess the nature of the problem (general system error or not). In either case, the communication channel between the assigned SPOCs will also be used to solve 'non general system' kind of problems on a case-by-case.

Phase 3: problem solving

~~+86-137.~~ The SPOCs will get in contact in order to inform each other of the problem. They will assess the impact of the problem and set up an action plan to solve it. **In this phase they will try to get a solution without proceeding to the a-normal back-up operational mode.** They will agree on a timing, within which the fault should be resolved and normal operational mode can be resumed. Standard this timing will be 4 hours to give the (IT) teams the chance to solve the problem. Another timing may be convened between the SPOCs, depending on the nature of the fault and the impact.

~~+87-138.~~ During trouble resolution both SPOCs will closely stay in contact with each other to follow up progress of solution.

~~+88-139.~~ If the fault is resolved within the agreed timing, normal operational mode will be resumed after the needed testing (see phase 6).

~~+89-140.~~ If the fault is not solved within the agreed timing, SPOCs will get in contact in order to start up the next phase (see phase 4) or will agree to stay in phase 3 for an additional timing.

Phase 4: message exchange by e-mail with non-encrypted order in XML format

~~+90-141.~~ After expiration of the agreed time during phase 3 without trouble resolution, SPOCs will get in contact to start up phase 4, i.e.:

~~+91-142.~~ Start-up the a-normal 'back-up' operational mode for message exchange, based on e-mail with non-encrypted order in XML format.

~~+92-143.~~ SPOCs will agree previously on:

- The nature of the e-mail exchange: bi-directional or uni-directional. Although bi-directional will be the most commonly mode, uni-directional e-mail exchange may be a pragmatic (temporarily) solution.
- e-mail addresses to be used to exchange message
- The number of messages (per day) that will be transmitted in this mode. This operational mode will limit the volumes, capable to be treated by the existing resources. To assure a minimum service and smooth return to normal mode (with minimal 'manual' orders left) this is an essential part of the procedure.

~~+93-144.~~ SPOCs will closely stay in contact during this phase in order to follow up operational performance, action plan and trouble solving.

~~+94.145.~~ As soon the problem is solved, normal operational mode will be resumed after the needed testing (see phase 6).

Phase 5: message exchange by fax in XML format

~~+95.146.~~ This phase is to be avoided as much as possible, as it will demand re-typing of all data (with the need of extra resources, fully manual processes and the generation of data quality issues). It will only be accepted in case the e-mail procedure does not work (e.g. public Internet network down) and return to phase 2 will be done as soon as possible.

~~+96.147.~~ This phase will therefore be exceptional and previous agreement between SPOCs is needed. The fax, exchanged between the parties, will be the non-encrypted XML, that otherwise would be sent by e-mail.

~~+97.148.~~ The Fax numbers will be communicated between parties when applicable.

Phase 6: test and resume normal operation

~~+98.149.~~ As soon as the problem is solved some test will be done, i.e.:

- When the problem is solved, the concerned party will firstly test his systems. E.g. If the fault was at Belgacom side, Belgacom will perform an end-to-end test with test messages of a dummy Beneficiary (or the real Beneficiary if agreed upon).
- A first message will be processed between the two parties and proper transfer will be checked.
After confirmation by both parties everything is up and running properly again, no e-mail or fax messages will be accepted and return to the standard encrypted XML procedure will be done at once.

Important note:

~~+99.150.~~ As the Beneficiary may not yet have his XML system in place immediately at the start of the contract, Belgacom can accept to start the service based on the back-up transfer system of phase 4 (e-mail with non encrypted order in XML format). This starting phase is however limited in time (max. 1 month) and volume (max. 1 order/day), unless otherwise agreed upon between parties. Intention will always be to go as soon as possible to the normal operational mode, i.e. the standard encrypted XML procedure.

Appendix E: Order Templates

1. End User line Forecasting templates

1.1. Remarks:

- M_1 refers to the month in which the forecasting templates are submitted.
- All quantities (M_1 to M_{12}) are incremental values.
- Each template will contain a heading with an identification field. This identification will be filled out by the Beneficiary and will contain info on the Beneficiary's reference and the edition of the template.
- The reception date will be filled out by Belgacom.

1.1. "Planning & Field Operations" Forecast

Forecasting Template for Broba II Orders						
Customer reference:						
Service : BROBA II ADSL, Reach Extended ADSL2 or ADSL2+						
Edition:						
Reception date:						
Telephone Zone	M_1	M_2	M_3	M_4	M_5	M_6
02						
03						
04						
09						
...						
089						

1.2. "Customer Operations" Forecast

Forecasting Template for Broba II Orders										
Customer reference:										
Edition:										
Service : BROBA II ADSL, Reach Extended ADSL2 or ADSL2+										
With or Without voice										
Reception date:										
Telephone Zone	M_1	M_2	M_3	M_4	M_5	M_6	M_7	M_8	...	M_{12}
Sub-area 1.1										
Sub-area 1.2										
Sub-area 2.1										
Sub-area 2.2										
Area 3										
Area 4										
Area 5										

2. Order templates

2.1. End User line

~~201-151.~~ Ordering the activation of ADSL on an End-User line is done through XML. See for details and examples on the Belgacom CWS secured website.

2.2. Bandwidth

~~202-152.~~ Ordering Bandwidth capacity, as well as changing or cancelling bandwidth is done through XML. See for details and examples on the Belgacom CWS secured website.

However, a back-up plan has been defined in case of problems. Firm orders of bandwidth per LEX shall be done through the use of the specific templates provided in section 2.2 of this Appendix.

The back-up plan should be seen as an abnormal operational mode, which will cause extra costs, resources and processes for order handling, both at Belgacom and Beneficiary side.

In the interest of both parties, back-up operational mode will always be an exception and should be as short as possible. If unavoidable and in a spirit of good partnership:

- First focus of both parties will be to solve the problem and return as soon as possible to the normal operational mode (standard encrypted XML procedure). Both parties will closely co-operate together to achieve this goal. SPOCS will be assigned at Beneficiary and Belgacom side to this purpose and facilitate the communication during the back-up procedure.
- Both parties to continue service will do best effort. However volumes and lead times of the 'normal operational mode' can't be guaranteed.
- The back-up operations mode won't be subject to any cost recuperation by one party from another, but focus will be instead on 'make things work'.

In case of use of the back-up plan, the Beneficiary has to indicate the following elements on the order form:

Access Area	Reference of the Access Area in which the VP has to be created
Lex/LDC reference	Reference of the LEX in which the VP has to be created
BGC ATM POP	Belgacom ATM Access Point to which Beneficiary is connected
Access Line codification Number VP#	Reference of the Access Line on which the VP has to be created Number of VP the OLO has on a specific DSLAM VP1: First VP of the Beneficiary on the DSLAM VP2: Second VP of the Beneficiary on the same DSLAM VP3: Third VP of the Beneficiary on the same DSLAM VP4: Fourth VP of the Beneficiary on the same DSLAM

VP5: Fifth VP of the Beneficiary on the same DSLAM
 VP6: Sixth VP of the Beneficiary on the same DSLAM
 VP7: Seventh VP of the Beneficiary on the same DSLAM
 VP8: Eighth VP of the Beneficiary on the same DSLAM
 VP9: Ninth VP of the Beneficiary on the same DSLAM
 VP10: Tenth VP of the Beneficiary on the same DSLAM
 VP11: Eleventh VP of the Beneficiary on the same DSLAM
 VP12: Twelfth VP of the Beneficiary on the same DSLAM

Vpi OLO	Unique number OLO gives his VP on that LEX/LDC
QoS	Quality of service of the VP (UBR+ or VBR nrt or VBR rt or CBR)
PCR (Kbps)	Peak Cell Rate
SCR (Kbps)	Sustainable Cell Rate (Min. 256 Kbps per VP; granularity of 256 Kbps)
PCR/SCR	Burst ratio (1 or 2 or 3 or 4)
MCR (Kbps)	Minimum Cell Rate
Contract duration	Duration of the VP contract
Beneficiary Requested Date NEW Order date	Date at which the Beneficiary would like the Access Line to be in service
DSLAM	Coordinate of the DSLAM where the VP must terminate
VP type	Type of the VP
Remark	

203-153. The Beneficiary has to provide Belgacom with the old values and the new values of the VP(s) to modify.

BROBA II ADSL – VIRTUAL PATH ORDERING TEMPLATE

1. General

~~204-154.~~ This document concerns the ordering of a virtual path in the framework of the Belgacom Broba II (Broba II ADSL) offer.

~~205-155.~~ This offer is valid for a period of four weeks from the sending date of the fax or from the signature of this Virtual Path order form.

2. Beneficiary information

Beneficiary name	
SPOC name	
SPOC function	
Phone number	
Fax number	
E-mail address	

3. Belgacom information

SPOC name	
SPOC function	
Phone number	
Fax number	
E-mail address	

4. New Virtual Path information

ID	Access Area	LEX/LD C ref.	BGC ATM POP	Access Line Codif. Nb	Vp #	Vpi OLO	QoS	PCR (Kbit/s)	SCR (Kbit/s)	PCR/SC R	MCR (Kbit/s)	Contract Duration	"NEW" Order Date	Dsla m	Vp Type	Remark
1																
2																
3																
4																
...																
12																

5. Modify Virtual Path

I D	Access Area	LEX/LD C ref.	BGC ATM POP	Access Line Codif. Nb	Vp #	Vpi OLO	QoS		PCR (Kbit/s)		SCR (Kbit/s)		PCR/SCR		MCR (Kbit/s)		Contract Duration	Order Date	Dslam	Vp Type	Rem
							Ol d	New	Ol d	New	Ol d	New	Ol d	New	Ol d	New					
1																					
2																					
3																					
4																					
...																					
12																					

2.3. Access Line

1. General

~~206~~-156. This document concerns the ordering of an access line in the framework of the Belgacom Broba II (Broba II ADSL) offer.

~~207~~-157. This offer is valid for a period of four weeks from the sending date of the fax or from the signature of this access line order form.

2. Beneficiary information

Beneficiary name	
SPOC name	
SPOC function	
Phone number	
Fax number	
E-mail address	

3. Belgacom information

SPOC name	
Phone number	
SPOC function	
Fax number	
E-mail address	

4. Access Line information

Type of Data Link	(Belgacom-sited or Customer-sited)
Capacity	(2 Mbps or 34 Mbps or 155 Mbps)
Belgacom Location	(ATM Access Point Reference)
Beneficiary Location	(Beneficiary Site Address from which the access line has to be implemented) Note: In case of a Belgacom-sited Access Line, Beneficiary can indicate the Belgacom Location
Interfaces	See available interfaces per type of Access Line and bandwidth in <u>Annex 2</u> , Belgacom technical specifications.
Installation Fee	EUR
Data Link Rental	EUR/month (in case of Customer-sited Data Link)
Patch Line Rental	EUR/month
Beneficiary Requested Date	Date at which the Beneficiary would like the Access Line to be in service

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Annex 4

Planning and Operations

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1. Introduction

1. This annex describes the Planning and Operations principles, related to the provisioning and repair of the Broba II SDSL Service.
2. Both parties will use at any time their best efforts to ensure an adequate level of service provisioning both between the Parties and towards the End Users concerned.
3. In the event that difficulties or problems arise in respect of Planning and Operations, the Parties will perform all necessary cooperation and consultation with a view to develop appropriate and workable solutions.
4. All relevant technical documentation, order forms, forecasting forms can be retrieved at the secured part of the website (available soon) for this offer.
5. All information and descriptions concerning the ATM part of this offer included in this document are related to SDSL in VC switching mode. For VP switching, reference is made to the BELGACOM Reference Offer for Bitstream Access - Data Connectivity BROBA II ADSL Annex 4 Planning & Operations.

2. Acronyms

ACK	Acknowledged
ADSL	Asymmetric Digital Subscriber Line
BGC	Belgacom
CA	Certification Authority
CSD	Customer Support Desk
DC	Data Connectivity
DES	Data Encryption Standard
FUT	Friendly User Testing
ISDN	Integrated Service Digital Network
LEX	Local Exchange
LS	Loop Service
LSD	Loop Service Deactivation
LSR	Loop Service Request
MDF	Main Distribution Frame
MIME	Multipurpose Internet Mail Extensions
NACK	Not Acknowledged
PSTN	Public Switched Telecommunications Network
QoS	Quality of Service
SDSL	Symetric Digital Subscriber Line
SOR	Statement Of Requirements
SPOC	Single Point Of Contact
VP	Virtual Path

3. Exchange of information

6. This chapter includes some communication guidelines in order to ensure a good interchange of information and to define an effective communication channel that focuses on both improving the comprehension and execution of the processes.

3.1. Single Point Of contact

7. Both Parties will appoint a member of its staff as Single Point Of Contact for Broba II SDSL. This person, referred to as "SPOC", will be in charge of all matters regarding the day-to-day management of the performance of this offer. In particular, all forecasts and firm orders must be submitted by registered mail to the SPOC of Belgacom, unless noticed otherwise.

3.2. Preliminary Exchange of Information for the initial setting up

8. Without prejudice to what is stated above, it is recommended that the Beneficiary provides a Statement Of Requirements (SOR) to Belgacom as early as possible in any discussions between the Beneficiary and Belgacom. The SOR is sent by registered mail to the SPOC of Belgacom. After the receipt of the SOR, Belgacom shall notify to the Beneficiary its observations, if any, concerning the SOR. In particular, when appropriate, Belgacom may request additional information to complete the information contained in the SOR.

3.3. Implementation Committee

9. The Implementation Committee is a meeting between both parties to supervise, discuss and examine at a general level technical and operational application of this offer, in particular, the implementation of the respective obligations of the Parties, as described in this offer.
10. The Implementation Committee will meet at least on a quarterly basis. Each Party will be entitled to call additional meetings within reasonable notice, as may be necessary. Each Party will be represented at the Implementation Committee by its SPOC accompanied by any staff as deemed necessary by the relevant Party.
11. In addition to the Implementation Committee, the Parties will be allowed to request for the set-up of any other bilateral working group in charge of discussing and agreeing on any technical or operational issues, including more specialized members on the specific topic.

4. Ordering Access Line

4.1. General

12. Before the Beneficiary can submit an order for the activation of SDSL on a specific End User line, an Access Line needs to be in service in the relevant Access Area.
13. Firm orders of Access Line between a BGC ATM Access Point and Beneficiary's equipment shall be done through the use of the specific templates provided in Appendix E of this document. Templates will be considered as valid only when they are properly completed. In case data is missing or is not correct, the template will be rejected. In the latter case, Belgacom

will indicate the reasons of rejection on the template. All firm orders will be submitted by fax to the SPOC of Belgacom for BROBA II.

14. Irrespective of the terms and conditions stated below, Belgacom reserves the right to reject forecasts if the volumes requested by the Beneficiary are not in line with reasonable market demands. In the event of such a rejection, Belgacom will provide the Beneficiary with the reasons for the rejection and the Parties will need to enter into a good faith discussion for finding a solution to deal with the difficulty that has arisen.

4.2. Ordering procedure

15. The Beneficiary can order its Access Line through a firm order. A firm order consists of the requested Access Line, per type of service (Appendix E). Together with the firm order, the Beneficiary includes the date when he wants the Access Line to be ready.
16. The Beneficiary is notified that in very exceptional situations, the theoretic delays may be escalated:
 - In case of periods of large demands at once that could not be foreseen,
 - In an emergency situation (i.e., exceptional cases of "*Force Majeure*"),
 - In situations of lightning and any other natural disasters that causes damage to the Belgacom network.
17. When the installation of the Access Line is complete, Belgacom will confirm it to the Beneficiary.

5. Ordering Bandwidth

5.1. Bandwidth Allocation

18. The creation of VCs is included in the process to order SDSL on a specific End User line. Belgacom does the set-up and the configuration of the VC, between the DSLAM sited in a LEX/LDC from which the End User depends and the Beneficiary equipment, on behalf of the Beneficiary. The relevant DSLAM is located in a LEX or LDC or any other relevant point where Belgacom has installed DSLAMs.
19. These VCs can be of the following type:
 - CBR
 - UBR
20. Maximum 4 VCs per connection
21. For more information, see Annex 2 Technical Specifications – Tables of profiles
22. The provision of SDSL on an existing End User line also requires the installation by the Beneficiary of a router at the End User side. The access to the Broba II SDSL Service at the End User site will be at the Belgacom Network Termination Point (NTP).
23. For information, the router used by the End User must be conforming to the applicable standardization and its interoperability with the DSLAM must have been demonstrated. Belgacom will participate together with the Beneficiary in the solving of interworking issues.
24. For the sake of clarity, the Belgacom SDSL network is currently based on the high density DSLAM Onestream ASAM. The STU-C supports SDSL modems based on the standard ITU-T G.991.2 and conformable with Belgacom UNI.
25. The handshake protocol, based on ITU G.994.1, determines the operation mode.
26. The Beneficiary is requested to deliver Belgacom with a technical Beneficiary contact for the synchronization in setting up the VC's. The Beneficiary will need to communicate to Belgacom the VPi/VCi at his side of the network.

6. Inquiry

27. The Beneficiary can obtain through an Inquiry web tool the confirmation whether the requested service as described in this offer is available. The inquiry tool is available on the public Internet and is accessible through a login and password. Multiple login's are possible. The inquiry tool is fully separated from the ordering process. This includes that the inquiry results on the website does not deliver an option to order the activation of SDSL on a End User line.
28. By input of the End User's dial number and the requested service, the tool will return information on the availability of the service.
29. An utilisation manual of the Inquiry Tool is available on the Belgacom Wholesale Personal Page (Regulatory Information/BRUO) describing the functionalities of this tool, the input needed and providing all needed explanations to interpret correctly its output.

7. Ordering SDSL on a specific End User line

7.1. Ordering via the Open Calendar Interface

53. The ordering process can be decomposed into 2 phases:

Phase 1: Negotiation phase

Negotiation is only possible by use of the Open Calendar interface. It allows the Beneficiary to introduce all parameters for the requested ordered product to

- get an overview of the workorders needed to provision the line
- get the available time slot
- indicate whether the installation is to be executed by a Certified Technician or not
- select the suitable timeslot according to the requirement of the enduser and start the ordering process.

The Beneficiary does not need to send an additional order via the classical XML way (No BGCIN).The order is automatically generated in the Belgacom ordering systems by the Open Calendar interface.

Phase 2: Order confirmation

This phase starts by the sending by Belgacom of a validate XML message via the classical xml way ("validate" or "reject" xml). This XML contains the final confirmation of the information exchanged via the Open Calendar interface. If the information exchanged during phase 1 should be modified, this is notified to the OLO by this "Validate" or "Reject" XML.

54. The follow-up of the order is performed by use of the Hold , Cancel , Amend , Reject Done message exchanged via the classical XML interface as described in the chapter Ordering via XML.

55. Reference is also made to the Belgacom Wholesale secured website – Regulatory information – BROBA - Information on ordering, for more detailed information on the ordering process via the Open Calendar interface in the following documents:

- Process documentation on Open Calendar interface
- technical documentation on Open Calendar interface

7.2. Ordering via xml

7.1.7.2.1. General

30. All exchange of information, with the exception of the inquiry, between Belgacom and the Beneficiary will be done through an electronic system. More details are described in section 40. In case of problems of the electronic system, reference is made to steps as described in the backup plan for ordering described in section 11.

56. Orders can be placed through the use of an electronic ordering system via xml directly or through the use of the Open Calendar interface as described above.

57. Reference is also made to the Belgacom Wholesale secured website – Regulatory information – BROBA - Information on ordering, for more detailed information on the ordering process via XML.

31. The communication process between the Beneficiary and Belgacom is based on SMTP Mail for the transfer, an ACK/NACK protocol and a message file in attachment with a predefined format.
32. The messages that are exchanged between the Beneficiary and Belgacom are encrypted and signed by the sender. Each message contains one order form in attachment that is coded in XML. [Technical Info and the order forms for XML ordering are included on the secured website.](#)
- ~~33. Only Beneficiaries who have signed the “Agreement for the provisioning of Bitstream Access in the local loops of Belgacom” will obtain the encryption keys in order to sign and encrypt the message. This will enable the Beneficiary to test the messaging system.~~
- ~~34.33.~~ The Beneficiary prepares the file in the predefined XML format, signs it, encrypts it, attaches it to a mail and sends it to the mailbox of Belgacom. The e-mail address for BROBA II is WDC@belgacom.be.
- ~~35. The order forms for the messages described below will be available in XML format. The Beneficiary will receive the XML templates for the Broba II service. To facilitate the Beneficiary to dimension its systems, the XML templates are delivered with DTD files, which describe the nature of the data fields (length, type, etc.). The details and overview of the valid values that need to be included in the electronic XML templates are described in the XML Content Manual. The XML data files and the XML content manual will be available through the secured part of the Broba II website and through the SPOC if necessary.~~
- ~~36. Electronic messages will be exchanged between Belgacom and the Beneficiary to manage the orders.~~
- ~~37. XML with encrypted XML files is the standard procedure. However, a back-up plan has been defined in case of problems.~~

7.2.7.2.2. Definitions

7.2.1.7.2.2.1. Type of Messages

- Acknowledge Message
- Order Message: message to initiate the creation of a new order
- Action Message: message to ask for a precise action on an existing order
- Answer Message: message sent to give an answer to an Order Message or Action Message

All possible messages are explained below and described in detail (on xml level) in the BROBA II XML Content Description Manual, which can be found on the Belgacom secured website - Regulatory Information – BROBA – Documentation on ordering.

7.2.2.7.2.2.2. Acknowledge Messages

- ~~38.34.~~ For any message exchanged between Belgacom and The Beneficiary, an acknowledge message (ACK/NACK) is sent to confirm
- The message has been received
 - The message has been decrypted
 - The signature has been successfully validated.

~~39:35.~~ NACK is sent if decryption or signature check does fail. NACK will contain the reason of rejection.

~~40:36.~~ If no ACK nor NACK message is received by the sender, the sender is supposed to send again the message. The order is not further processed by Belgacom.

~~41:37.~~ If an ACK is received by the Beneficiary, this does not automatically mean that the order will be provisioned. The order could still be rejected.

7.2.3.7.2.2.3. Order Messages

~~42:38.~~ An Order can be:

INITIATED BY THE BENEFICIARY

- PROVIDE NEW: the activation of a complete new Broba II SDSL Service
- CEASE: the deactivation of a Broba II SDSL Service
- CONVERT – cease part and provide part: conversion of his own existing BROBA II SDSL product or another type of product towards a (another) BROBA II SDSL product
- PROVIDE CHANGE OWNER: transfer of ownership of an existing xDSL belonging to another Beneficiary (Belgacom end-user customer included) with or without conversion of the existing product
- CHANGE: Modification of the existing BROBA II SDSL product (add/remove/delete VC – change line profile – change switching mode)

INITIATED BY BELGACOM DUE TO AN ACTION OF ANOTHER BENEFICIARY OR FROM THE END-USER CUSTOMER ON HIS VOICE SERVICE

- CEASE CHANGE OWNER: launched as a consequence of a validated PROVIDE CHANGE OWNER of another Beneficiary, or an action of the end-user-customer of Belgacom
- MOVE – cease part and provide part: launched as a consequence of a MOVE of the voice of the end-user-customer; the BROBA II SDSL product will be moved along if technical possible.
- CONVERT – cease part and provide part: launched as a consequence of
 - Change of technology of the voice of the end-user-customer from PSTN to ISDN and vice versa
 - A cease or an export of the voice; the BROBA II SDSL with voice will be converted into a BROBA II SDSL without voice
 - A new connection or an import of the voice; the BROBA II SDSL without voice will be converted into a BROBA II SDSL with voice
- CEASE (for technical reasons): launched as a consequence of an action on the voice part - e.g. move/conversion of the voice – while the BROBA II SDSL product can not be re-established in the new situation due to technical reasons

7.2.4.7.2.2.4. Action Messages

~~43.39.~~ An Action Message can be:

INITIATED BY THE BENEFICIARY

- AMEND : this message can be sent by the Beneficiary to change the Due Date of an existing order
- CANCEL : this message can be sent by The Beneficiary to cancel an existing order.

INITIATED BY BELGACOM

- HOLD : this message can be sent by Belgacom to inform The Beneficiary that Belgacom will not perform the service at Due Date. due to technical reasons; due to absence of the end-user-customer; a new Due Date is communicated to The Beneficiary in this message

~~44.40.~~ These action messages apply only on pending orders sent by the Beneficiary to Belgacom.

7.2.5-7.2.2.5. Answer Messages

45:41. An Answer Message can be:

- REJECT :after the ACK was sent by Belgacom for a certain message, this message may however show some problems that will prevent Belgacom to treat the request correctly:
 - The message contents (file attachment) does not respect predefined format
 - The message does not contain predefined values
 - The message does not respect precedence rules
 - The message refers to a non existing order
 - The new order does not pass through administrative validations: pending order, unknown or non activated Directory Number, non PSTN/ISDN-BA installation, bad payer, ...
 - The new order does not pass through technical validations: no pair available, distribution pairs absent, ...

The rejection message contains at least one, if possible more, rejection codes to inform the Beneficiary of all reasons for rejection so that sender can send again the message and minimise the retry cycle. If rejected, the order does not exist anymore. If The Beneficiary wants to retry, he will have to issue again the same demand, but through a new order.

- VALIDATE : this message confirms that the order will be executed on the given due date; Belgacom will provide the Beneficiary with all the necessary technical information in order to configure the related VP at the Beneficiary's side of the network; the message includes the circuit-id.
- DONE : this message confirms the execution of the order, the field intervention for service activation is completed.
- FAIL : this message is sent when it is not possible for Belgacom to succeed in providing the service with existing infrastructure; the order has not been executed. The message contains the appropriate codes to inform The Beneficiary about the reason(s) for failing. After this message the order is considered as not existent and is removed out of the ordering system.
- CANCELLED – AMENDED : those messages confirm the action messages, CANCEL and AMEND

7.3:7.2.3. Description of specific ordering procedures

46:42. A working day for order purposes is considered as being from: 8h00 - 16h30, excluding Saturday, Sunday, Belgian and Belgacom holidays.

47:43. The timers mentioned in the other parts of the Contract and used in the order provisioning process are expressed in working days at the first working day after an acknowledgement has been sent. The number of days of delay starts at the first day after the day the timer limit was passed.

7.2.4. Small Network Adaptations

44. Beneficiary has the possibility to indicate 'SNA not allowed' when ordering. If 'SNA not allowed' is flagged when ordering, Belgacom will send a reject of the order should the need for a SNA be established at any point in the provisioning phase.

45. In case the order is not flagged 'SNA not allowed', the process is as follows:

48. In case of Small Network Adaptations:

a.1. If a Small Network Adaptation need is detected during the order validation,

Belgacom will notify this into the XML VALIDATE message by communication in the remark type SmallNetworkAdaptations the word "NEEDED".

b.2. If a SNA need is detected during provisioning,

Belgacom will create a HOLD message where a new appointment date will be proposed and with in the remark type SmallNetworkAdaptations the word "NEEDED".

In both cases, the Beneficiary can then contact its End User for further negotiations.

The Beneficiary will be enabled till the day before the Due Date (DD-1) to cancel its request. If there is no cancellation, the SNA will be considered as accepted by the Beneficiary and realized as such.

~~This type of communication will at first be done on a case-by-case basis. Belgacom will inform the Beneficiary in good faith, as soon as possible, of modifications of the current ordering procedures relating to these Small Network Adaptations.~~

Rush provisioning

46. Rush Provisioning is the delivery of the implementation of a new line in minimum 3 working days and maximum 5 working days (subject to the conditions of the point below).

47. The rush provisioning is subject to all conditions of regular provisioning, including the presence of the required connectivity to the Belgacom network before ordering. An order is considered as a Rush Provisioning Service when the Beneficiary asks this explicitly to Belgacom.

48. Rush Provisioning will be always during working hours.

49. Rush Provisioning is offered as a service when resources can be found to perform the necessary tasks. In case Belgacom cannot perform the works in the delay requested, Belgacom will continue the provisioning as a default order. Belgacom will inform in that case the Beneficiary

50. Any delay for a Rush Provisioning Process put in place by Belgacom, for instance absence of User on the Customer Requested date, will entitle Belgacom to charge the Beneficiary with 50% of the Rush Provisioning Fee. In any case the process will continue and a new Customer requested Date will be settled following default procedures (Hold & Change Date)

51. The standard order will be submitted by XML, possibly by the means of the Open Calendar interface. The Beneficiary will in a first phase call (phone) Belgacom to prioritize this order and confirm by e-mail to Car LLU. The Beneficiary is requested to specify the exact date requested for the provisioning: the Service Required Date (SRD). If the rush order has been accepted, Belgacom will provide the Beneficiary with the committed RFS date and the data service identifier (Circuit ID), by using the default validation service through XML.

52. Per line for which rush provisioning is requested, the installation fee is doubled.

Escalations

- 58. An escalation can be requested in case of Belgacom Fault (e.g. Missed Appointment)
- 59. The Beneficiary will in a first phase call (phone) Belgacom to prioritize the order and confirm by e-mail to Car LLU. Belgacom will verify this request, and handle it in a manual escalation mode if the request for escalation is justified.
- 60. An escalation order has no additional cost.

8. Description of the Forecasting Process

8.1. General Principles

61. This chapter describes the forecast process. The forecasts are prerequisites for the respect of SLA on Slot Availability by Belgacom. Forecasts are needed to help Belgacom to plan a reasonable capacity to fulfil customer's demand.
62. Beneficiaries are guaranteed that Belgacom will set-up the necessary resources for the period concerned to meet its market needs.
63. For the orders exceeding the forecasts (orders in 'overrun') no guarantee on Slot Availability will be offered and they will be carried out, as soon as possible, according to the remaining capacity available.

8.2. Confirmation of forecasts by the Beneficiary

~~50-64.~~ The Beneficiary shall submit on a monthly basis to Belgacom a rolling forecast for the service concerned, at the requested level of detail. Forecasted volumes will be provided by month. Belgacom will propose an individual forecast to each Beneficiary exceeding order volumes of 50 orders per month, based on actual ordered volumes of the last 6 months. This forecast will be elaborated per month, per customer visit / no customer visit (all products BRUO, BROBA and WBA combined) and per subarea. The Beneficiary is requested to confirm or modify this forecast, at the latest one month prior to the first forecasted period in time. If no confirmation or modification is received by that time, Belgacom will consider the proposed forecasted volumes as confirmed. The Beneficiary is responsible for the accuracy of the forecast. Orders for which the installation will be executed by a Certified Technician are not taken into account.

~~51-65.~~ Forecasts modifications or confirmations must be sent by registered mail to the SPOC of Belgacom as indicated in this offer. ~~The submission of the forecasts will be done not later than one month prior the start of first forecasted period in time.~~ Forecasting shall be done through the use of the templates provided by Belgacom. These templates will only be considered as valid when they are properly completed. In case data is missing or is not correct, the template will be rejected (within 5 working days following its reception).. In the latter case, the reasons of rejection will be indicated on the template by Belgacom.

~~52-66.~~ For the first series of forecasts ~~submitted by the Beneficiary~~, both Parties will enter into good faith discussions about the submitted forecasts and the feasibility to implement the forecasts concerned.

8.3. Processing of Forecasts

~~53-67.~~ The forecasting system in scope of this offer is ~~split in 2 parts~~ to cover the specific needs of the divisions ~~"Planning & Field Operations" & "Customer Operations"~~ of Belgacom for the provisioning of the BROBA SDSL Services. Both parts consist on rolling forecasts of validated orders (new lines, change owner & convert included), with monthly submissions.

The first part, spread over one year, must be volumes (new lines, change owner and convert included) are established by sub-area/area zone -and ventilated per installation type (with or without customer visit), all products BRUO, BROBA and WBA combined. Orders for which the installation will be executed by a Certified Technician are not taken into account in the forecast.

- ~~The months 7 to 12 are indicative.~~

- The second part, spread over 6 months, must be established by telephone zone, and cover BROBA ADSL as an whole. This part of the forecasts is indicative.

	Geographic name	Telephone zone
Sub-area 1.1	“West” Vlaanderen	050, 051, 056, 057, 058, 059
Sub-area 1.2	“Oost” Vlaanderen	09, 052, 053, 054, 055
Sub-area 2.1	“Antwerpen”	03, 015
Sub-area 2.2	“Vlaams-Brabant” & Limburg	011, 012, 013, 014, 016, 089
Area 3	Brussels	02
Area 4	Hainaut & Brabant wallon	010, 060, 064, 065, 067, 068, 069, 071, 081
Area 5	Liège, Namur & Luxembourg	04, 019, 061, 063, 080, 082, 083, 084, 085, 086, 087

68. Once modified or confirmed (possibly by default) by all concerned Beneficiaries at the first working day of each month, the forecasted volumes are globalized by Belgacom into one basket. Capacity reservation, and calendar dimensioning, is done accordingly to fit the needs of the entire market

8.4. Deviations between successive forecasts

54.69. The forecasted volume for month M will be compared with the forecast for month M-1. For each forecasted month common to the 2 successive forecasts, the maximum deviation between the successive forecasts of this month at month M and at month M-1 will be – 30 % and + 30 % (or 10 lines for “Planning & Field Operations” and 50 lines for “Customer Operations”).

59. The table below shows the allowed deviations between 5 months of 2 successive forecasts (the 6 last months must be filled in only for the “Customer Operations” forecast and are indicative). The same deviation of 30 % is applicable for month 2 till month 5.

Month	1	2	3	4	5	6	Indicative					
Month 0	A ₀	B ₀	C ₀	D ₀	E ₀	F ₀	G ₀	H ₀	I ₀	...	...	...
Month 1	B ₁	C ₁	D ₁	E ₁	F ₁	G ₁	H ₁	I ₁	...	...	...	...
Month 2	C ₂	D ₂	E ₂	F ₂	G ₂	H ₂	I ₂	...	...	...	...	...

- B₁ between B₀ – 30 % and B₀ + 30 %
- C₁ between C₀ – 30 % and C₀ + 30 %
- D₁ between D₀ – 30 % and D₀ + 30 %
- E₁ between E₀ – 30 % and E₀ + 30 %
- F₁ between F₀ – 30 % and F₀ + 30 %
- G₁ new entry value (reference for subsequent deviation)

60. If the Beneficiary submits forecasts which are higher than the effective number of orders placed, the difference between forecasted volumes and effective orders will be used as reference to lower the volume for which the SLA will be applicable in the subsequent month. Moreover, in case of repeated over forecasting, Belgacom reserves the right to invoice the Beneficiary in proportion to the estimated unused operational resources.

8.5. Deviations between forecasted volumes and actual volumes

8.5.1. Underrun

- 70. Underrun occurs when actual ordered volumes are below forecasted volumes. Any underrun mechanism applies to the entire globalized volume of orders of the entire market.
- 71. A reasonable underrun of the forecasted volumes can be absorbed by Belgacom and has no direct consequences for the Beneficiary. A reasonable underrun is considered to be no more than a 20% deviation of the forecasted volume, considered on a monthly basis. In case of severe underrun (i.e. more than 20%) and in case this underrun was caused by a single Beneficiary who excessively increased the volume proposed by Belgacom, Belgacom reserves the right to limit the allowed modification for the forecast of the following 3 months for that Beneficiary to a level deemed necessary by Belgacom.

8.5.2. Overrun

- 72. Overrun occurs when actual ordered volumes are above forecasted volumes. Any overrun mechanism applies to the entire globalized volume of orders of the entire market.
- 73. As from the first order exceeding the globalized forecasted volume, independently of which Beneficiary might be the cause of this overrun, all orders of all Beneficiaries for the remainder of the month will be considered 'in overrun', and will receive timeslots from the general Belgacom calendar.

8.4.8.6. Forecasting specifications for the VRUO, BROBA and WBA End User Lines orders Broba II SDSL Service

57-74. Remarks:

- M_i refers to the month in which the forecasting templates are submitted.
- All quantities (M_1 to M_{12}) are incremental values.
- Each template will contain a heading with an identification field. This identification will be filled out by the Beneficiary and will contain info on the Beneficiary's reference and the edition of the template.
- The reception date will be filled out by Belgacom.

“Planning & Filed Operations” Forecast

Forecasting Template for Broba II Orders						
Customer reference:						
Edition:						
Reception date:						
Telephone Zone	M_1	M_2	M_3	M_4	M_5	M_6
02						
03						
04						
09						
...						
089						

8.4.2. “Customer Operations” Forecast

Forecasting Template for Broba II Orders										
Customer reference:										
Edition:										
Service : BROBA II SDSL										
Reception date:										
Telephone Zone	M_1	M_2	M_3	M_4	M_5	M_6	M_7	M_8	...	M_{12}
Sub-area 1.1										
Sub-area 1.2										
Sub-area 2.1										
Sub-area 2.2										
Area 3										
Area 4										
Area 5										

Forecasting Template for BRXX and WBA Orders

<u>Customer reference:</u>
<u>Edition:</u>
<u>Split: With or Without customer visit</u>
<u>Reception date:</u>

Telephone Zone	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	...	M ₁₂
Sub-area 1.1										
Sub-area 1.2										
Sub-area 2.1										
Sub-area 2.2										
Area 3										
Area 4										
Area 5										

9. Phases in the provisioning of the Broba II SDSL Service

~~53:75.~~ The way of provisioning the Broba II SDSL Service to the Beneficiary will evolve according to the following 2 successive Phases: Friendly User Testing Phase and Full Commercial Phase

9.1. Friendly User Testing Phase

~~54:76.~~ During the Friendly User Testing phase, later to referred as FUT, Belgacom will introduce and support the Beneficiary to get acquainted with the processes and systems in scope of the Broba II SDSL Service.

~~55:77.~~ Each of the Parties will need to agree on the date of successful completion of the Friendly User Testing Phase. The FUT phase should cover a period of 10 working days.

~~56:78.~~ The FUT Phase is executed at one ATM Access Point, linked to at maximum two LEX's: one local, one zonal or interzonal. The number of 'friendly user' End Users (to be provided by the Beneficiary) is set at 24 per Beneficiary.

9.2. Full Commercial Phase

~~57:79.~~ The Full Commercial Phase will entirely be based on Beneficiary's forecasts (see point 5.1 in the general document) for the Broba II SDSL Service - provided the Beneficiary follows and respects the forecasting rules applicable between the Parties - and on the firm orders transmitted by the Beneficiary. Firm orders given by the Beneficiary must be reasonable and progressive in order to avoid that the order intake services of Belgacom are overloaded by large amounts of initial orders.

10. Fault Reporting and Repair

~~58:80.~~ This section describes the responsibilities of Belgacom and The Beneficiary in fault reporting and repair.

~~59:81.~~ Belgacom will be responsible for the repair of the PSTN/ISDN Belgacom Services offered to the End User.

~~60:82.~~ The Beneficiary is responsible for the repair of the Broba II SDSL Service for which he has the control and is responsible to filter all non-network related problems.

10.1. Point of Entry for fault reports:

~~61:83.~~ In case of repair, two points of contact between the Beneficiary and Belgacom have been identified according to the type of problem:

- **e-tool for repair tickets**
- The National Call Center (also referred to as NCC) for the reporting of faults at VP level and Access Line level.
- The address "o80093122@belgacom.be" for the reporting of faults at End User level.
- Tel : 0800 / 93 122
- FAX : 02 / 512.78.95

10.2. Fault Reporting on Broba II SDSL

~~62:84.~~ It is always the Beneficiary that

- Reports faults in the Broba II SDSL Access;
- Receives own End Users' fault reports before reporting faults to Belgacom. Belgacom will not take calls directly coming from End Users of the Beneficiary Broba II SDSL Access;
- Handles own End Users' fault reports before reporting faults to Belgacom.

~~63:85.~~ It is the Beneficiary's responsibility to check that there is sufficient ground to assume that the fault is with Belgacom.

~~64:86.~~ The following information is required for a fault report. The Beneficiary is responsible for transmitting all necessary information requested by Belgacom. The Beneficiary will therefore transmit to Belgacom at least the following information:

- fault reporting information that includes the problem description and all relevant technical details;
- if available, measurements from equipment on the Beneficiary's side that can help in solving the fault;
- Circuit ID that was provided in the Broba II SDSL provisioning process;
- ATM Access Point;
- contact point and phone number of the End User during office hours;

- hours of availability of End User;
- contact point and phone number of the Beneficiary.

65:87. For fault reporting, the Beneficiary will contact Belgacom by e-mail. The e-mail address to be used by the Beneficiary is broba.repair@belgacom.be. The Beneficiary will send an excel file with the description of the problem to this address.

66:88. The Beneficiary will test the concerned fault equipment before sending the excel file to Belgacom to ensure that the fault is attributable to Belgacom. The Beneficiary is responsible for transmitting all necessary information requested by Belgacom. Beneficiary will therefore transmit to Belgacom an excel file with information related to the problem. In the following cases the trouble ticket creation will be rejected:

- Information in the Excel sheet is incomplete
- More than one ticket is sent in the e-mail

67:89. The Beneficiary will possibly communicate to Belgacom:

- Measurements from equipment on the Beneficiary's side that can help in solving the fault (if available).
- Contact point and phone number of the End User during office hours (in case an intervention is required at the End User side).
- Hours of availability of End User (in case an intervention is required at the End User side).

68:90. It is always the Beneficiary that receives own End Users' fault reports regarding the Data Connectivity Access Services before reporting faults to Belgacom. In case Belgacom receives fault reports regarding the Data Connectivity Service, Belgacom will refer the End User to the Company with whom he has signed an agreement.

69:91. When the Beneficiary receives a fault from one of his End Users for Data Connectivity, the Beneficiary performs a first diagnostic.

- In case the issue does not require a Belgacom intervention, the Beneficiary manages the issue and contacts the End User once the issue is solved and closed.
- On the opposite, if the issue requires a Belgacom intervention (typically for network issues), the Beneficiary continues the issue resolution process with Belgacom.

70:92. Important note: The Beneficiary must clearly specify to the End User that the PC and modem must be left "on" in order to let the possibility to Belgacom to perform all the actions required to identify and fix the issue.

10.3. Belgacom liability in connection with fault reporting

71:93. Belgacom starts the fault localization and performs repair activities during working hours.

72:94. The Beneficiary recognizes that:

- if necessary, the Beneficiary is required to disconnect the terminal equipment at the End User site upon Belgacom request to carry out its proper measurements;
- Belgacom can request to the Beneficiary a timeframe for disconnecting the Data Connectivity Service at the MDF to the Beneficiary collocation facilities so as to be able to carry out the necessary measurements. Refusal from The Beneficiary to do so will imply that Belgacom is not in a position to verify the lines and can be considered as wrongful repair request;

- The Beneficiary's repair request must relate to the type of service for which the Data Connectivity Service has been ordered;
- During the repair process the Beneficiary may submit additional information in respect of a specific repair request, cancel a repair request or change a repair request on the same end-user BROBA II SDSL access.

~~73-95.~~ Belgacom reports the result of the repair activities to the Beneficiary immediately upon repair.

~~74-96.~~ Any follow-up feedback requested by the Beneficiary, either during the repair period, after additional tests and rejection or acceptance of the repair action, or once the fault is fixed, will be taken care of through the repair team for Data Connectivity.

~~75-97.~~ In any case of planned maintenance and repair that can affect the Broba II SDSL Service, Belgacom shall inform the Beneficiary.

~~76-98.~~ In case the Beneficiary contacts Belgacom by phone about an ongoing repair action, Belgacom will inform the Beneficiary of the current repair status.

10.4. Special conditions in connection with Repair

~~77-99.~~ When the End User connects equipment (on its side) that is not compliant with the requirements set out in the Main Body or equipment that causes disturbances for Belgacom and/or for other Beneficiaries in the cables, Belgacom is entitled to disconnect the Data Connectivity Service after prior notification of the Beneficiary, following the RTTE directive.

~~78-100.~~ In fault situations where the responsibility for the fault cannot immediately be placed, and where Belgacom makes coordinated efforts with one or more Beneficiaries, settlement is made or arranged after conclusion of the Repair. Service interruptions due to modifications and interruptions are not included in the SLA or Improved SLA on service availability, like any other interruption at the condition that it is done on a non-discriminatory basis or for the normal management of the network.

10.5. Repair Request and Feedback

VC and access line level

~~79-101.~~ The Beneficiary's requests for Repair at VC level and Access Line level will be answered by the NCC. Communication in repair will be through phone. The NCC representatives will however not accept direct calls from the End User.

~~80-102.~~ Any follow-up feedback given to the Beneficiary, either during the repair period, after additional tests and rejection or acceptance of the repair action, or once the trouble is fixed, will be through CSD, again insuring continuity and consistency.

End User level

~~81-103.~~ The Beneficiary's requests for Repair at End User level (DSLAM level) will be answered by "o80093122@belgacom.be". Communication in repair will be through e-mail. No direct calls from the End User will be accepted.

82:104. The Beneficiary needs to provide the circuit ID that was provided in the End User line provisioning process. The Beneficiary repair request must relate to the type of service for which this line has been ordered. If the reported problem does not match the service ordered by the Beneficiary as documented, the repair request will be rejected. During the repair process the Beneficiary may also submit additional information for a specific complaint, cancel a complaint or change a complaint.

83:105. It may during repair appear necessary for the Belgacom representative to contact the End User. The Beneficiary will therefore transmit to Belgacom the contact point of the End User and his phone number together with the repair request. In case contact with the End User is necessary for repair and the Beneficiary failed to give this information, the repair request may be rejected.

84:106. Any follow-up feedback given to the Beneficiary, either during the repair period, after additional tests and rejection or acceptance of the repair action, or once the trouble is fixed, will be through "080093122@belgacom.be", again insuring continuity and consistency.

85:107. The escalation procedure document for the repair can be found on the Broba II web site.

10.6. Wrongful repair request

86:108. In case of a repair request where the fault was not caused by Belgacom and Belgacom has performed work for that repair request, useless costs are made by Belgacom. To encourage the Beneficiary to perform a check first on the loop and on the connected equipment, Belgacom will bill an incentive fee to the Beneficiary. There will be an indication of the trouble ticket reference and the cause of the wrongful repair.

11.Setting up of the electronic messaging system

87.For any changes which may have a significant impact on the system (new types of messages or new exchange process), Beneficiaries shall be notified at least 6 months in advance with a high level description of the impact and with a structure of the documentation. Belgacom will provide detailed impact and documentation 3 months prior start of the modifications.

61For the smaller changes, Beneficiaries shall be notified at least 3 months in advance with a high level description of the impact and with a structure of the documentation. Belgacom will provide detailed impact and documentation 1 months prior start of the modifications.

89.. The BIPT will be informed in any case.

90.Concerning the periods of notice, the BIPT can allow exceptions

11.1.Provisioning of order templates

91.The order form XML templates are provided in advance to The Beneficiary.

11.2.Provisioning of encryption keys

92.Only Beneficiaries who have signed this offer will obtain the encryption keys in order to sign and encrypt the message. As soon as The Beneficiary and Belgacom reach an agreement on the start date for Data Connectivity ordering, the Belgacom encryption keys will be provided to the Beneficiary but it is the responsibility of the Beneficiary to get its own certificate from a Certification Authority and to provide it to Belgacom. All messages that are sent to the WDC e-mail address before the start date for Data Connectivity ordering for that Beneficiary will be ignored.

93.Belgacom advises the Beneficiary to use one of the following Certification Authorities, recognized in Belgium:

- PersonalSign 3 Pro™ Certificate
(http://www.globalsign.net/digital_certificate/personalsign/index.cfm)
- Certipost E-Trust Primary CA for Normalised certificates
(http://www.certipost.be/en/article.php?id_article=26)

11.3.General Concept of the electronic messaging system

94.The communication process for the Data Connectivity Service between The Beneficiary and Belgacom is based on SMTP Mail for the transfer, a simple Ack-Nack protocol and attachment files with a predefined XML format.

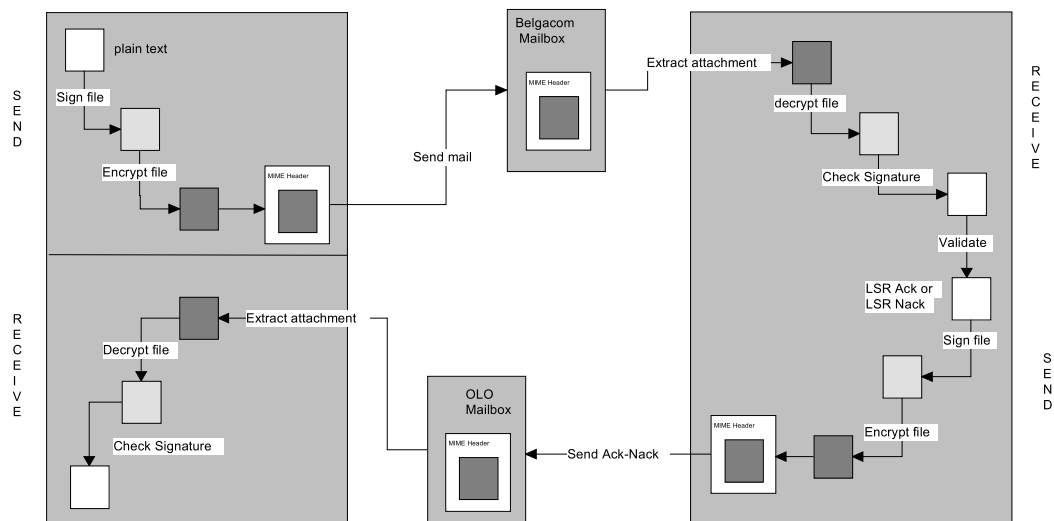


Fig.5

95. The sender prepares the attachment file in the predefined XML format, signs it, encrypts it, attaches it to an e-mail and sends it to the other Beneficiary's mailbox (agreed e-mail address).

96. At the other side the attachment is extracted, decrypted and the signature is verified. After successful reception of the attachment file, an LSR Ack message is sent back to the originator of the e-mail. In case of non-conformity of the attachment, a LSR Nack message is sent back to the originator of the e-mail.

97. All information exchanged must be encrypted and signed. The reason for the encryption is that since the information travels over the Internet it must be made sure that others than the addressee will not be allowed to read or modify the attachment file. The information in the attachment file is considered to be confidential. The reason for the electronic signature is that we must be sure that the sender can be authenticated and can act in the name of The Beneficiary. All these steps will be discussed in further detail in the next chapters.

11.4. Mail Format

General

98. All e-mails sent must be compliant with the MIME 1.0 standards and use following character set: us-ascii.

99. The content of the subject field is "LSR", "LSR Ack" or "LSR Nack".

100. Each e-mail must contain one and only one attachment (the actual data file in XML format and the triple DES key are incorporated into one file).

101. Only two e-mail layouts are accepted:

1) Multipart mixed:

Content-Type: multipart/mixed;

Followed by the body part:

Content-Type: text/plain; charset=us-ascii

Content-Transfer-Encoding: **base64**

And the attachment:

Content-Type: application/octet-stream; name=WDC_ID999999999_yyyymmdd_nnnn.xml

Content-Transfer-Encoding: **base64**

Content-Disposition: attachment; name=WDC_ID999999999_yyyymmdd_nnnn.xml

The body part of the e-mail is not used, but the format is accepted, since some e-mail tools always generate a body part, even though no body text is supplied.

2) Only the attachment:

Content-Type: application/octet-stream; name=WDC_ID999999999_yyyymmdd_nnnn.xml Content-Transfer-Encoding: **base64**

Content-Disposition: attachment; name=WDC_ID999999999_yyyymmdd_nnnn.xml

102. Important Note: As shown in the example above, the value for Content Transfer Encoding must be base64.

Belgacom e-mail addresses

103. The e-mail address to be used by The Beneficiary for the sending of the Data Connectivity Service related e-mails is llu.car@belgacom.be

104. Identification of the sender will be based on the certificate and not on the 'from:' field. It is however advised to fill in the 'from' address with a proper value.

105. Only ONE e-mail address and ONE certificate per Beneficiary is allowed. In a similar way the e-mails to The Beneficiary will be sent to ONE and only ONE e-mail address. This e-mail address must be communicated to Belgacom together with the certificates.

Mail attachment naming

106. The name of the attachment file is constructed as follows:

WDC_ID999999999_yyyymmdd_nnnnnn.xml

Where:

WDC: _____ Start identifier for all Data Connectivity messages

ID999999999: _____ Belgacom Customer ID of The Beneficiary.

yyymmdd: _____ Date of the request

nnnnnn: _____ Unique sequence number of the request

Incorrect named attachment file will be rejected.

Example:

WDC_ID000573521_20001207_000015.xml

11.5. Electronic encryption and signature

Technical implementation

11.5.1.1. Sign attachment

107. The first step is to sign the attachment file with the sender's private key (PKCS #12 format). The result is the signed data. It is stored in a PKCS #7 file, which includes:

- the attachment file
- the signature of the sender
- the sender's certificate
- the CA's primary certificate
- the CA's root certificate

108. The CA (Certifying Authority) is responsible for delivering the certificate and the accompanying keys.

109. The PKCS #12 file contains both the private keys of the client and the client's certificate.

11.5.1.2. Encrypt attachment

110. According to the PKCS #7 standard, the file is encrypted with a secret session key. It results in an encrypted signed data file. The secret session key is encrypted with the public key of the receiving server. Both the encrypted signed data PKCS #7 file and the encrypted secret key are incorporated into one file and are sent to the receiver.

11.5.1.3. Decrypt attachment

111. Each Encrypted file includes:

- the encrypted secret key
- the encrypted signed data object

112. The receiver decrypts the secret key file with its private key. The result is a file containing the secret key generated by the sender. With this decrypted secret key, the receiver can decrypt the encrypted (Triple-DES) signed data (PKCS #7) object. It results in a decrypted signed data (PKCS #7) object.

11.5.1.4. Check Signature

113. The decrypted signed data (PKCS #7) object contains:

- the attachment file
- the signature of the sender
- the sender's certificate

- the CA's primary certificate
- the CA's root certificate

114. Once the decryption phase is ended, the check of the signature and of all the certificates of the signature of the sender can start. The receiver checks the signature contained in the PKCS #7 file thanks to the public key of the sender. The receiver also checks the certification chain of the signature.

115. The receiver directly fetches the CA's root certificate of the sender from the CA.

116. This certificate is introduced in the certification chain contained into the PKCS #7 file. The client's certificate of the sender must match with the CA's primary certificate of the sender, which one in its turn must match, with the CA's root certificate of the sender fetched by the receiver.

117. If the certification chain is kept, the signature is removed from the PKCS #7 file. The result is a plain text file.

Software

118. Belgacom will deliver to The Beneficiary a certificate and software for the encryption and signature. Also Belgacom delivers the documentation on the usage and installation of the provided software. Belgacom does NOT deliver packages like JAVAMail or the Java Activation Framework. They should be retrieved from the SUN Microsystems website, because The Beneficiary must agree with the linked copyrights. The software will be delivered in such a form that Beneficiary can install it and use it. Further integration in the own IT system is the responsibility of The Beneficiary.

Certificate

119. Each involved party must ask a Certificate. The Certificate binds the identity (for example Name and E-mail address) to a Public Key. The proof of binding is contained within the Certificate so that anyone in possession of a Certificate can satisfy himself or herself that the identity with in the Certificate is indeed bound to the accompanying Public Key.

120. Beneficiaries are free to choose a certificate from another vendor but it must fulfill the same conditions as above.

121. Every Beneficiary must transit its certificate to Belgacom. The Beneficiary must also inform Belgacom regarding the Certification Authority used.

11.6. Message overview

Summary of messages

Message name	From	To
Attachment handling messages		
LSR Ack	Customer	BGC
LSR Naack	Customer	BGC
LSR Ack	BGC	Customer

LSR Naek	BGC	Customer

Attachment handling messages

11.6.1.1.LSR Ack

- ~~122.~~The LSR Ack message sent by the receiver is the proof for the sender that the attachment file was received and validated according to the encryption and digital signature definition, without any errors. It does NOT give any information on the contents nor the format of the attachment file (individual requests).
It is the responsibility of the sender to make sure a LSR Ack is received for each sent e-mail.

11.6.1.2.LSR Nack

- ~~123.~~The LSR Nack message is sent if the received attachment file cannot be validated according to the encryption and digital signature definition. If the sender receives this LSR Nack message he knows the receiver did NOT handle the attachment file. It is up to the sender to find out the problem, correct it and if necessary resend it. In case of a LSR Nack, a manual intervention is needed to solve the problem. In case of reception of non-signed attachment files no LSR Nack message is sent since the identity of the sender cannot be guaranteed. These e-mails and attached files are removed from the system.

11.7.Communication Standards

SMTP Standard

- ~~124.~~The objective of Simple Mail Transfer Protocol (SMTP) is to transfer e-mail reliably and efficiently.
- ~~125.~~SMTP is independent of the particular transmission subsystem and requires only a reliable ordered data stream channel.
- ~~126.~~An important feature of SMTP is its capability to relay e-mail across transport service environments. A transport service provides an inter-process communication environment (IPCE). An IPCE may cover one network, several networks, or a subset of a network. It is important to realize that transport systems (or IPCEs) are not one-to-one with networks. A process can communicate directly with another process through any mutually known IPCE. Mail is an application or use of inter-process communication. Mail can be communicated between processes in different IPCEs by relaying through a process connected to two (or more) IPCEs. More specifically, mail can be relayed between hosts on different transport systems by a host on both transport systems.
- ~~127.~~See RFC 821, SIMPLE MAIL TRANSFER PROTOCOL, Jonathan B. Postel, August 1982 for a detailed description of SMTP.

MIME standard

- ~~128.~~Multipurpose Internet Mail Extensions defines a message representation protocol specifying considerable detail about US-ASCII message headers, and leaves the message content, or message body, as flat US-ASCII text. This set of documents, collectively called the

Multipurpose Internet Mail Extensions, or MIME, redefines the format of messages to allow for:

- textual message bodies in character sets other than US-ASCII;
- an extensible set of different formats for non-textual message bodies;
- multi-part message bodies;
- textual header information in character sets other than US-ASCII.

~~129. Related Documents:~~

~~RFC 2045: Multipurpose Internet Mail Extensions Part One: Format Of Internet Message Bodies
Freed & Borenstein, November 1996~~

~~This document specifies the various headers used to describe the structure of MIME messages.~~

~~RFC 2046: Multipurpose Internet Mail Extensions Part Two: Media Types, Freed & Borenstein,
November 1996~~

~~This document defines the general structure of the MIME media typing system and defines an initial set of media types.~~

~~RFC 2047: Multipurpose Internet Mail Extensions Part Three:~~

~~This document describes extensions to RFC 822 to allow non-US-ASCII text data in Internet mail header fields.~~

~~RFC 2048: This document specifies various IANA registration procedures for MIME-related facilities.~~

~~RFC 2049: The fifth and final document, RFC 2049, describes MIME conformance criteria as well as providing some illustrative examples of MIME message formats, acknowledgements, and the bibliography.~~

~~See <http://www.rfc-editor.org/>~~

DES (Data Encryption Standard)

~~130. The Data Encryption Standard specifies a cryptographic algorithm that converts plaintext to cipher text using a key, a process called encryption. The same algorithm is used with the same key to convert cipher text back to plaintext, a process called decryption. The DES consists of 16 "rounds" of operations that mix the data and key together in a prescribed manner using the fundamental operations of permutation and substitution. The goal is to completely scramble the data and key so that every bit of the cipher text depends on every bit of the data and every bit of the key (a 56-bit quantity for the DES). After sufficient "rounds" with a good algorithm, there should be no correlation between the cipher text and either the original data or key.~~

~~131. The DES uses 16 rounds for several reasons. First, a minimum of 12 rounds was needed to sufficiently scramble the key and data together; the others provided a margin of safety. Second, the operation of 16 rounds would return the key back to its original position in an electronic device for the next use when used in accordance with the published algorithm. Third, numerous "rounds" were needed to keep an analyst or adversary from working simultaneously forward and backward and "meeting in the middle" with a solution.~~

~~See <http://security.isu.edu/isl/des.html> for more information.~~

PKCS #7: Cryptographic Message Syntax Standard

132. This standard describes a general syntax for data that may have cryptography applied to it, such as digital signatures and digital envelopes.

133. See <http://www.rsasecurity.com/rsalabs/pkcs/pkcs-7/> for a detailed description of the standard.

11.8. Certificate procedure

General procedure

- 1) Apply for a certificate to certification authority.
- 2) Provide the public key in a DER format to Belgacom.
- 3) Provide your WDC e-mail address to Belgacom (via Intereconnect Manager)
- 4) Install the **Belgacom Certificate** on your system. This you will need to verify signatures and to encrypt files.
- 5) Install the in point 3 described software.
- 6) Integrate the process in your own ICT systems.
- 7) Perform tests (see below)

Software requirements

134. Following software will be delivered by Belgacom:

MMT API containing: jcrypto classes and Cipher classes (This API contains methods for the encryption, decryption, signing and verifying of signature).

135. A set of classes implementing the API and to be tailored to the specific needs:

DECRYPTFILE.JAVA	: DECRYPT SPECIFIED FILE
ENCRYPTFILE.JAVA	: ENCRYPT SPECIFIED FILE
SIGNFILE.JAVA	: SIGN SPECIFIED FILE
VERIFYFILE.JAVA	: VERIFY AND EXTRACT SIGNATURE ON SPECIFIED FILE
SENDMAIL.JAVA	: SEND SPECIFIED FILE AS ATTACHMENT USING JAVAMAIL.
READMAIL.JAVA	: EXTRACT THE ATTACHMENT FROM A MAIL AND SAVE IT TO A FILE (USES JAVAMAIL)

136. Some of the above described classes use JAVAMail functionality. The JAVAMail software and related classes must be retrieved from the WebPages of SUN Microsystems (license agreement)

Java Virtual Machine software version SUN JAVA 1.3
javamail.jar : JavaMail API Version 1.1.3
activation.jar : Java Activation Framework Version 1.0.1

These 2 should **only be installed if the SendFile and ReadMail classes are used**. If the files are included as attach in an ordinary mail system, they're not needed.

137. In case the ldap class from the MMT API is used, following software is also mandatory:

~~-ldap.jar : Java Naming and Directory Interface Version 1.2~~
~~-providerutil.jar : Java Naming and Directory Interface Version 1.2~~
~~-jndi.jar : Java Naming and Directory Interface Version 1.2~~

11.9.E Mail software

~~138. This document serves as a guideline to implement the electronic communication solution, using the software delivered by Belgacom. It explains installation and implementation concepts without going into detail on the technical level for the different IT platforms. It is not the purpose of this document to give you a plug-and-play solution, but it helps you in creating the minimal environment needed for the Secure Mail communication.~~

JDK Software

~~139. Download the correct JDK 1.3 software kit depending on the platform you will be working on (Solaris and PC can be found on the site of SUN (<http://www.java.sun.com/j2se/1.3/>), for other platforms see the web site of your vendor).~~

~~140. Install the JDK software according to the accompanied installation notes.~~

~~**Please remember to set your PATH (and CLASSPATH, but —classpath option is preferred in Java 1.3) variables after the installation.**~~

Javamail and Java Activation Framework (optional)

~~141. Download the JavaMail and Java Activation Framework software kit that can be Solaris and PC can be found on the site of SUN.~~

~~JavaMail V1.1.3:~~

~~http://www.java.sun.com/products/javamail/javamail_1_1_3.html~~

~~Activation Framework V1.0.1:~~

~~<http://java.sun.com/products> ==> select JavaBeans Activation Framework~~

~~and install the software according to the accompanied installation notes.~~

MTM API

~~142. Here 2 possibilities exist;~~

~~1. Using jar files:~~

~~- create a directory to store the jar files (preferably, but not necessary, a subdirectory of the JDK directory);~~

~~- unzip the MTM-API zip file into this directory.~~

~~• CypherDecrypt.jar~~

~~• CypherEncrypt.jar~~

~~• Jcrypto.jar~~

~~• Ldap.jar (only needed in certificate validation is performed)~~

- ◆SignatureSign.jar
- ◆SignatureVerify.jar

-add each jar (with the directory path) to the CLASSPATH.

2.Using classes files:

- create a directory (classes subdirectory) to store the classes (preferably, but not necessary, a subdirectory of the JDK directory).
- unzip the MTM API zip file into this directory.
- unzip each individual jar file (using the jar utility, Winzip or any other unzip utility following the PKWARE definition) into class files in the classes directory. The extract will automatically created all needed subdirectories
- delete the jar files.
- add the classes subdirectory to the CLASSPATH

143.Now you should have three subdirectories in your classes directory namely :

- be
- jcrypto
- Meta-inf.

144.During the unzipping the file 'manifest.mf' in the directory Meta-inf can be overwritten, since this includes only information on the jar files and therefore will not needed when storing the individual classes.

API Documentation

145.Create a subdirectory in the JDK/docs subdirectory and unzip the API doc zip file. The starting point is tree.html.

Set of classes implementing the API

146.Unzip the zip file with the extra classes file into the class's subdirectory (if option 1 in the previous step was chosen, the subdirectory must first be created and the directory must be added into the CLASSPATH variable).

Implementation

147.Dependent on the level of automation in your IT systems one of following options can be implemented.

- ◆The classes can be integrated into a shell or batch script implementing an error handling mechanism.
- ◆A user interface can be developed which calls the appropriate classes in the right order and can present file selection via File selection boxes.
- ◆Each individual step can be executed manually. See next chapter for n section.
- ◆...

148.Modify the classes if needed and compile them (javac <name of class>). The class files must be put on the class's directory.

149.The order of calling is following:

- The sending process:

- SignFile (see parameter list in the source file)
- EncryptFile (see parameter list in the source file)
- SendFile ~~or~~ include the resulting file as an attachment in your mailtool.

- The receiving process:

- ReadMail ~~or~~ save the attachment using a mailtool
- DecryptFile (see parameter list in the source file)
- VerifyFile (see parameter list in the source file)

150.Important note: The Readmail class expects a single mail file as input. The class is unable to extract individual mail from the mailbox. The easiest solution to this is auto forwarding your mails to individual files with unique names.

Execution

151.If the CLASSPATH variable is set correctly, execution of the different classes is performed with the following command : java classname (without .class extension) [input parameters list]

152.e.g. java SignFile <name and location of the plain text file to be signed> < name and location of private key> <name and location signed file> <name and location of password file>

153.in the other case provide the classpath option followed by the needed jars.

12.11. XML Back-up procedure

12.1.11.1. General

~~154.109.~~ The back-up plan should be seen as an a-normal operational mode, which will cause extra costs, resources and processes for order handling, both at Belgacom and Beneficiary side.

~~155.110.~~ In the interest of both parties, back-up operational mode will always be an exception and should be as short as possible. If unavoidable and in a spirit of good partnership:

- First focus of both parties will be to solve the problem and return as soon as possible to the normal operational mode (standard encrypted XML procedure). Both parties will closely co-operate together to achieve this goal. SPOCS will be assigned at Beneficiary and Belgacom side to this purpose and facilitate the communication during the back-up procedure.
- Both parties to continue service will do best effort. However volumes and lead times of the 'normal operational mode' can't be guaranteed.
- The back-up operations mode won't be subject to any cost recuperation by one party from another, but focus will be instead on 'make things work'.

~~156.111.~~ In case there is no XML-procedure in place or if this procedure is neither sufficient nor effective for a particular process (e.g. migrations) all orders can be given by fax, letter, e-mail

12.2.11.2. Back-up procedure

~~157.112.~~ The back-up procedure consist out of different steps:

Phase 1: Assignment of Beneficiary and Belgacom SPOCs for back-up procedure

~~158.113.~~ Together with the signing of a contract, parties will exchange the names and co-ordinates of their SPOC for this back-up procedure.

Phase 2: Fault detection

~~159.114.~~ A 'general system error' is detected in the normal operational mode by at least one of the parties.

~~160.115.~~ This can be:

- At the level of the XML transfer:
One of the parties is unable to create/send/receive/decrypt/... XML files
- At the level of the message transfer:
One of the parties doesn't receive Ack/Nack messages, which leads to the suspicion that the other party receives none of his messages.

~~161.116.~~ An Ack/Nack message should be received within 4 hours after sending of a message to the other party. However accidentally an Ack/Nack message may be lost, e.g. on the Internet or in the IT-systems of the receiving party. Care should therefore be taken to jump to the

conclusion the Message Transfer System is not working properly because of a 'general system error', based on the loss of only one or a limited number of Ack/Nack message.

~~462~~117. General remark: Problems, which don't assume a general system error, will always be solved on a case-by-case basis, without triggering a back-up procedure. An example of such problem, which doesn't assume a general system error, may e.g. be the sporadic loss of Ack/Nack messages by one Beneficiary, while the system is working properly for all other Beneficiaries.

~~463~~118. The SPOCs will commonly assess the nature of the problem (general system error or not). In either case, the communication channel between the assigned SPOCs will also be used to solve 'non general system' kind of problems on a case-by-case.

Phase 3: problem solving

~~4~~119. The SPOCs will get in contact in order to inform each other of the problem. They will assess the impact of the problem and set up an action plan to solve it. In this phase they will try to get a solution without proceeding to the a-normal back-up operational mode. They will agree on a timing, within which the fault should be resolved and normal operational mode can be resumed. Standard this timing will be 4 hours to give the (IT) teams the chance to solve the problem. Another timing may be convened between the SPOCs, depending on the nature of the fault and the impact.

~~5~~120. During trouble resolution both SPOCs will closely stay in contact with each other to follow up progress of solution.

~~6~~121. If the fault is resolved within the agreed timing, normal operational mode will be resumed after the needed testing (see phase 6).

~~7~~122. If the fault is not solved within the agreed timing, SPOCs will get in contact in order to start up the next phase (see phase 4) or will agree to stay in phase 3 for an additional timing.

Phase 4: message exchange by e-mail with non-encrypted order in XML format

~~8~~123. After expiration of the agreed time during phase 3 without trouble resolution, SPOCs will get in contact to start up phase 4, i.e.:

~~9~~124. Start-up the a-normal 'back-up' operational mode for message exchange, based on e-mail with non-encrypted order in XML format.

~~10~~125. SPOCs will agree previously on:

- The nature of the e-mail exchange: bi-directional or uni-directional. Although bi-directional will be the most commonly mode, uni-directional e-mail exchange may be a pragmatic (temporarily) solution.
- e-mail addresses to be used to exchange message
- The number of messages (per day) that will be transmitted in this mode. This operational mode will limit the volumes, capable to be treated by the existing resources. To assure a minimum service and smooth return to normal mode (with minimal 'manual' orders left) this is an essential part of the procedure.

~~11~~126. SPOCs will closely stay in contact during this phase in order to follow up operational performance, action plan and trouble solving.

~~12~~127. As soon the problem is solved, normal operational mode will be resumed after the needed testing (see phase 6).

Phase 5: message exchange by fax in XML format

~~13-128.~~ This phase is to be avoided as much as possible, as it will demand re-typing of all data (with the need of extra resources, fully manual processes and the generation of data quality issues). It will only be accepted in case the e-mail procedure does not work (e.g. public Internet network down) and return to phase 2 will be done as soon as possible.

~~14-129.~~ This phase will therefore be exceptional and previous agreement between SPOCs is needed. The fax, exchanged between the parties, will be the non-encrypted XML, that otherwise would be sent by e-mail.

~~15-130.~~ The Fax numbers will be communicated between parties when applicable.

Phase 6: test and resume normal operation

~~16-131.~~ As soon as the problem is solved some test will be done, i.e.:

- When the problem is solved, the concerned party will firstly test his systems. E.g. If the fault was at Belgacom side, Belgacom will perform an end-to-end test with test messages of a dummy Beneficiary (or the real Beneficiary if agreed upon).
- A first message will be processed between the two parties and proper transfer will be checked.
After confirmation by both parties everything is up and running properly again, no e-mail or fax messages will be accepted and return to the standard encrypted XML procedure will be done at once.

12-3.11.3. Important note:

~~17-132.~~ As the Beneficiary may not yet have his XML system in place immediately at the start of the contract, Belgacom can accept to start the service based on the back-up transfer system of phase 4 (e-mail with non encrypted order in XML format). This starting phase is however limited in time (max. 1 month) and volume (max. 1 order/day), unless otherwise agreed upon between parties. Intention will always be to go as soon as possible to the normal operational mode, i.e. the standard encrypted XML procedure.

Annex 5

BROBA II ADSL & BROBA II SDSL VP & VC Switching ~~2008~~

**BASIC SERVICE LEVEL
AGREEMENT**

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1. Object

1. The present document defines the Terms and Conditions upon which Belgacom will deliver installation and maintenance of basic services for the Broba II ADSL & SDSL VP & VC switching. For all operational aspects, reference is made to the Annex 4 - Planning and Operations for Broba II ADSL & SDSL.
2. The terms and conditions of ~~this the~~ [SLA on Slot Availability](#) are applicable within the limits of the forecasted volumes [submitted by Belgacom to provided by the Beneficiary and confirmed/corrected by the latter](#) in line with the forecasting mechanism and deviations described in the Annex 4 (Planning and Operations).
3. All conditions of the ~~“Colo to Colo and Colo to PoP Backhaul Leased LinesBROTSOLL” in its last version~~ are applicable to the access lines as mentioned in this document.

2. Scope

4. The scope of this document is to set a framework for operational collaboration between Belgacom and Beneficiary that ensures the respect of the fixed deadlines and an acceptable quality of the provided services.
5. The intention is to minimize the risk of shortcomings and so motivate all parties to respect the thresholds set in this SLA and to provide an incentive to enhance the performance of both parties.
6. Both parties agree that the objective of this document is to optimize operational collaboration and all efforts should be taken to avoid compensations or penalty fees.
7. [Given the introduction of new SLA measurements and values for provisioning, combined with the introduction of a new ordering system called “Open Calendar”, the working of this Service Level Agreement is subject to a learning curve, i.e. The current values included for provisioning are target values that are will to be evaluated and possibly reviewed after a transition period. This transition period is to be determined in function of the order inflow via the new Open Calendar system. The SLA and its associated compensations \(when relevant\) will only enter into force after the mentioned transition period has passed, on a regular basis and excessive peaks in ordering, i.e. very concentrated ordering in a very short period of time, must be analyzed when happening.](#)
8. [A detailed explanation on the exact calculation of all SLA measurements mentioned in this document is available on the Belgacom Wholesale website – Regulatory offers.](#)
- 8-9. This document is an evolving document that may be adapted and revised regularly.

3. Prerequisites

- 8-10. Both parties agree to respect the content of this document and to offer services as described in this document.
11. When specific follow up or support needs to be performed, both parties are obliged to provide a SPOC with its respective name, telephone number or e-mail. [An escalation procedure is foreseen and details are described in the escalation procedure document published on the Belgacom Wholesale website – Regulatory information. The version on the web site is to be considered as the most up-to-date version of the procedure and any modification in the escalation procedure will be](#)

notified to the BROBA Beneficiaries and the BIPT and will be subject to the approval of the BIPT. Escalation is only relevant after the defined timer has been passed.

~~10.12.~~ Timers in this document expressed in days are always working days unless specified otherwise. For a timer of x days, the action must be completed before end of working day x after reception of the order or other Beneficiary message, unless specified otherwise. Timers expressed in months consist of 21 working days. They are applicable as Belgacom receives order requests on a normal distributed basis, meaning that in specific circumstances that cannot be qualified as reasonably normal the timers are not applicable. Under the present document, a working day for order purposes is considered as being from 8h00 to 16h30 excluding Saturday, Sunday, Belgian and Belgacom holidays. Belgacom holidays are 2 January and 26 December.

~~11.13.~~ In case of massive orders, provisioning will be done on project-basis. In that case, planning can be negotiated between Beneficiary and Belgacom. Beneficiary must immediately inform Belgacom when communicated volume is exceeded. In that case, although SLA will not apply, Belgacom will manage, as far as possible, this increase of orders according to its best suitability.

~~12.14.~~ In order to ensure reasonable operational work load, the Beneficiary should see to a reasonable spread of his orders during the month. For the execution of the present Contract, the maximum daily volume intake for the concerned month is defined as 10% of the volumes projected in the forecast for this month (such maximum daily volume does not allow the Beneficiary to exceed the total forecasted volume for the concerned month). The orders exceeding on a daily basis the maximum daily volume intake are exempted from the SLA conditions. Belgacom will execute these orders on a best effort basis.

~~13.15.~~ Timer violations outside the working hours are not logged as such and shall not be used to claim service shortage.

~~14.16.~~ The Service Level Agreement is not valid in situations of "Force Majeure" as defined in the "General Terms of Conditions".

~~15.17.~~ Timers that are delayed due to Beneficiary are not valid within this Basic Service Level Agreement.

4. Timers

~~16~~18. This paragraph includes the most relevant timers in the operational processes framework. The purpose is that these timers will be reviewed periodically based on experience.

~~17~~19. The timers included below are binding and a revision of these last is possible after BIPT approval.

4.1. Provisioning

4.1.1. Provisioning of End User Line

~~18~~20. The provisioning of End User Line is the activation of the ADSL/~~SDSL~~ on the line of an individual End-User. Note that for the voice telephony of Belgacom, it is the End-User that receives a Basic Service for the provision of a normal connection to the public telephone network as well as maintenance work.

21. In scope of provisioning, 5 indicators to measure the Belgacom performance are identified:

- Validation xml Timer
- Done xml Timer
- Slot Availability
- Appointment Kept
- Due Date Respected

22. Vocabulary

- a. Order : assembly of all workorders needed to deliver an ordered product.
- b. Work order : one of the different actions assigned to a technician to perform the delivery of an ordered product.
- c. Ordered product : the line ordered by the Beneficiary

4.1.1.1. Validation xml Timer

~~19~~23. As soon as an order to activate the Broba II ADSL & SDSL VP & VC Switching for an individual End-User is submitted to Belgacom through the secured electronic e-mail system (XML)), via the Open Calendar ordering interface or as back up procedure via non-secured electronic system and fax as described in the Annex 4 - Planning & Operations, the order will be processed for validation. The validation ~~confirmation-xml~~ timer will start on the receipt of the order. This receipt is the automated acknowledge message that is sent to the Beneficiary. Messages that are incorrect, due to the reasons as described in the Annex 4 - Planning and Operations will be returned with a Not Acknowledged message. In this case, Beneficiary needs to resend the order with the corrections.

~~20~~24. The validation or rejection process consists of an administrative and technical validation. The validation will be sent as soon as all validations have passed successfully. In case of not acceptance of the order, the reasons will be communicated with the respective message.

~~21~~25. Based on the current experience on similar data products, the validation timer is set at 5 working days for 99% of the orders.

26. Monthly computation is as follows:

Number of orders for which the Validate (or reject) XML is sent within timer

% XML Validate = -----

==

Total Number of orders

4.1.1.2. ~~Implementation~~ Done xml Timer

27. As soon as the implementation is done, Belgacom will notify the Beneficiary of the completion of the order. This confirmation is done by sending a message through the electronic e-mail system or by fax as a back-up procedure. This timer includes the number of days the requested Ready for Service Date was passed.

~~21. The Implementation done timer is set at:~~

	Timer
Implementation done timer (to be respected by Belgacom)	1 working day

~~22. If a technical problem impedes the RFS, the Beneficiary and Belgacom need to agree on a possible approach: either continue the trouble-shooting or work out an intermediate solution. In case of an intermediate solution, this needs to be evaluated on a case by case basis and is not automatically possible.~~

28. The Done xml timer is set at 1 working day for 98% of the orders.

29. Monthly computation is as follows:

$$\% \text{ XML Done} = \frac{\text{Number of orders for which the Done (reject) XML is sent within timer}}{\text{Total Number orders}}$$

4.1.1.3. ~~Total Provisioning Timer~~ Slot Availability

30. Slot availability is a globalized measure, applicable to the entire market as a whole, aligned with the globalized system of Forecasting (see Annex 4 – Planning & Operations)

~~23. The total provisioning timer is the time frame to be respected for booking in working days taken as from the order date of the Beneficiary to the date of the Done Message. The Total provisioning Timer includes the validation of an order, the implementation and the Done notification. The total provisioning timer consists of a timer range wherein the Beneficiary can determine its Ready for Service date. Beneficiary provides the implementation day (also referred to as CRD Customer Requested Date, Due Date or Ready for Service Date) taken into account the minimum and maximum total provisioning timer. The minimum provisioning timer is indicated below. The maximum provisioning timer is set at 42 calendar days (corresponding to the maximum CRD Customer Requested Date).~~

~~25. 31. The timers are valid in case all needed infrastructure is in place (Access Line and Virtual Paths or Circuits). If it is not the case, timers of VP/VCs provisioning as defined in section 29 have to be added to this timer. If a SNA is required, then it will be planned between Belgacom and Beneficiary within 20 working days as from its detection. These cases fall out of the application of SLAs.~~

4.1.1.3.1. For ordered products introduced via the Open Calendar interface

32. This indicator will not apply for all lines installed by a certified technician.

33. Slot availability will be measured for ordered products not exceeding and ordered products exceeding the volume forecast. Only the ordered products within the forecasted volumes are subject to SLA.

34. For each work order of an ordered product, the first timeslot proposed must be within the following timer.

Ordered Product	timer(working days)
With customer visit	15
Without customer visit	10

35. Monthly computation is as follows:

Number of confirmed ordered products for which the first timeslot proposed is within timer (or at latest on SRD if SRD>timer) for all work orders

$$\% \text{ Slot availability} = \frac{\text{Number of confirmed ordered products for which the first timeslot proposed is within timer (or at latest on SRD if SRD>timer) for all work orders}}{\text{Total Number of confirmed ordered products}}$$

The monthly target percentage is set at 95%.

4.1.1.3.2. For ordered products introduced directly with an xml

36. Slot availability will be measured for ordered products not exceeding and ordered products exceeding the volume forecast. Only the ordered products within the forecasted volumes are subject to SLA.

37. For each ordered product, the appointment date proposed must be within the following timer.

<u>Ordered Product</u>	<u>timer(working days)</u>
<u>With customer visit</u>	<u>15</u>
<u>Without customer visit</u>	<u>10</u>

If a due date outside the above-mentioned timer is requested, the proposed appointment date must be at the latest on the requested SRD date.

38. Monthly computation is as follows:

Number of confirmed orders which received an appointment date within timer (or at latest on SRD if SRD>timer)

$$\% \text{ Slot availability} = \frac{\text{Number of confirmed orders which received an appointment date within timer (or at latest on SRD if SRD>timer)}}{\text{Total Number of confirmed ordered products}}$$

The monthly target percentage is set at 95%.

Total provisioning timers to be respected by Belgacom:

	<u>March 1, 2008</u>	<u>June 1, 2008</u>	<u>Sept 1, 2008</u>
<u>BROBA II with voice</u>	<u>10wd 95% incl "done"</u>	<u>9wd 95% incl "done"</u>	<u>8wd 95% incl "done"</u>
<u>BROBA II with voice with Telecom installation</u>	<u>14wd 95% incl "done"</u>	<u>12wd 95% incl "done"</u>	<u>10wd 95% incl "done"</u>
<u>BROBA II without voice</u>	<u>14wd 95% incl "done"</u>	<u>12wd 95% incl "done"</u>	<u>10wd 95% incl "done"</u>

	<u>March 1, 2008</u>	<u>June 1, 2008</u>	<u>Sept 1, 2008</u>
<u>BROBA II with voice</u>	<u>20wd 99% incl "done"</u>	<u>19wd 99% incl "done"</u>	<u>18wd 99% incl "done"</u>
<u>BROBA II with voice</u>	<u>24wd 99% incl "done"</u>	<u>22wd 99% incl "done"</u>	<u>20wd 99% incl "done"</u>

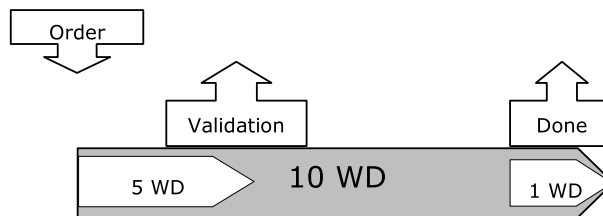
with Telecom installation			
BROBA II without voice	24wd 99% incl "done"	22wd 99% incl "done"	20wd 99% incl "done"

25. 4 months after the start of the new NTP process, the above mentioned provisioning timers will be transformed into "With or Without customer visit" timers instead of "With or Without voice" timers, according to the following rules:

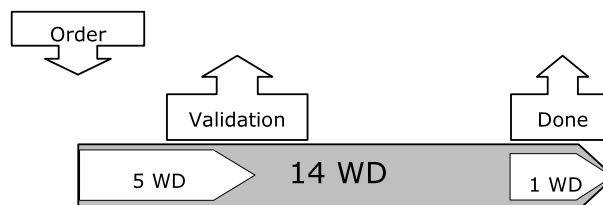
- With customer visit timers : above mentioned "Without voice" timers or "With voice with Telecom installation" timers
- Without customer visit timers : above mentioned "With voice" timers

26. The total provisioning timer will be the basis for the calculation of compensations. Compensations for the 95% timer are only due within the limits of the forecasted volumes that have been submitted according to the rules described in Annex 4 Planning & Operations of the present offer and for which the deviation rules are respected.

E.g.: timers for BROBA II with voice without SNA, as from March 1, 2008 (see above for other timers applicable as from June 1st and September 1st)



E.g.: timers for BROBA II without voice without SNA, as from March 1, 2008 (see above for other timers applicable as from June 1st and September 1st)



4.1.1.4. Appointment Kept

39. This indicator will not apply for all lines installed by a certified technician.

40. Appointment Kept is measured per Beneficiary. It measures the number of orders with Customer Visit that have respected all their Customer Visit appointments. If one Customer Visit appointment has not been respected, the full order is considered out of SLA.

41. Monthly computation is as follows:

$$\% \text{ Appointment kept} = \frac{\text{Number of orders for which all Customer Visit appointments are kept}}{\text{Number of orders having at least one Customer Visit}}$$

42. The monthly target percentage is set at 90 %.

43. Belgacom reserves the right to adapt this target value at the level of the performance reached by its own retail broadband services

4.1.1.5. Due Date Respected

44. This indicator will not apply for all lines installed by a certified technician.

45. Due Date Respected is measured per Beneficiary. It measures the number of orders for which the last Due Date was respected by Belgacom.

46. An order has respected the Due Date if the closure date (xml actual completion date) is on the same day as the last Due Date communicated to the Beneficiary for this order.

47. Monthly computation is as follows:

$$\% \text{ Due date respected} = \frac{\text{Number of orders for which the last due date was respected}}{\text{Total Number of orders}}$$

48. The monthly target percentage is set at 90 %.

49. Belgacom reserves the right to adapt this target value at the level of the performance reached by its own retail broadband services

4.1.2. Provisioning of Virtual Paths or Circuits (VP/VCs)

48.50. The provisioning of VP/VCs covers the set-up and configuration of VP/VCs and the modification of the existing VP/VCs parameters.

4.1.2.1. Set-up and configuration of VP/VC Timer

49.51. The set-up and configuration of VP/VC timer is related to the creation of a new VP/VC between a DSLAM and the Beneficiary. The set-up and configuration of VP/VC timer will start on the receipt of the order, submitted to Belgacom through the secured electronic e-mail system that is automatically sent by Belgacom to the Beneficiary if this automatic receipt sending is activated, if this is not so, the date of sending by Beneficiary prevails (XML) or as backup procedure via non-secured electronic system and fax as described in the Annex 4. This receipt is the automated acknowledge message that is sent to the Beneficiary. Messages that are incorrect, due to the reasons as described in the Annex 4 - Planning and Operations will be returned with a Not Acknowledged message. In this case, Beneficiary needs to resend the order with the corrections. The set-up and configuration of VP/VC timer is set at:

	Timer
Set-up & configuration timer (to be respected by Belgacom)	10 working days

4.1.2.2. Modification of VP/VC parameters Timer

~~30:52.~~ The modification of a VP/VC parameters timer is related to the modification of the parameters of an existing VP/VC between a DSLAM and the Beneficiary. The process consists of an administrative treatment and a technical treatment of the order and requires a synchronization with the Beneficiary.

~~31:53.~~ The modification of a VP/VC parameters timer will start on the receipt of the order. This receipt is the confirmation by e-mail system that is sent automatically by Belgacom to the Beneficiary if this automatic receipt sending is activated, if this is not so, the date of sending by Beneficiary prevails or the fax transmission date (if fax was used as back-up procedure). The modification of a VP/VC parameters timer is set at:

	Timer
Modification of VP/VCs parameters timer (to be respected by Belgacom)	3 working days

4.1.3. Provisioning of Access Line

~~32:54.~~ The provisioning of access line timers follows the timers describe into the paragraph 14 "Service Level Guarantee" in the "Annex B 1: Colo to Colo and Colo to PoP Backhaul Leased Lines : Product Description".

4.2. Repair

4.2.1. Repair Time on the End User line timer

~~33:55.~~ The repair time on the End User line timer starts when Belgacom receives a Trouble mention based on the issue description communicated by the Beneficiary and ends at the closure of this Trouble Ticket after the feedback has been given by Belgacom to the Beneficiary. If an appointment is needed at the End-User address and the problem resides at the high bandwidth part, it is the Beneficiary that arranges an appointment at the End-User premises.

~~34:56.~~ This timer is not subject to this Service Level Agreement in the following cases:

- An appointment (if absolutely needed) is not accepted at the proposed date¹, in case of absence of the End-User at appointment date, in any case of incomplete² or incorrect information to be provided by the Beneficiary with relevance for the repair process.
- Limitation/degradation of service due to spectrum management if Belgacom applied the correct rules.

~~All cases covered by §35 hereafter.~~

	Timer
Repair timer End User line (to be respected by Belgacom)	Day of trouble ticket opening + 1 (before end of the following second working day)

¹ The intervention on the End User line timer is not applicable in case appointment is scheduled with client on day later than d+1 or d+2. In this case, the timers will be applicable as from that date.

² Belgacom refers to Annex 5A "Improved SLA", section 6 , for the complete set of information

~~34.~~ For a newly installed BROBA ADSL ~~without voice~~ without ~~voice line~~ customer visit installed by Belgacom, when the provisioning process - described in the Appendix B: "NTP process for Provide New BROBA II without voice products" of the BROBA ADSL Main Body – allowed to determine that the installation of a NTP by a Belgacom technician was not necessary, in case the trouble covered by the Trouble Ticket was due to the absence of the Network Termination Point, the repair timer will be equal to the difference between the [slot availability timers for orders](#) with and ~~the without voice provisioning timers~~ customer visit as defined in the section ~~4.1.1.34.1.1.3~~ "Slot Availability~~Total Provisioning Timer~~" of this document.

57. For a newly installed BROBA ADSL without voice installed by certified technician, in case the trouble covered by the Trouble Ticket was due to an incorrect installation performed by the certified technician, the repair timer will be equal to the slot availability timer relevant to the needed installation method (with or without customer visit) as defined in the section 4.1.1.3 "Slot Availability" of this document.

~~36:58.~~ If an appointment is needed at the end-user address, the repair timers will only apply if the Beneficiary specifies in the Trouble Ticket its end-user availability.

59. Note that the "Trouble Ticket Resolution Timer" is not applicable in case appointment is scheduled with client on day later than d+1 or d+2. In this case, the timers will be applicable as from that date.

4.2.2. Repair Time on the ATM Transport Timer

~~37:60.~~ The repair time window for ATM transport is done by trouble ticket handling during working days.

~~38:61.~~ The repair time on the ATM Transport timer starts when Belgacom receives a Trouble mention based on the issue description communicated by the Beneficiary and ends at the closure of this Trouble Ticket after the feedback has been given by Belgacom to the Beneficiary.

	Timer
Repair time Timer ATM Transport (at LEX level) (to be respected by Belgacom)	Day of trouble ticket opening + 1 (before end of the following second working day)
	Timer
Repair time Timer ATM Transport (at ATM Access Point level) (to be respected by Belgacom)	4 working hours after trouble ticket opening

4.2.3. Repair Time on the Access Line Timer

~~39:62.~~ The repair of access line timers follows the timers describe into the paragraph 14 "Service Level Guarantee" in the "Annex B 1: Colo to Colo and Colo to PoP Backhaul Leased Lines: Product Description".

5. Wrongful Repair Requests

~~40.63.~~ Belgacom will charge the Beneficiary with the fee related to SLA Wrongful Repair Requests (see Annex 6 – Pricing and Billing) if the fault is not attributable to Belgacom or if the fault results from the abnormal use of the line or any other Beneficiary - or end user of the Beneficiary - fault.

~~41.64.~~ In case during the repair process, Belgacom performed useless actions further to Beneficiary's request, i.e. in case of absence of end-user at the appointment, incorrect information provided, Belgacom will charge the Beneficiary with the costs of those actions.

6. Terms and Conditions for Compensations

6.1. General

~~42:65.~~ Compensations are applicable in the cases that Belgacom has not respected its commitment within the delay or on the date agreed with the Beneficiary, excluding the cases in which the Beneficiary is responsible for the delay or in the case of force majeure.

~~43:66.~~ This SLA guarantees 100 % of timers. However all troubles can not be solved within these timeframes.

- For repair, the percentage of non wrongful repair tickets for which a Beneficiary may request compensations for a specific month varies in function of the percentage of wrongful repair of the same Beneficiary and of the same month, according to the following table :

% wrongful repair	% repair for which compensations are applicable
$X \leq 10\%$	99%
$10\% < x \leq 20\%$	95%
$X > 20\%$	90%

- For provisioning, compensations will never be applicable to the 1% of the orders representing the worst cases.

These percentages of cases are identified on basis of the cases over one calendar month.

67. Compensations will be settled through a Beneficiary's invoice without VAT.

~~44. The provisioning orders as well as the repair ticket having received an "HOLD" notification for reasons which are independent of Belgacom, compensations are not applicable for example when an End User is absent.~~

~~45:68.~~ Compensations are only applicable if the volumes per month are below the defined limits in the forecasting process as describe in the Annex 4 – Planning and Operations.

~~46:69.~~ In case of timer escalations, the consequences as described further in this paragraph shall be applicable to Belgacom taking into account the concerned item (end-user line, ATM Transport and Access Line). Compensations are calculated per timer without cascade effect, meaning that if a timer has been exceeded, compensations will only be due for this single timer (e.g. If a problem occurs on the access line, compensation will be paid only for the access line and not for the ATM Transport and for not for the End Users).

70. The Beneficiary needs to provide Belgacom with the necessary information in case of a delayed repair or any shortage of Belgacom that give cause for the compensations described in this Service Level Agreement. Belgacom will upon receipt verify this information. When this verification appears that the information of the Beneficiary shows a shortcoming of Belgacom that gives cause for paying compensation, this payment will be done immediately and automatically.

71. The Beneficiary will submit a detailed request for compensation to Belgacom including for every repair requested at least date and hour notified/resolved, circuit id, problem on line and product type. The validity of each request for compensation will be examined by Belgacom and motivated in case of rejection for one or more repair records of this compensation request.

~~47:72.~~ Quarterly quality meetings will be organized between Belgacom and the Beneficiary in order to compare the amounts of compensation that have been assessed by both parties.

6.2. Provisioning ~~Timer~~ Escalations

6.2.1. Compensations Appointment Kept

6.2.1. Provisioning End User line Timer Escalations

~~48. Provisioning was not completed on the agreed Due Date. Except in the event of other deadlines being agreed with the Beneficiary, Belgacom undertakes to take all steps to establish a new connection. If this deadline cannot be respected, Belgacom undertakes to inform the Beneficiary of the reasons for the delay and also to communicate the new deadline for meeting his request.~~

~~49:73. In cases that Belgacom has not respected its the committed percentage as indicated in the definition of the SLA, ment within the delay or on the date agreed with the Beneficiary, the Beneficiary will be entitled to a compensation per end user line and per calendar day, Appointment not kept in the relating month, according to the rules presented in the following table.~~

Compensation due by Belgacom per Appointment not kept = 20€

Type of provisioning timer	Compensation
95% timer	~~10 € per calendar day (until the 10 working day timer has been reached)~~
99% timer	~~5 € per calendar day (above the 10 working day timer)~~

6.2.2. Compensations Due Date Respected

~~74. In cases that Belgacom has not respected the committed percentage as indicated in the definition of the SLA, the Beneficiary will be entitled to a compensation per Due Date not respected in the relating month.~~

Compensation due by Belgacom per Due Date not Respected = 5€

6.2.2.6.2.3. Provisioning VP/VCs Timer Escalations

~~50:75. The provisioning of VP/VCs timer escalation includes the provisioning of new VP/VCs and the modification of existing VP/VCs when the provisioning of a new VP/VC or the modification of an existing VP/VC was not completed on the agreed date. Except in the event of other deadlines being agreed with the Beneficiary, Belgacom undertakes to take all steps to set-up or to modify the VP/VC. If this deadline cannot be respected, Belgacom undertakes to inform the Beneficiary of the reasons for the delay and also to communicate the new deadline for meeting his request.~~

~~51:76. The Beneficiary will be entitled to a compensation that corresponds to the values per VP/VC presented in the following table.~~

	Compensation
Provisioning of VP/VCs Timer Escalation	€ 10 per VP/VC per calendar day delayed

(to be respected by Belgacom)	

6.2.3.6.2.4. Provisioning Access Line Timer Escalations

52:77. The Beneficiary will be entitled to the same compensation as describe into the paragraph 14 "Service Level Guarantee" in the "Annex B 1: Colo to Colo and Colo to PoP Backhaul Leased Lines : Product Description".

6.3. Repair Timer Escalations

6.3.1. Repair End User line Timer Escalations

53:78. Interruptions of service which last more than the timers defined in Section 4.2.1 "Repair Timer on the End-User line", §34 & 35, and are the fault of Belgacom shall entitle the Beneficiary to a reimbursement of the rental fee corresponding to the duration of the interruption, provided he cannot claim compensation due to a case of "force majeure" where Belgacom is unable to establish the connection or repair the breakdown within the agreed timeframe. In these cases, Belgacom shall notify the Beneficiary of the timeframe in which his request will probably be carried out. The timeframe taken into consideration for calculating the reimbursement amount goes from the day that the interruption is reported up to and including the day that service is restored.

54:79. The Beneficiary will be entitled to a compensation that corresponds to a percentage of the daily recurring fee per end-user line.

	Compensation
Repair Timer Escalations (to be respected by Belgacom)	150 % of daily rental fee per calendar day

6.3.2. Repair ATM Transport Timer Escalations

55:80. Interruptions of service where Belgacom did not intervene within the timeframes as defined in section 4.2.24.2.2 and are not the fault of the Beneficiary shall entitle the Beneficiary to a reimbursement that corresponds to the value presented in the following table, provided he cannot claim compensation due to a case of force majeure where Belgacom is unable to act within the agreed timeframe. In these cases, Belgacom shall notify the Beneficiary of the timeframe in which his request will probably be carried out.

	Compensation
Repair time Timer Escalations ATM Transport (to be respected by Belgacom)	€100 per calendar day delayed

6.3.3. Repair Access Line Timer Escalations

56:81. The Beneficiary will be entitled to the same compensation as describe into the paragraph 14 "Service Level Guarantee" in the "Annex B 1: Colo to Colo and Colo to PoP Backhaul Leased Lines: Product Description".

7. ESCALATION PROCEDURE

82. By default Internal Escalations are performed automatically. The target of departments is to limit the number of external escalations by launching pro-actively internal escalations as soon as timers are exceeded.
83. For repair, escalation is possible when a trouble ticket has been created.
84. External Escalation is done to level 1 after the defined timer has been passed. Further escalation can be requested to level 2 at day of first external escalation submitted +1 day. Escalation to level 3 can be requested at day of first external escalation submitted + 2 days.
85. Immediately External Escalation to Level 2 and Level 3 is accepted from persons at the same level in the Beneficiaries Organization in case the Level 1 escalation is done before and the level 1 escalation shows structural problems or unavailability. Level 2 and 3 will first check whether lower escalation steps have been taken, before proceeding.
86. The escalation matrix is available on the Belgacom Wholesale website.

Annex 5 A

BROBA II ADSL & BROBA II SDSL VP & VC Switching ~~2008~~

IMPROVED SERVICE LEVEL AGREEMENT

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1. Object

1. The present document defines the Terms and Conditions upon which Belgacom will deliver repair services in the framework of Broba II ADSL & SDSL VP & VC Switching. The elements included in this document replace those in the basic service level agreement, unless otherwise stated.

2. Scope

2. The scope of this document is to set a framework for operational collaboration between Belgacom and Beneficiary that ensures the respect of the fixed deadlines and an acceptable quality of the provided services.
3. The intention is to minimize the risk of shortcomings and so motivate all parties to respect the thresholds set in this SLA and to provide an incentive to enhance the performance of both parties.
4. Both parties agree that the objective of this document is to optimize operational collaboration and all efforts should be taken to avoid compensations or penalty fees.
5. The working of this Service Level Agreement is subject to a learning curve, i.e. the current values included are target values that are to be evaluated on a regular basis and excessive peaks in ordering, i.e. very concentrated ordering in a very short period of time, must be analyzed when happening.

3. Prerequisites

6. This Improved Service Level Agreement is signed between two parties being Belgacom and Beneficiary concerned.
7. Belgacom will provide a SPOC with its respective name, telephone number or e-mail for the purpose of follow up or support. An escalation procedure is foreseen as described in the escalation procedure document. Escalation is only relevant after defined timer has been passed.
8. The document reflects only the service indicated. Any future interference due to synchronization with any other product is out of scope.
9. The Improved Service Level Agreement is not valid in situations of "Force Majeure" as defined in the "General Terms and Conditions".
10. In case of incomplete information in ticket creation (see point 66) by Beneficiary, the ticket concerned will not be taken into account for the timers respect and compensations as further specified in this document.
11. Only service interruptions are covered by the current service. Degraded service (if any Bitstream activity is detected – see point 88) is not covered by the present ISLA.
12. If an appointment is needed at end user address, access is authorized without negotiation. It is the responsibility of the Beneficiary to inform its end user about it. This timer is not subject to the ISLA in case an appointment is not accepted by the Beneficiary or its end user at the proposed date and/or hour, in case of absence of the end user at the appointment date and time, and in any case of incomplete or incorrect information provided by the Beneficiary with relevance for the repair process.

4. Conditions

13. The services offered in virtue of this Improved SLA are to be described as follows:
 - Single helpdesk for all access lines & backbone & end-user lines issues
 - Improved timers for repair
 - Improved availability level
 - Higher compensations in case of default (compared to Basic SLA)
14. Belgacom is committed to achieve for the Broba II services the best possible quality standards; as such the timers indicated in this document are maximum time intervals.
15. Belgacom confirms that it is applying normal network monitoring tasks and as such may already correct any fault detected without waiting for the Beneficiary to detect a fault. On lines without voice, Belgacom has no view on the end-user lines: this is where Belgacom's obligation for "normal network tasks" ends.
16. This Improved SLA is valid if for every trouble ticket the following conditions are applicable:
 - Delivery of forecasts on a range of active lines subject to ISLA is desirable but not mandatory. This delivery of forecasts will never prevent the putting into effect of the signed Broba II ADSL & SDSL VP & VC Switching ISLA. In any case, at the latest at the signing of the Broba II ADSL & SDSL VP & VC Switching ISLA, the Beneficiary will provide Belgacom with a list of lines to start the ISLA. In case the Beneficiary gives forecasts for new lines (or change SLA type), the forecasting method must be agreed upon by Beneficiary and Belgacom. In case no forecast is given by the Beneficiary for new lines (or change SLA type), the maximum increase per month of the number of active lines in the ISLA is fixed by BIPT at 30% per month, calculated on the number of active lines in the ISLA in the preceding month.
 - The Beneficiary reports by e-trouble ticketing, phone (0800/93122), fax (02/540.46.69) or e-mail (broba.repair@belgacom.be).
 - Overall authorization from the Beneficiary to access User premises without negotiation if needed for repair. A prior notification is to be given for any particular case. The overall authorization is considered to be not applicable if there is no prior notification. This is needed to give the Beneficiary the opportunity to inform the user prior to the access by Belgacom. Belgacom has to be informed when the end-user will be available on site.
 - Test and repair are actions authorized without negotiation or warning.
 - The repair timer will start after the validation of the information provided described in the diagnoses below in the trouble ticket.

5. Terminology

17. Trouble Ticket: The file created in Belgacom's computer system by a front-end helpdesk officer or an e-tool when a Beneficiary reports a problem. This file contains the information already available in the computer systems, the information provided by the Beneficiary and the information added by technicians during the repair process.
18. Trouble Intake: The creation of the Trouble Ticket in the computer systems for the repair of Belgacom services.
19. Gross Repair Time: Time needed to restore the service to the Beneficiary. This runs from the Trouble Intake to the close of the Trouble Ticket - i.e., the time when the service is re-established and after feedback has been given by Belgacom to the beneficiary and after the beneficiary has agreed with the closure of the ticket.
20. Stop-Clock Time: Time during which the timer is stopped not attributable to Belgacom or one of its subcontractors or suppliers, e.g., inability to access certain sites, delay by third parties in carrying out work to be performed before Belgacom can act, performance of line measurements, etc.
21. Net Repair Time: Difference between the Gross Repair Time and the Stop-Clock Time.
22. Time to First Intervention: Interval between the trouble being reported by the Beneficiary and the first action taken by a Belgacom technician to repair the service via either a remote operation or on-site intervention.
23. Clock Hours: Target Repair Time, expressed in Clock Hours, i.e. where the service to be provided by Belgacom is available 24 hours per day, 7 days a week.
24. Working Hours: Target Repair Time expressed in Working Hours, i.e., where the service is available during Working Days from 8h00 to 16h30, excluding Saturday, Sunday, Belgian holidays and Belgacom holidays.

6. Information and test results

25. It is mandatory that the Beneficiary gives test results when opening a Trouble Ticket. Belgacom delivers the form of standardization of these test results. The applicable test methods are proposed by Belgacom and are mandatory. Reference is made to the Belgacom template.

The following administrative info has to be included in the complaint template:

- Circuit identity number
- Voice phone number (NA) --> lines with voice only
- Installation address of the line
- End user contact person and contact phone number in case of field intervention
- Leased line codification number of the access line
- End user ADSL/SDSL line profile
- End user ATM Traffic descriptor down & up
- VPi and VCi at access line of Beneficiary
- BROBA II first use or not (bad provisioning or not)
- Single user affected or several users affected

Diagnose info to be included by the Beneficiary in the complaint template for BROBA II with voice lines:

- Is service fully interrupted or degraded
- Is End User ADSL line synchro present or not
- Confirm if ADSL modem or router is powered on
- Confirm if Computer is powered on
- Confirm if splitter(s) is(are) connected and checked
- Confirm if End User internal cabling is checked
- Is ATM connectivity test (OAM F5 Segment or end-to-end Loop back Cell) successful or not

Diagnose info to be included by the Beneficiary in the complaint template for BROBA II without voice lines:

- Is line "open" or "short-circuited"?
- Measurement of the length of the line
- Measurement of the insulation between wires and wire/earth
- Is service fully interrupted or degraded?
- Is End User ADSL/SDSL line synchro present or not?
- Confirm if ADSL/SDSL modem or router is powered on
- Confirm if Computer is powered on
- Confirm if End User internal cabling is checked
- Is ATM connectivity test (OAM F5 Segment or end-to-end Loop back Cell) successful or not?

7. Set-up of service

26. Activation of the Broba II ADSL & SDSL VP & VC Switching ISLA per line can be done at ordering, the process needed to activate the ISLA will start immediately after the implementation of the Broba II ADSL & SDSL VP & VC Switching service. The request will be included in the remarks field of the XML when ordering if this remark field appears to be too small to include all information (because this field has also to be used to mention other kind of information), a second XML order for the same line can be issued by Beneficiary, where beneficiary will precise in the remarks field that is a second order issued for the purpose of completing the information. At first, no change is possible through XML. Changing users already connected will be treated on a case-by-case basis within maximum two working days. In any case, each individual request can also be sent by fax, following the rules defined in the backup procedure, if XML is not available. The Beneficiary will provide Belgacom with a list of lines at the latest two working days before the bringing into service of the ISLA.

8. Nature of the service disruption

27. When reporting a disruption, it is essential that the Beneficiary clearly identifies the nature of the problem, i.e., to distinguish disruptions that have an impact on traffic from those that do not.
- Impact on traffic: A problem is presumed to have an impact on the traffic when it requires immediate action by Belgacom to effect a repair, i.e., in case of a complete line disruption.
 - No impact on traffic: A problem is not considered to impact on traffic when it does not require immediate action by Belgacom to effect a repair, e.g., recurrent temporary disruption, quality problems, etc.
28. Service disruptions that do not impact on traffic are reported in the same manner as those that do. However, since long-term analysis is generally required to resolve such problems, Belgacom shall not be able to guarantee the Repair Time as for problems resulting in full line disruption.
29. In case of quality problems and recurrent temporary disruption where there is no impact on traffic, Belgacom will cooperate in good faith with the Beneficiary to find the cause of the problem. Information of the findings and results of the research about the causes are to be exchanged between Belgacom and the Beneficiary. Where such a decision is taken, the Beneficiary shall authorize Belgacom to interrupt the troubled line where necessary to effect immediate repairs within the requisite deadline.

9. Stop-Clock or freeze rules

30. The clock for repair starts when the complaint ticket is valid, i.e. in line with the conditions described in point [66](#).
31. There are four scenarios in which Belgacom may use the stop-clock procedure:
 - Cooperation with the Beneficiary is impossible due to the absence of staff on the local site, there is no possibility of accessing the site or, despite several attempts, the Beneficiary contact point has proved impossible to contact by telephone, provided that those cases can be proved by e-mail evidence;
 - The Beneficiary asks for the repair to be postponed or an appointment if applicable to be rescheduled;
 - A Trouble Ticket is opened and the Beneficiary does not allow Belgacom to interrupt the line in order to perform tests.
 - Awaiting feedback, input or confirmation of the Beneficiary that prevents Belgacom to proceed to the repair process
32. If the stop-clock procedure is used, this shall be fully documented in the System, which will set out the:
 - Reason for stop-clock;
 - Action to be undertaken;
 - Timing;
 - Name of the contact person in the Beneficiary's organization who was informed (except when the Beneficiary cannot be contacted by phone) or requests the stop clock.

10. Wrongful Repair Requests

33. Belgacom will charge the Beneficiary with the fee related to SLA Wrongful Repair Requests (see Annex 6 – Pricing and Billing) if the fault is not attributable to Belgacom or if the fault results from the abnormal use of the line or any other Beneficiary - or end user of the Beneficiary - fault.
34. In case during the repair process, Belgacom performed useless actions further to Beneficiary's request, i.e. in case of absence of end-user at the appointment, incorrect information provided, Belgacom will charge the Beneficiary with the costs of those actions.

11. Beneficiary's obligations

11.1. Contact persons

- 35. It is highly recommended that the Beneficiary provides a helpdesk. Belgacom may be unable to guarantee the repair time and feedback deadlines where it is unable to inform the Beneficiary of the status of repair operations.
- 36. It is highly recommended that the Beneficiary guarantees the availability of a 24/24, 7/7 helpdesk.
- 37. A technical contact with the Beneficiary will be available 24/24, 7/7.
- 38. Beneficiary will provide a SPOC with its respective name, telephone number and e-mail address for the purpose of follow up or support.

11.2. Site access

- 39. When calling the Belgacom Helpdesk, the Beneficiary will communicate the site access procedure..
- 40. If an appointment is needed at end user address, access is authorized without negotiation. It is the responsibility of the Beneficiary to inform its end user about it..
- 41. The appointment date and time proposed by Belgacom will be agreed between the Beneficiary and Belgacom.
- 42. The end user or site contact person communicated is present at the proposed date and/or hour
- 43. Any failure to comply with these procedures shall result in a stop clock / freeze rule.
- 44. If necessary, the Beneficiary shall also undertake to provide the necessary staff during the repair process.

11.3. Required Information

- 45. Beneficiary will provide correct information with relevance for the repair process.
- 46. In case of incomplete information in ticket creation by the Beneficiary, the stop clock / freeze rule is applicable and the timer will be unfrozen after the Beneficiary has provided the necessary information.

12. Timers

12.1. Preliminary

12.1.1. Timers

47. All timers in present document are net timers. Delays due to Beneficiary are not taken into account and lead to stop clock. Net time is gross time minus stop clock times.

12.1.2. General Feedback Timer

48. Belgacom will give feedback to the Beneficiary within one hour after trouble ticket validation. In any case, a trouble is only to be considered as being closed after Belgacom has given feedback to the Beneficiary.

12.1.3. Note

49. The Repair Timer will be frozen in case appointment needed for the intervention proposed by Belgacom is scheduled later on demand of the Beneficiary and at that time the repair timer will be unfrozen and continued.

12.2. Repair

12.2.1. End-user line Trouble Ticket Resolution timer

50. The Trouble Ticket Resolution timer starts when Belgacom receives a trouble mention based on the issue description communicated by the Beneficiary and ends at the repair done permanently or identified as being definitely non-Belgacom originated of this Trouble Ticket. If an appointment is needed at the User address, access is authorized without negotiation. It is the responsibility of the Beneficiary to inform its User in those cases. This timer will be frozen in case an appointment if needed is not accepted by the Beneficiary at the proposed date, in case of absence of the User at appointment date, and in any case of incomplete or manifest incorrect information provided by the Beneficiary with relevance for the repair process.

	Trouble Ticket Creation
Trouble Ticket Handling (to be respected by Belgacom)	24/24 hours, 7/7 days
	Repair Window
Repair Window (to be respected by Belgacom)	24/24 hours, 7/7 days

12.2.1.1.1. ~~Trouble ticket resolution timer~~ ~~Case of End User line with voice~~

Repair timer for Broba II ~~end user line with voice~~ (to be respected by Belgacom)	Repair Timer
	<u>4 hours (60% of the trouble tickets resolved)</u> <u>6 hours (80% of the trouble tickets resolved)</u> <u>8 hours (95% of the trouble tickets resolved)</u>

These percentage relates to the total number of trouble tickets opened by the Beneficiary per month for BROBA ADSL or SDSL, wrongfull repair requests excluded.

~~12.2.1.2. Case of End User Line without voice~~

Repair timer for BROBA II without voice (to be respected by Belgacom)	Repair Timer
	8 hours

~~12.2.1.3.~~ 12.2.1.2. Availability

51. Availability is equal to net timer of interruption due to Belgacom fault divided by the total time per year of availability committed to end user from the date of signing the agreement of the Broba II ADSL & SDSL VP & VC Switching service, taking into account the total number of lines from a Beneficiary subject to this ISLA. The time of interruption is defined as from the trouble ticket start resolution timer for a trouble that has been sorted out as being a Belgacom fault, excluding conditions of "Force Majeure" and wrongful repair requests up to the moment of the ticket closure, mentioned to the Beneficiary with information about the reason of outage.

Availability	Average yearly availability
	99,4% for < 1500 lines in improved SLA 99,5% for 1500 lines in improved SLA 99,6% for 2500 lines in improved SLA 99,7% % for > 5000 lines and conditions see below in improved SLA

52. For a volume of more than 5000 lines, availability is set at 99,7% if all of the following conditions are fulfilled. Cases where this condition is not achieved will be out of scope of this availability improvement.
- The Beneficiary will perform its own proactive measurements following a measurement procedure agreed with Belgacom and communicate the results of these measurements on a regular basis. Belgacom will analyze and could perform pro-active repair actions on the Beneficiary's loops based on these results. Note that it should be defined how Belgacom can recover the costs for these actions.
 - Give Belgacom technically, the possibility to make the intervention on the pair (ensure continuity) till a demarcation point between Belgacom and the Beneficiary collocation, if any (without dismantlement of the pair at the Beneficiary equipment). For this, no fast test procedure can be done, as it is always a test between Belgacom and Beneficiary technician. If this is not possible, i.e. the inclusion and full conversion from all lines to an Handover Distribution frame is needed, this cases will be excluded
 - Mention for every demand of repair, what type of signal is coming to the User.

53. The volume for applicability of case 1) can be agreed bilateral between Belgacom and the Beneficiary.

12.2.2. Repair on the DSLAM Timer

54. The Repair on the DSLAM timer starts when Belgacom receives a Trouble mention based on the issue description communicated by the Beneficiary and ends at the repair done permanently or identified as being definitely non Belgacom originated of this Trouble Ticket after the feedback (including detailed description of the issue or the issue intervention) has been given by Belgacom to the Beneficiary.

DSLAM	Timer
Intake window	• 24x7: 24 hours / day — 7 days per week
Repair within (to be respected by Belgacom)	• 4 working hours in case of remote intervention • 8 working hours in case of on-site intervention

55. First feedback after maximum one working hour, subsequent feedback each hour.

12.2.3. Repair on the ATM Transport Timer

56. The Repair on the ATM Transport timer starts when Belgacom receives a Trouble mention based on the issue description communicated by the Beneficiary and ends at the repair done permanently or identified as being definitely non Belgacom originated of this Trouble Ticket after feedback (including detailed description of the issue or the issue intervention) has been given by Belgacom to Beneficiary.

	Timer
Intake window	• 24x7: 24 hours / day — 7 days per week

	Timer
Repair Timer ATM Transport (to be respected by Belgacom)	• 4 working hours after trouble ticket opening in case of remote intervention or intervention without rollout (case of manned sites) • 8 working hours in case of field intervention (only cases of unmanned sites and impossibility of remote operations)

	Timer
Repair Timer Plus ATM Transport (at ATM Access Point and LEX levels) (to be respected by Belgacom)	• 4 hours after trouble ticket opening in case of remote intervention or intervention without rollout (case of manned sites) • 8 hours in case of field intervention (only cases of unmanned sites and impossibility of remote operations)

57. 1st information after one hour, subsequent feedback each hour

~~12.2.4. Repair on the Access Line Timer~~

~~58. The repair of access line timers follows the timers describe into the paragraph 14 “Service Level Guarantee” in the “Annex B 1: Colo to Colo and Colo to PoP Backhaul Leased Lines : Product Description”.~~

13. Prices

~~59:54.~~ Reference is made to Annex 6 Pricing and Billing

14. Compensations

14.1. General

~~60:55.~~ Belgacom shall pay compensation to the Beneficiary for any delay not respecting the ISLA date or time otherwise agreed with Beneficiary. Belgacom shall not pay compensation to the Beneficiary for periods of delay, resulting from circumstances beyond its reasonable control, like a force majeure event or a delay caused by Beneficiary or the end-user (i.e. during which the timer "clock" is stopped). Belgacom shall notify Beneficiary as soon as possible when such circumstances arise and inform Beneficiary of the details of the events and the estimated duration. In case of "Force Majeure", Belgacom will try to soften the effects of the events and to continue to fulfill its contractual obligations as soon as reasonably possible.

~~61:56.~~ Payment will be expressed in a discount on next provisioning and rental bill(s) for the respective service.

~~62:57.~~ The Beneficiary has to provide Belgacom with the necessary information in case of a delayed repair or any shortage of Belgacom that gives cause for the compensations described in this ISLA. Belgacom will upon receipt verify this information. When this verification shows a shortcoming of Belgacom that gives cause for paying compensation, this payment will be done immediately and automatically.

~~63:58.~~ The Beneficiary will submit a detailed request for compensation to Belgacom including for every repair requested at least date and hour notified/resolved, circuit id, problem on line and product type. The validity of each request for compensation will be examined by Belgacom and motivated in case of rejection for one or more repair records of this compensation request.

~~64:59.~~ In case of repair timer escalations, the consequences as described further in this paragraph shall be applicable to Belgacom.

14.2. End-user line Repair Timer Escalations

~~65:60.~~ Troubles which last more than the timers described in point ~~12.2.1~~~~12.2.4~~ and are the fault of Belgacom shall entitle Beneficiary to receive payment of compensation by Belgacom, provided he cannot claim compensation due to a case of force majeure where Belgacom is unable to respect the timers. In these cases, Belgacom shall notify Beneficiary of the probable timeframe. The timeframe taken into consideration for calculating the compensation goes from the day on which the trouble is reported to the day of closing the trouble ticket included. The calculation of the % is done on a monthly basis.

Type of repair timer	Compensation
Repair Timer Escalations for Broba II with voice	~~> 6 hours: 150% of the line monthly rental fee~~ ~~> 12 hours: 200% of the line monthly rental fee~~ ~~> 24 hours: 300% of the line monthly rental fee~~ ~~> 48 hours: 400% of the line monthly rental fee~~ ~~> 72 hours: 500% of the line monthly rental fee, which is the maximal Compensation~~
<u>< 60% in 4 hours</u>	<u>50% of the line monthly rental fee per trouble ticket closed in more than 4 hours</u>
<u>Between 60% and <80% in 6 hours</u>	<u>100% of the line monthly rental fee per trouble ticket closed in more than 6 hours</u>
<u>Between 80% and <95% in 8 hours</u>	<u>150% of the line monthly rental fee per trouble ticket closed in more than 8 hours</u>

Repair Timer Escalations for Broba II without voice	Compensation ➤ 8 hours: 150% of the line monthly rental fee ➤ 12 hours: 200% of the line monthly rental fee ➤ 24 hours: 300% of the line monthly rental fee ➤ 48 hours: 400% of the line monthly rental fee ➤ 72 hours: 500% of the line monthly rental fee, which is the maximal Compensation

Availability

66.61. In case the guaranteed minimum yearly availability of the line is not respected due to a cause that is not external to Belgacom, the Beneficiary is entitled to a compensation as described in the table hereunder. The definition of the availability is given at the section 12.2.1.2~~12.2.1.3~~

Availability Compensation	
Number of related pairs	Compensation (in EUR)
< 100 or < 2 LEX/LDC concerned	0
> 100 and > 1 LEX/LDC concerned	5% of yearly rental fee Improved SLA

~~14.3. Repair DSLAM Timer Escalations~~

~~14.4.~~

~~14.5. Interruptions of service where Belgacom did not intervene within the timeframes as defined in section 12.2.2 and are not the fault of the Beneficiary or of its user shall entitle the Beneficiary to compensation.~~

~~14.6.~~

~~14.7.~~	~~14.8. Compensation~~
~~14.9. Repair Timer Escalations DSLAM~~ ~~14.10. (to be respected by Belgacom)~~	~~14.11.4 working hours in case of remote intervention or > 8 working hours in case of field intervention:: 100% of monthly rental fee of the line~~ ~~14.12. end next calendar day after trouble ticket creation: 150% of monthly rental fee of the line + every day after end next calendar day after trouble ticket creation: 150% of monthly rental fee of the line, with a maximum of 450% of monthly rental fee of the line~~

~~14.13.~~

~~14.14. Repair ATM Transport Timer Escalations~~

~~14.15.~~

~~14.16. Interruptions of service where Belgacom did not intervene within the timeframe as defined in section 12.2.3 and are not the fault of the Beneficiary or of its end user shall entitle the Beneficiary to a reimbursement of the rental fee corresponding to a percentage of the daily rental fee of the bandwidth with the same quality of service (QoS) within the concerned Access point, pro rata to the number of VP/VC impacted, provided he cannot claim compensation due to a case of force majeure where Belgacom is unable to act within the agreed timeframe.~~

In these cases, Belgacom shall notify the Beneficiary of the timeframe in which his request will probably be carried out.

~~14.17.~~

~~14.18.~~	~~14.19. Compensation~~
~~14.20. — Repair Timer Escalations ATM Transport~~ ~~14.21. (to be respected by Belgacom)~~	~~14.22. 300% of daily rental fee, per VP/VC, per QoS (within a specific access point, per day)~~ ~~14.23. [Daily rental fee of the total bandwidth with the same QoS in the concerned Access point / number of VP/VC] * 3 (calculation to be made in a sliding window of 2 months)~~

~~14.24. —~~

~~14.25. Repair Access Line Timer Escalations~~

~~14.26. —~~

~~14.27. The Beneficiary will be entitled to the same compensation as describe into the paragraph 14 “Service Level Guarantee” in the “Annex B 1 : Colo to Colo and Colo to PoP Backhaul Leased Lines : Product Description”.~~

Annex 5 B

BROBA II ADSL & BROBA II SDSL VP & VC switching

**IMPROVED SERVICE LEVEL
AGREEMENT FOR PROVISIONING**

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1. Object

- 1 The present document defines the specific Terms and Conditions upon which Belgacom will provision BROBA II ADSL and SDSL lines in case ISLA on provisioning for those lines was requested. The elements included in this document replace those in the basic service level agreement, unless stated otherwise.

2. Prerequisites

- 2 This Service Level agreement is signed between two parties being Belgacom and Beneficiary concerned.
- 3 Belgacom will provide a SPOC with telephone number and e-mail (CAR_LLUI), for the purpose of follow up or support.
- 4 The document reflects only the service indicated. Any future interference due to synchronization with any other product is out of scope.
- 5 The Service Level Agreement is not valid in situations of force majeure. The term "Force Majeure" as used in this ISLA shall include, without limitation, earthquake, fire, flood, epidemic, act of war, strikes, whether declared or undeclared, blockade, insurrection, riot or other cause(s) beyond the reasonable control of either of the parties, these other causes being duly agreed as such by the other party.
- 6 The ISLA on provisioning applies only for lines installed by Belgacom, and does not apply to any line installed by a certified technician.

3. Conditions

- 7 The services offered in virtue of this Improved SLA on Provisioning are to be described as follows:
 - Improved percentages compared to basic SLA on Appointment Kept
 - Higher compensations in case of default (compared to basic SLA on Appointment Kept)

3.1. Terminology

- Order : assembly of all workorders needed to deliver an ordered product .
- Work order : one of the different actions assigned to a Belgacom technician to perform the delivery of an ordered product.
- Ordered product : the line ordered by the Beneficiary
- Appointment: Date for the customer visit which was communicated by Belgacom to the Beneficiary by means of XML.

3.2. Description

- 8 For an order for which ISLA for Provisioning has been requested by the Beneficiary via the electronic ordering system, Belgacom will take all necessary actions to follow-up this order in the provisioning chain and ensure the appointment on which Belgacom has committed via xml is kept.

- 9 The ISLA for Provisioning target is defined as follows:

$$\% \text{ Appointment kept} = \frac{\text{Number of ISLA orders for which all Customer Visit appointments are kept}}{\text{Number of ISLA orders having at least one Customer Visit}}$$

- 10 An appointment is considered as “kept” if the technician is “on site” on the day of the appointment as it was communicated to the Beneficiary.
- 11 If multiple customer visits are scheduled on the same date for installation of a line, the appointment is considered as kept if at least 1 intervention has started on the scheduled date. E.g. Splicer intervention followed by a standard installation
- 12 Notwithstanding the provisions of points 9 and 10 above, if the Belgacom technician was present on the appointment date but the enduser was not present (“customer absent”), refused or asks to postpone the installation, the appointment is considered as kept and the applicable fee will be charged. For the necessary second intervention the applicable fee will also be charged.

3.3. Set-up of service

- 13 Activation of the improved SLA per line can be done at ordering via the electronic ordering system.

4. Values

	Monthly target value
% ISLA appointment kept	99%

5. Beneficiary's obligations

5.1. Contact persons

- 14 A contact person who will be present on site at the date of the appointment and whose contact number needs to be communicated in the xml.

5.2. Required Information

- 15 Beneficiary will provide in the order correct contact information with relevance for the provisioning process: Contact person who will be present on site at the day of the appointment, contact number, address.
- 16 In case of incomplete or incorrect information given in the order by Beneficiary, the ISLA on provisioning target can not be guaranteed.

6. Prices

- 17 Reference is made to Annex 6 Pricing and Billing.

7. Compensations

- 18 Compensations are applicable in the cases that Belgacom has not respected its commitment on the date agreed with Beneficiary, excluding the cases in which Beneficiary or its Enduser is responsible (e.g. customer absent) or in the case of force majeure.
- 19 Payment will be made via a creditnote on next provisioning and rental bill(s) for the respective service.
- 20 The Beneficiary needs to provide Belgacom with the necessary information in case of any shortage of Belgacom that might give cause for the compensations described in this Improved Service Level Agreement. Belgacom will upon receipt verify this information. When at this verification appears that the information of the Beneficiary shows a shortcoming of Belgacom that gives cause for paying a compensation, this payment will be done immediately and automatically on the next invoice relevant to the service concerned.
- 21 The Beneficiary will submit a detailed request for compensation to Belgacom. The validity of each request for compensation will be examined by Belgacom and motivated in case of rejection within a delay of maximum 20 working days, if the request is related to orders submitted during the 3 months preceding the request. If Belgacom has not rejected the request within the delay of 20 working days, the request will automatically be considered as approved by Belgacom. If the request is related to orders submitted before the 3 months preceding the request, the delay of 20 working days does not apply.

	Compensation
Per appointment missed	€40

Amendment to the BROBA II ADSL Agreement between .../... and Belgacom

Between

.../... a limited liability company incorporated under the laws of .../... , having its registered office at .../...

(hereafter referred to as “.../...”)

and

Belgacom N.V./S.A., a Belgian autonomous public enterprise organized under the Law of March 21, 1991 and the Royal Decree of August 19, 1992, with registered office and place of business at 1030 Brussels, 27 Boulevard du Roi Albert II, registered with the Brussels Register of Legal Entities under number VAT BE 0202 239 951 (hereafter referred to as "Belgacom")

Whereas .../... and Belgacom (jointly referred to as the “Parties”) have entered into Agreement for the Provisioning of ...BROBA II ADSL..., ...BROBA II SDSL... in the Local Loops of Belgacom on ...Date... (hereafter referred to as the “BROBA II Agreement”);

Whereas the Parties have agreed to define improved service levels guarantees in the frame of the Service;

Now, therefore, it is hereby agreed as follows:

Article 1 - Adjunction of the Improved Service Level Agreement

By the present Amendment, the Parties agree to add the Improved Service Level Agreement for Provisioning as enclosed to the present Amendment.

Article 2 - General provisions

The provisions of a general nature of the BROBA II Agreement including, in particular but without limitation, those on liability, confidentiality, choice of law and dispute resolution are incorporated by reference into and are fully applicable to the present Amendment to the BROBA II Agreement.

The present amendment constitutes, at the time of signature of this amendment, the only changes to the existing BROBA II Agreement.

In witness whereof, .../... and Belgacom have caused this Amendment to the BROBA II Agreement to be executed in two original copies, each Party acknowledging having received one original copy, by the hands of their duly authorized officers, on the date and year written below.

Brussels, _____ .

For Belgacom:

For .../...

By :
Title :
Date :

By :
Title:
Date :

BROBA II ADSL-2008

Annex 6

Pricing and Billing

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Preliminary notes

All prices included in this Price List are expressed in Euro, VAT excluded.
Structure and prices of the below Price List are subject to further adaptations.

1. Pricing

1.1. Startup fee

- 1 The start-up fee is charged to Beneficiary, operator, consultant or other that requires explanations by Belgacom BROBA specialists (Product Management and/or Customer service) on the offer content (e.g. this fee is not charged for negotiation meetings). This fee is due until the first installation of the Beneficiary of a VP to a DSLAM.

Information on BROBA	Price
Rate per hour per Belgacom person	€99,49

1.2. Tariffs applicable for the End User line

1.2.1. One time fees

1.2.1.1. XML Inquiry Fee

- 2 The XML inquiry fee will be invoiced only in case the Beneficiary does not place a firm order within 45 working days after the inquiry has been proceeded with positive result by Belgacom. In such case, this Beneficiary will be invoiced the following amount for the work performed by Belgacom.

	Euro
Inquiry Fee for BROBA II ADSL (with or without voice)	€9,94

1.2.1.2. LLU Inquiry Tool

- 3 The Beneficiary will be invoiced the following amount per inquiry done.

	Euro
Per inquiry done	€0,00

1.2.1.3. Activation Fee of ADSL Service on an End User Line

Activation Fee per line without Customer Visit	Price
Activation fee for BROBA II ADSL with voice	€46,09
Activation fee for BROBA II ADSL without voice, installed by Belgacom	€40,98
Activation fee for BROBA II ADSL without voice, installed by certified technician	€9,20

- 4 The activation fees are inclusive the price of the activation of the first VC on the End User Line.

Additional fee for Telecom Installation	Price
BROBA II ADSL with voice	€38,88
BROBA II ADSL without voice, installed by Belgacom	€58,64
BROBA II ADSL without voice, installed by certified technician	€00,00

- 5 In case of request by the Beneficiary of a Telecom Installation together with the Activation of an End User Line, the additional fee for Telecom installation is added to the Activation Fee without Customer Visit.
- 6 If an activation for BROBA ADSL without voice without visit is ordered but that during the activation process of the line, Belgacom finds that a customer visit is required, according to the process described in the Appendix B: "NTP process for Provide New BROBA II without voice products" of the BROBA ADSL Main Body, the additional fee for Telecom installation will be added to the Activation Fee without Customer Visit, independently of the initial request of the Beneficiary.
- 7 If during a repair action performed by Belgacom on a newly installed BROBA ADSL without voice line [installed by Belgacom](#), when the provisioning process - described in the Appendix B: "NTP process for Provide New BROBA II without voice products" of the BROBA ADSL Main Body – allowed to determine that the installation of a NTP by a Belgacom technician was not necessary, in case the trouble covered by the Trouble Ticket was due to the absence of the Network Termination Point, an additional fee for Telecom Installation detected during a repair action will be due. This fee will be invoiced on top of the Activation Fee without Customer Visit.

Additional fee for Telecom Installation detected during repair	Price
BROBA II ADSL without voice installed by Belgacom	€91,54

- 8 The additional fee for the Telecom installation on Broba II with voice end-user line includes the Splitter installation, travel to the end-user and hardware costs.

- 9 The 2 additional fees for the Telecom installation on Broba II without voice end-user line [installed by Belgacom](#) include the Network Termination Point installation, travel to the end-user and hardware costs.

- 10 [If during a repair action performed by Belgacom on a newly installed BROBA ADSL without voice line installed by a certified technician, in case the trouble covered by the Trouble Ticket was due to an incorrect installation performed by the certified technician, an additional fee for repair will be due. This fee will be invoiced on top of the Activation fee for BROBA II ADSL without voice, installed by certified technician.](#)

Additional fee for repair due to incorrect installation by certified technician	Price
BROBA II ADSL without voice installed by certified technician	€123.33

[1.2.1.4. Rush Order](#)

- 11 [When Rush order has been requested the standard activation fee will be doubled.](#)

[1.2.1.5. VC Configuration Fee on an End User Line](#)

	Euro
Activation/Modification/ De-activation fee per VC	€3,21

- ~~10~~12 [For the first VC activated together with the activation of the End-User Line, the above-mentioned fee for the VC Activation must not be added to the Activation Fee per line.](#)

- ~~11~~13 [For the last VC de-activated together with the de-activation of the End-User Line, the above-mentioned fee for the VC de-activation must not be added to the De-activation Fee per line.](#)

~~1.2.1.5~~1.2.1.6. Modification of End-User Line Profile

	Euro
Modification (per modified Line Profile)	€3,21

~~1.2.1.4~~ In case of simultaneous Modification of a Line Profile and of a VC of the same End-User Line, both fees will be invoiced.

~~1.2.1.6~~1.2.1.7. Coordinated Move

Coordinated Move Fee	Price
Move of the BROBA II ADSL with voice service from location A to location B in coordination with PSTN move	€50,44

~~1.3~~15 This fee remunerates the coordination of the move of the Beneficiary's data service together with the Belgacom Voice service, in the framework of a BROBA II ADSL with voice. The coordinated move fee includes both the activation and the de-activation part of the move.

~~1.2.1.7~~1.2.1.8. Conversion PSTN/ISDN

~~1.4~~16 Conversion is the change from BROBA II ADSL with voice over PSTN toward BROBA II ADSL with voice over ISDN and vice versa.

Conversion Fee	Price
BROBA II ADSL with voice	€35.74

~~1.2.1.8~~1.2.1.9. De-activation fee of an End User line

~~1.5~~17 This is the fee that the beneficiary has to pay in case the beneficiary wants to stop an already activated service.

	Euro
De-activation fee for BROBA II line with voice	€4,35
De-activation Fee for BROBA II line without voice	€4,51

~~1.6~~18 The above-mentioned fees are inclusive the price of the de-activation of the last VC on the End User Line.

~~1.2.1.9~~1.2.1.10. Change Date Fee

~~1719~~ When a Beneficiary (or Belgacom) requests to change the date of implementation, Belgacom (or the Beneficiary) will invoice this Beneficiary (or Belgacom) the following Change Date fee:

Change Date Fee	Euro
Change before DD-1 (12 pm)	€6,59

~~1820~~ In case such change is requested after due date-1 (12 pm), the same fee will be paid by the Beneficiary (or Belgacom) up to the condition that the new activation date is within 20 working days.

~~1.2.1.10:~~ 1.2.1.11. Cancellation Fee

~~1921~~ The Beneficiary requesting the cancellation of an order shall pay to Belgacom the administrative fee mentioned in the table below:

Cancellation Fee	Euro
Cancellation before DD-1 (12 pm)	€6,99

~~2022~~ In case cancellation is requested after DD-1 (12 pm), the related activation fee and the de-activation fee (instead of the cancellation fee) will have to be paid by the Beneficiary (refer to point 1.2.1.3. of this section). In practice, Belgacom will try at best effort to stop the intervention even after the deadline. If successful, only the cancellation fee in the table above will be charged.

~~1.2.1.11:~~ 1.2.1.12. Move from LDC to LEX

~~2123~~ This fee is due when an end-user line is moved from a LDC to its corresponding LEX during the activation of the line. This action will only be performed if the move request is done at the moment of the activation of the end-user line with voice.

	Euro
Move from LDC to LEX Fee	€64,05

~~1.2.1.12:~~ 1.2.1.13. Pending order due to useless end-user visit

	Euro
Pending order due to useless end-user visit	
Per intervention	€20,04

~~2224~~ This fee is due when an end-user of the Beneficiary is not present at his premises on the appointment date, if the validate message has been sent by Belgacom to the Beneficiary in the timing described in Annex 5 (SLA), so that the Beneficiary has had the opportunity to propose an alternative date-hour if necessary, and if the installation is performed by Belgacom.

~~1.2.1.13:~~ 1.2.1.14. Improved SLA on repair

~~2325~~ One-time fee for configuration of systems and resources. The setup fee is to be paid one time only, for the first Improved SLA BROBA II ("Improved SLA Broba II ADSL & SDSL VP switching" or "Improved SLA SDSL VC switching").

	One-time fee
Setup fee	€2.000,47

~~24~~26 One-time fee per line for setup of ISLA in case of a new line.

	One-time fee
Activation fee	€8,23

~~25~~27 One-time fee per line for change of the SLA from Basic to Improved (or reverse) in case of an existing line.

	Per local loop
Change SLA type fee	€8,23

~~26~~28 Rental fee per local loop with the ISLA type in addition to the monthly fee.

	Monthly Rental
Extra Rental Fee	€8,74

~~27~~Extra monthly rental fee for the ATM transport repair timer.

	Monthly Rental
Extra ATM Fee	€5,75 per VP

1.2.1.15. Improved SLA on provisioning

~~29~~ For application of the ISLA, a one-time fee for follow-up and coordination will be applicable per customer visit.

	<u>One-time fee</u>
<u>Per customer visit</u>	<u>€10</u>

~~1.2.1.14~~1.2.1.16. Small Network Adaptations

~~28~~30 In case Belgacom needs to perform additional work, also called Small Network Adaptations, both the Small network Adaptations and the installation of the line will always be performed by Belgacom, according to the terms and definitions as defined in this Offer. T, the following fee will apply in surplus of the ~~installation~~ Activation fee relevant to an installation by Belgacom.

	Euro
Small Network Adaptations	€441,66

~~29~~31 This fee, applicable (if any) only in case of ADSL without voice, will only be billed after having given to the Beneficiary the proof of the effective need and execution (with number of pairs introduced) of the Small Network Adaptations. This has to be done in written form. If no proof

is given, the relevant fee is not due by the Beneficiary. Only the number of pairs related to the request are due, on a pro-rata base.

~~1.2.1.15~~ 1.2.1.17. Wrongful repair request

~~3032~~ In case of wrongful repair request by a Beneficiary, Belgacom will invoice this Beneficiary an administrative fee of 104,61 Euro

~~3133~~ If Belgacom has performed specific work due to this wrongful repair request made by Beneficiary, Belgacom will invoice these additional costs to Beneficiary.

~~3234~~ In case of wrongful request by Beneficiary, the invoicing of 104,61 EUR is to be done exclusively following the provisions of section 5 ("Wrongful Repair Requests") of Annex 5. Belgacom will provide the following information to the Beneficiary as well as to the BIPT: detailed data about the relevant cases, the ticket numbers, the date and hour of opening and closing of the tickets, the identification numbers (e.g. directory numbers) and the reason why Belgacom's responsibility is not involved.

1.2.2. Monthly Recurring fee per End User line

Monthly Recurring Fee	Euro
BRUO Shared Pair	Price applicable for the invoiced period
BROBA II ADSL, ADSL2 Reach Extended and ADSL2+ with voice specific costs	€5,02
BROBA II ADSL, ADSL2 Reach Extended and ADSL2+ with voice	BRUO Shared Pair + BROBA II ADSL and ADSL2 Reach Extended with voice specific costs

Monthly Recurring Fee	Euro
BRUO Raw Copper	Price applicable for the invoiced period
BROBA II ADSL, ADSL2 Reach Extended and ADSL2+ without voice specific costs	€5,02
BROBA II ADSL, ADSL2 Reach Extended and ADSL2+ without voice	BRUO Raw Copper + BROBA II ADSL and ADSL2 Reach Extended without voice specific costs

1.3. Tariffs applicable for the ATM Transport

1.3.1. Preamble

~~3335~~ The Beneficiary must be connected to at least one ATM Access Point in each access area in which he wants to deliver the Broba service.

~~3436~~ Pricing is differentiated based upon the requested “quality of service” and the fact whether local or non-local ATM tariffs do apply.

~~3537~~ The formulas in section 1.3.2 are applicable

- a. In SDSL VC switching: per VC.
- b. In ADSL and SDSL VP switching: per VP billed.
 - In each LEX/LDC where the Beneficiary benefits of Virtual Paths (VPs), Belgacom bills the bandwidth of all the VP's¹ of the Beneficiary on each DSLAM where the Beneficiary occupies minimum 36 positions².
 - In each LEX/LDC where the Beneficiary benefits of Virtual Paths (VPs) and where the Beneficiary occupies less than 36 positions on each DSLAM, Belgacom will only bill the most expensive VP³ of the Beneficiary, per VP type.

If a Beneficiary benefits of Virtual Paths in a LEX/LDC, and that these are not billed according to above-mentioned rule, then the bandwidth of these VPs may not be higher than the following values, per QoS:

- UBR: 20Mbps
- VBR nrt: 20Mbps
- VBR rt: 2Mbps
- CBR: 1 Mbps.

~~3638~~ The prices set bellow are those stated in BIPT's advises on Backhaul. These advises are the object of requests for annulment before the “Council of State”. Accordingly, Belgacom reserves its right to apply different prices should these requests succeed.

~~3739~~ All formulas for the calculation of the costs that are listed in this offer are based upon Mbps. When input figures are provided using other measurement units, the conversion rules 1 Mbps = 1.000 Kbps and 1 Gbps = 1.000 Mbps do apply.

1.3.2. Formulas

~~3840~~ Based on the formulas hereunder, it is possible to determine the exact price in Euros for a bandwidth in Mbps. The first formula is applicable for the non-local ATM tariffs, the second one for local ATM.

1.3.2.1. Formula for non-Local ATM

¹ Only applicable for VP's with at least one VC.

² One position on one DSLAM card corresponds to one end-user of a Beneficiary.

³ Only applicable for VP's with at least one VC. If the most expensive VP has no VC, then Belgacom will bill the next most expensive VP with at least one VC.

~~3941~~ The following formula allows to compute the ATM tariffs in Euros for bandwidths in Mbps for non-local ATM transport between DSLAM's and ATM Access Points to which Customer is connected (case of LEXs or LDCs not directly connected to an ATM Access Point).

$$\text{ATM\_NL tariff} = \text{MIN}(\text{ATM\_NL\_LOW}, \text{ATM\_NL\_HIGH})$$

$$\text{ATM\_NL\_LOW} = 12,683 + \text{QoSFIX\_LOW}_{q,nl} + \text{BWNL}_{r,q} * (30,002 + \text{QoSVAR\_LOW}_{q,nl}) * \text{PCR}_r$$

$$\text{ATM\_NL\_HIGH} = 37,503 + \text{QoSFIX\_HIGH}_{q,nl} + \text{BWNL}_{r,q} * (9,2634 + \text{QoSVAR\_HIGH}_{q,nl}) * \text{PCR}_r$$

Where:

- $\text{BWNL}_{r,q}$: bandwidth (Mbps in SCR) of a VP (in VP switching) or a VC (in VC switching), characterised by non-local ATM transport, a ratio PCR/SCR r and a quality of service q .
- PCR_r : correction factor for PCR/SCR ratio r .
- $\text{QoSFIX\_LOW}_{q,nl}$, $\text{QoSFIX\_VAR}_{q,nl}$, $\text{QoSFIX\_HIGH}_{q,nl}$ and $\text{QoSVAR\_HIGH}_{q,nl}$: correction factors for QoS q in non-local ATM transport.

~~4042~~ The correction factor for PCR/SCR ratio which have to be taken into account are as follows:

PCR/SCR	1	2	3	4	5	6	7	8
	100,00%	155,61%	192,68%	225,12%	255,71%	285,37%	314,50%	343,29%

~~4143~~ The correction factor to apply per QoS are the following:

QoSFIX_LOW_q	Local	Non Local	QoSFIX_HIGH_q	Local	Non Local
CBR	-	-	CBR	-	-
UBR+	- 1,9916	- 2,1271	UBR+	- 3,0190	- 6,2897
VBR NRT	-	-	VBR NRT	-	-
VBR RT	-	-	VBR RT	-	-

QoSVAR_LOW_q	Local	Non Local	QoSVAR_HIGH_q	Local	Non Local
CBR	5,4868	9,0833	CBR	5,4868	9,0833
UBR+	- 1,2563	- 5,0317	UBR+	- 0,0672	- 1,5536
VBR NRT	-	-	VBR NRT	-	-
VBR RT	2,7434	4,5416	VBR RT	2,7434	4,5416

1.3.2.2. Formula for Local ATM

~~4244~~ The following formula allows to compute the ATM tariffs in Euros for bandwidths in Mbps for local ATM transport between DSLAM's and ATM Access Point to which Customer is connected (case of LEXs or LDCs directly connected to an ATM Access Point).

$$\text{ATM\_L tariff} = \text{MIN}(\text{ATM\_L\_LOW}, \text{ATM\_L\_HIGH})$$

$$\text{ATM\_L\_LOW} = 6,6063 + \text{QoSFIX\_LOW}_{q,l} + \text{BWL}_{r,q} * (4,1673 + \text{QoSVAR\_LOW}_{q,l}) * \text{PCR}_r$$

$$\text{ATM\_L\_HIGH} = 10,014 + \text{QoSFIX\_HIGH}_{q,l} + \text{BWL}_{r,q} * (0,2229 + \text{QoSVAR\_HIGH}_{q,l}) * \text{PCR}_r$$

Where:

- $BWNL_{r,q}$: bandwidth (Mbps in SCR) of a VP (in VP switching) or a VC (in VC switching), characterised by local ATM transport, a ratio PCR/SCR r and a quality of service q .
- PCR_r : correction factor for PCR/SCR ratio r (see §4249 above).
- $QoSFIX\_LOW_{q,l}$, $QoSFIX\_VAR_{q,l}$, $QoSFIX\_HIGH_{q,l}$ and $QoSFIX\_HIGH_{q,l}$: correction factors for QoS q in local ATM transport (see §4341 above).

1.3.3. One-time Fees

1.3.3.1. Fees for activation of VPs

	Euro
Activation fee per VP	€38,51

45 During a definite period of 6 months commonly agreed between the Beneficiary and Belgacom, which has to take place within the first 24 months after signing the Belgacom Reference Offer, Belgacom will only bill one activation fee per LEX (or LDC) for all VPs of same type activated by Belgacom for this Beneficiary during this period. After this period, an activation fee is due for any new VP.

1.3.3.2. Fees for change of ATM Transport parameters (VP modification)

	Euro
Modification fee per VP	€19,01

1.3.3.3. Bandwidth Rerouting Fee

Bandwidth Rerouting Fee will be charged when one logical point of termination of a vp changes, for example a new access line or a new pop.

	Euro
Activation fee per rerouting per VP	€2,07

1.3.3.4. Fees for de-activation of VPs

	Euro
De-Activation fee per VP	€19,44

1.3.4. Documentation of the VPs billing

4346 Belgacom will detail the invoicing VP per VP and deliver to the Beneficiaries the information needed to validate their invoice, like number of occupied positions per DSLAM and per day, and technical characteristics of the VP's.

1.3.5. Tariffs applicable for the Access Line

4447 It should to be mentioned that Belgacom has to work on the cost orientation basis, and that these costs have to be minimal for the Beneficiary. It means that, for example, "Access Line" ordered by a Beneficiary in the context of BROBA 2 contract, could be used by this Beneficiary to set up additional VPs for other purposes (e.g. a Turboline Wholesale contract). This example is not limitative neither exclusive.

48 It is also possible for the Customer sited data links, where the Beneficiary can also sublet this Access Line to third parties, e.g. PVP's set up by Belgacom.

49 For the tariffs applicable to Customer-Sited Access Line, reference is made to the BROTSOLL offer, type "Belgacom-external".

1.3.6. Tariffs applicable for Customer-Sited Access Line

45 For the tariffs applicable to Customer-Sited Access Line, reference is made to Belgacom Backhaul Leased Lines offer.

City	Address	NCOW	Applicable Tariff
Aalst	Ridderstraat 43	5321	OLO to LEX
Antwerpen – Berchem	Karel Coggestraat 2	3227	OLO to AGE
Antwerpen – Centrum	Lange Nieuwstraat 106	3224	OLO to AGE
Arlon	Avenue Jean-Baptiste Nothomb 40	6321	OLO to LEX
Ath	Rue Jean-Jaurès, 11	6828	OLO to LEX
Brugge – Assebroek	Matmeers 2 A	5033	OLO to AGE
Brussels – Ixelles/Elsene	Rue Borrens – Borrensstraat 16	2646	OLO to LEX
Brussels – Etterbeek	Rue J. de Lalaing – J. de Lalaingstraat 36-40	2280	OLO to LEX
Brussels – Evere	Avenue des Anciens Combattants – Oudstrijderlaan 94	2726	OLO to LEX
Brussels – Linthout	Rue V. Lefèvre – V. Lefèvre 24-26	2732	OLO to LEX
Brussels – Marais	Rue du Marais – Brockstraat 72-74	2220	OLO to AGE
Brussels – Paille	Rue Lebeau – Lebeauststraat 2	2513	OLO to AGE
Brussels – Sacré-Cœur	Avenue A.J. Slegers – A.J. Slegerslaan 36	2770	OLO to LEX
Brussels – Schaarbeek	Rue Jan Bloekx – Jan Bloekxstraat 26-30	2215	OLO to LEX
Brussels – St-Gilles –/St. Gillis	Rue Steens – Steensstraat 11	2538	OLO to LEX
Brussels – Uccle	Rue Rodenbach – Rodenbachstraat 133	02	OLO to LEX
Brussels – Woluwe	Voordestraat 10	2725	OLO to LEX
Charleroi – Centre	Rue de la science 2	7127	OLO to LEX
Charleroi – Gilly	Sentier de la Limite 80	7141	OLO to AGE
Chimay	Rue Reine Astrid 5	6021	OLO to LEX
Ciney	Rue d'Omalius 67 B	8321	OLO to LEX
Dendermonde	Courtenstraat 22	5221	OLO to LEX
Diest	Ferd. Allenstraat 38	1333	OLO to LEX
Dinant	Rue Bribosia 9	8222	OLO to LEX
Durbuy	Chainrue 52	8621	OLO to LEX
Genk	Europalaan 27	8930	OLO to LEX
Gent – Centrum	Sint-Niklaasstraat 27	9223	OLO to AGE
Gent – Keizer Karel	Keizer Karelstraat 1	9265	OLO to AGE
Hasselt	Paardsdamerstraat 10	1127	OLO to AGE
Herentals	Molenvest 13	1421	OLO to LEX
Huy	Rue du Vieux-Pont 16	85	OLO to LEX
Ieper	Vooruitgangsstraat 1	5720	OLO to LEX
Jemelle	Rue Delvigne 76	8421	OLO to LEX
Kortrijk	Doorniksestraat 61-65	5622	OLO to AGE
La Louvière	Rue de la Concorde 17	6422	OLO to LEX
Leuven	Vismarkt 17	1621	OLO to AGE
Libramont	Rue des alliés 1	6122	OLO to LEX
Liège – Centre	Rue de l'université 30	4223	OLO to AGE
Liège – Grétry	Rue d'Harseamp 17	4349	OLO to AGE
Meehelen	Stationstraat 58	1540	OLO to LEX
Mons	Rue des fosses 7	6533	OLO to AGE
Namur	Rue Marie-Henriette 60	8172	OLO to AGE
Namur	Rue Rogier 2	8123	OLO to AGE
Ninove	Groenmarkt 42	5433	OLO to LEX
Nivelles	Place Albert 1	6722	OLO to LEX
Oostende	Hendrik Serruyslaan 18 A	5970	OLO to LEX
Roeselare	H. Consciencestraat 3-5	5120	OLO to LEX
Ronse	Politieke Gevangenerstraat 14	5521	OLO to LEX
Stavelot	Cour de l'hôtel de ville 3	8088	OLO to LEX
Tournai	Rue de la Tête d'Or 9	6922	OLO to LEX
Verviers	Rue Thil Lorrain 6	8733	OLO to LEX
Veurne	Pannestraat 1	5831	OLO to LEX
Waremmé	Rue Joachim 67	1932	OLO to LEX
Wavre	Rue de la Limite 2	1022	OLO to LEX

4750 These prices are those stated in BIPT's advises on [BackhaulBROTSoLL of](#). These advises are the object of requests for annulment before the [“Council of State” Court of Appeal of Brussel](#).

Accordingly, Belgacom reserves its right to apply different prices, should these requests succeed.

~~1.3.7. Tariffs applicable for Belgacom-Sited Access Line~~

~~4851~~ For the tariffs applicable to Belgacom-Sited access line, reference is made to Belgacom Backhaul Leased Lines offer.

1.4. Migration fees

- ~~49~~52 Those fees only refer to migrations towards a BROBA ADSL service. The tariffs for migrations
- towards a BROBA SDSL service are described in the Annex 6 of BROBA II SDSL.
 - towards a BRUO service are set in the Annex H “Price List” of BRUO.

1.4.1. Single Line Migration fees

1.4.1.1. *Conversion from BROBA II ADSL with voice towards BROBA II ADSL without voice (or conversely), for the same OLO*

- ~~50~~53 The following tariffs are applicable for the conversion from BROBA II ADSL with voice towards BROBA II ADSL without voice (or conversely), for the same OLO.

	Euro
BROBA II with voice to BROBA II without voice and reverse, ~~with/due to Number Portability Request~~ asked <u>indirectly</u> by end-user <u>when he ceases/ports his voice</u>	~~€6,00~~ <u>€5,28</u>
~~BROBA II with voice to BROBA II without voice and reverse, asked by OLO~~	<u>€5,28</u>

- ~~51~~54 These fees include both the activation and the deactivation parts of the migration, and will be entirely invoiced to the Beneficiary.

1.4.1.2. *Other Migration fees*

- ~~52~~55 For ADSL and ADSL2 Reach Extended, the following Migration fees are applicable in the following cases:

- a. Change ownership: transfer of a line from Beneficiary 1 to Beneficiary 2.
- b. Convert: Product modification from any product to BROBA II ADSL or BROBA II ADSL2 Reach Extended (except cases listed in section 1.4.1.1)
- c. A combination of a. and b.

	Price
Change owner/Convert to BROBA II ADSL or ADSL2 Reach Extended with voice	€21,78
Change owner/Convert to BROBA II ADSL or ADSL2 Reach Extended without voice, <u>installed by Belgacom</u>	€24,11
<u>Change owner/Convert to BROBA II ADSL or ADSL2 Reach Extended without voice, installed by certified technician</u>	<u>€10,29</u>

- ~~53~~56 For ADSL2+, the following Migration fees are applicable in the following cases:

- a. Change ownership: transfer of a line from Beneficiary 1 to Beneficiary 2.
- b. Convert: Product modification from any product to BROBA II ADSL2+ (except cases listed in section 1.4.1.1)
- c. A combination of a. and b.

	Price
Change owner/Convert to BROBA II ADSL2+ with voice	€36,30
Change owner/Convert to BROBA II ADSL2+ without voice, installed by Belgacom	€38,30
Change owner/Convert to BROBA II ADSL2+ without voice, installed by certified technician	€10,29

[5457](#) The fees listed in §54 and 55 include both the activation and the deactivation parts of the migration, and will be entirely invoiced to the destination Beneficiary.

[58](#) [If during a repair action performed by Belgacom on a line migrated to BROBA ADSL or ADSL2+ without voice line installed by a certified technician, in case the trouble covered by the Trouble Ticket was due to an incorrect intervention performed by the certified technician, an additional fee for repair will be due. This fee will be invoiced on top of the Migration fee for BROBA II ADSL or ADSL2+ without voice, installed by certified technician.](#)

Additional fee for repair due to incorrect intervention by certified technician	Price
BROBA II ADSL without voice installed by certified technician	€46,72
BROBA II ADSL2+ without voice installed by certified technician	€60,91

[5559](#) For scenarios for which no specific Single Line migration process is developed (see list of active scenarios in Annex K Migrations), the provisioning will be realized in two steps, the first will be the deactivation of the previous situation and the second one the activation of the new situation. Therefore a deactivation fee will be invoiced to the Beneficiary of the previous situation and an activation fee will be billed to the Beneficiary of the new service. In case of product modification within the installed base of the same Beneficiary, this Beneficiary will be billed the deactivation fee and the activation fee.

1.4.2. Project Migration fees

[5660](#) Because of the specific character of the Project Migration, pricing will be proposed on a case-by-case quotation.

1.4.3. Mass Migration fees

[5761](#)

Migration Fee for Mass Migrations	Price
Physical Mass Migration to BROBA II ADSL	€45,50
Virtual Mass Migration to BROBA II ADSL	€8,45

5862 For scenarios for which no specific Mass migration process is developed (see list of active scenarios in Annex K Migrations), the provisioning will be realized in two steps, the first will be the deactivation of the previous situation and the second one the activation of the new situation. Therefore a deactivation fee will be invoiced to the Beneficiary of the previous situation and an activation fee will be billed to the Beneficiary of the new service. In case of product modification within the installed base of the same Beneficiary, this Beneficiary will be billed the deactivation fee and the activation fee.

1.5. Use of e-tool and databases

1.5.1. Repair e-Tools

~~5963~~ The e-tool for repair BROBA and the repair line measurement

Repair e-Tools	Price
Repair and Line Measurement	Free of Charge

1.5.2. Street Information

~~6064~~ The Beneficiary will be invoiced for the KVD inquiry performed.

Received in one inquiry:	Price
First KVD Inquiry (1 KVD + 1 half hour for looking up the info)	€17,25
For every extra KVD	€0,59
For every extra 20' started	€16,66
A maximum of €17.25 * {# of requested KVD's} will be billed	

~~6165~~ The Network Street Relation Database can be obtained in MS Access format.

Network Street Relation Database	Price
Initial License Fee	€16.660
1 update/year annual fee	€2.000
6 updates/year annual fee	€5.000

1.6. Training and certification costs of certified technicians

- 66 The program of the training to follow by each candidate certified technician is determined by Belgacom individually, based on the Belgacom trainings already received by each candidate and on its professional experience. For each candidate to the certification it will result in a personal training program, based on a series of theoretical and practical training modules, followed by an individual test. The duration of each training module is a multiple of half days. The duration of the test is less than a half day.
- 67 After its certification, each certified technician will have to follow mandatory updating sessions organized periodically by Belgacom to refresh its technical skills on the services covered by the project Certified Technician and communicate him the evolution of the processes and of the documentation systems. The duration of each updating session is a multiple of half days.
- 68 The cost of a theoretical training module, or of an updating session, of an half day is: € 79,00 per certified technician.
- 69 The cost of a practical training module of an half day is: € 68,00 per certified technician.
- 70 The cost of the test is: € 53,00 per certified technician.
- 71 If the certified technician is an employee of a Beneficiary, the cost of the training modules and of the test will be invoiced by Belgacom to this Beneficiary.
- 72 If the certified technician is a subcontractor or an employee of a subcontractor of one or several Beneficiaries, the cost of the training modules and of the test will be invoiced by Belgacom to the subcontractor.

2. Billing

2.1. Preliminary

6273 Parties are defined in the present document as Belgacom a telecommunication operator in Belgium and Beneficiary, an undertaking authorized to practice the activities covered by this agreement under the Belgian regulatory framework.

6374 The Belgacom billing process is based on a number of steps in which the two Parties have specific responsibilities. In order to implement this process, both Parties need to put in place (a) system(s) that will be used for the purposes of accounting and billing.

6475 For each BROBA product, Belgacom will invoice Beneficiary accordingly

6576 Belgacom shall record, store and process the Billing Data in accordance with Section 2 of this Document.

6677 The “Billing Data” is the data that is necessary to ascertain the charges payable by Beneficiary under the Agreement. The Billing Data is recorded via the Billing System as described in Section 2.2 of this Document.

6778 All information related to the Billing procedures between Belgacom and Beneficiary is covered by the obligation of confidentiality set out in the Agreement. Specifically, such information will be kept strictly confidential by the Parties and will only be used for the purposes of accounting, and invoicing between the Parties and will only be disclosed between the Parties, or as legally required or in the framework of formal dispute procedures. Belgacom will be under no obligation to provide to Beneficiary direct access to its Billing system nor to any other system or facility generating the Billing Data.

6879 Belgacom reserves the right to modify the layout and the presentation of the invoice to the Beneficiary.

2.2. Recording and storage of billing data

~~69~~80 For each service chargeable under the Agreement, Belgacom shall record via its Billing System at least the following Billing Data:

- Product/service ID;
- Type of request
- Subscription date;
- End of month of Subscription date;
- Customer ID;
- Account ID;

~~70~~81 The general list of billing data indicated above is not exhaustive. Pricing is set in the Section 1 of this Annex.

~~71~~82 Billing Data shall be stored for 60 days after the due date of the related invoice. In case of a dispute on the Billing Data, Belgacom will use all reasonable effort to keep the storage of the concerned Billing Data. The storage of these detailed Billing Data shall be limited to the disputed amount of Billing Data.

2.3. Confirmation of charging principles

~~72~~83 All charges payable under this Agreement shall be calculated in accordance with the rules set out in the relevant provisions of this Agreement and its Annexes.

~~73~~84 For internal purpose, Belgacom will use 6 decimals in Euro. The use of decimals is set as follows:

- Per line items up to 4 decimals can be used in Euro.
- The revenues, VAT and the totals use decimals in Euro.

~~74~~85 All the non-recurring charges will be mentioned in the Invoice of the Billing Period covering the Bringing Into Service Date.

~~75~~86 The recurring charges for the product fees will be mentioned in the Invoice of the Billing Period which the Bringing In Service Date encompasses. The Charges will be calculated on the proportion of the Billing Period in which the product and service fee were operational

~~76~~87 Beneficiary amount of charges will be divided in the groups of one-time fees and recurring fees for the services described in the pricelist of this offer (Section 1 of this Annex)

2.4. Invoices

~~7788~~ Subject to the specific rules applying to specific types of Services as set out in Appendix A, Belgacom shall submit to the Beneficiary, invoice(s) for the charges under the Agreement during the applicable Billing Period.

~~7889~~ For each Billing Period, Belgacom shall provide to Beneficiary the Invoice described hereafter. The Invoice will be established in accordance with the following rules:

- Invoice Details: the Invoice will list all the services by product that are provided by Belgacom to the Beneficiary.
- The above-mentioned Invoice will be transmitted via ordinary mail to the representatives or departments of Beneficiary as listed in Appendix B Contact persons.

~~7990~~ Any invoice or credit note transmitted by Belgacom will contain the following information, in addition to any legally required mentions and information:

- relevant Billing Period;
- total net amount in Euro;
- due VAT amount;
- total amount due in Euro (including VAT);
- Due Date.

~~8091~~ Belgacom shall use its best endeavours to issue invoices as of the start of the applicable Billing Period. Though, in respect of the development of billing systems by both Parties and the sending of invoices, Belgacom cannot ensure that the invoicing for the products and services provided will be performed within specific delays. Delays in the production of invoices can occur under these circumstances following notification by the Billing Party. Neither party may construe any late billing by the other party as a renunciation to its right to payment of the said bills.

~~8192~~ Notwithstanding the foregoing, if an adjustment is required following a change in the referred Price List, a pending Dispute (for which the appropriate Dispute resolution mechanisms have been timely activated in accordance with this Agreement) or the outcome of commercial negotiations having a retroactive effect, the amount of such adjustment shall be established and Belgacom shall issue an invoice or a credit note as the case may be, within 30 days from the date of the relevant adjustment.

~~8293~~ All changes to amounts invoiced in accordance with this Section 4 will be effected through credit notes or additional invoices.

2.5. Payment

8394 All charges due by Beneficiary to Belgacom under the Agreement shall be paid within 30 Calendar Days after issuance of the invoice (the “Due Date”).

8495 If Beneficiary has sent to Belgacom a Notice of Dispute related to an amount invoiced by Belgacom and if such Dispute has not been resolved by the Due Date the disputed amount may be withheld until the dispute is resolved provided that the remaining balance is payable on the Due Date.

8596 Credit notes will be set off against any payments due of the next invoice and are refundable when there are no outstanding invoices.

8697 If payment is not received by Belgacom on or before the Due Date, Belgacom will be entitled to an interest calculated on the basis of the legal interest rate + 2 percent points on the unpaid balance for late payment interests, administrative and recovery costs, but is only due if the dispute has been resolved in favour of Belgacom. This interest shall accrue from the Due Date until the date of payment in full of the amount to be paid. Such interest shall accrue day by day and shall not be compounded. In the event that a Dispute resolution procedure has been initiated by Belgacom as provided by the Agreement (including Section 6 of this Document), this interest shall be limited to the legal interest rate.

8798 Value Added Tax as well as any other applicable taxes, if any, shall be added to all or any part of the charges due under this Agreement and shall be paid by the Beneficiary responsible for making such payment.

8899 Any payments under this Agreement will be made in Euro and will be made by bank transfer on the bank accounts mentioned in the Invoice. Payment costs are borne by the Beneficiary. Costs of credit notes are borne by Belgacom.

2.6. Disputes

89100 The Parties shall use their reasonable endeavours to resolve, pursuant to this Section 6 disputes related to the calculation and settlement of the charges invoiced or to be invoiced pursuant to this Document. Notwithstanding the foregoing, either Party will be allowed to trigger at any time the dispute resolution procedure provided under the main body of the Agreement provided that such Party reasonably believes that the Dispute at stake involves aspects of the Parties’ rights and obligations broader than the mere calculation and settlement of charges pursuant to this Document. The fact that a Dispute involves aspects broader than the mere calculation and settlement of charges pursuant to this Document will not release the Disputing Party from its obligation to pay any undisputed amount pursuant to Section 2.5.2.

99101 Any Dispute under this Section 2.6 will be triggered by a Notice of Dispute sent by registered letter by the Beneficiary to Belgacom before the Due Date. Such Notice of Dispute will indicate the disputed amounts, as well as a summary of the grounds for the Dispute and the position of the Disputing Party. Any amount invoiced under the Agreement will be deemed accepted unless a Notice of Dispute has been sent in accordance with above.

91102 Upon receipt of the Notice of Dispute, the Parties shall exchange by ordinary mail any information necessary or useful for solving the Dispute.

92103 Within 15 Working Days from the date of the Notice of Dispute, Belgacom will provide, by registered mail, an answer (“Notice of Reply”) to the Beneficiary. If Belgacom does

not accept some or all the arguments of the Beneficiary, the Notice of Reply will contain a justified reply to the arguments of the Beneficiary. If Belgacom accepts all or some arguments of the Beneficiary, Belgacom will, together with the Notice of Reply, issue a credit note for the relevant amount.

~~93~~104 If, within 15 Working Days from the receipt of the Notice of Reply, the Beneficiary confirms its position in writing by registered letter, the Parties will escalate the Dispute within their respective organization as provided under Section 2.6.6. If the Beneficiary fails to confirm its position within 15 Working Days, from the date of the Notice of Reply, any outstanding amounts will be paid promptly and without delay and the Dispute will be deemed settled.

~~94~~105 If the Parties have been unable to settle the Dispute as provided under the foregoing provisions, they will refer the matter to Implementation Committee, which, if deemed necessary by either Party, will be organized for this specific purpose. If after such meeting, the Dispute remains, the Parties will follow such additional steps in the escalation procedure as provided in the main body of the Agreement, or, if requested by either Party, the Dispute will be submitted to a certified accountant to be either jointly appointed by the Parties, or, failing agreement between the Parties in this respect, to be appointed by “Belgisch Instituut voor Bedrijfsrevisoren”/“Institut Belge des Réviseurs d’Enterprise”. This certified accountant will investigate and determine a solution for the Dispute, acting as an expert and not as an arbitrator. Unless there is evidence of a manifest error, decision of the certified accountant will be final in respect of those elements covered by the Dispute referred to him/her and will be binding on the Parties. The Parties will co-operate with this investigation. The costs of the certified accountant will be borne as determined by him/her in proportion to the outcome of the Dispute. Prior to undertaking his/her mission, the certified accountant will provide the Parties with an estimate of the relevant fees and costs. Upon final settlement of the Dispute, any necessary credit note will be issued and any outstanding amount will be paid promptly and without delay.

Appendix A: Billing parameters

95106 Product covered under this billing and accounting document:

96107 BROBA 2 (Data Connectivity Broba II)

97108 The general list of billing services below is not exhaustive, and may be adapted.
Pricing is set in Section 1 of this Annex.

98109 Tariffs applicable for the End User line

- One time fees
 - Inquiry fee
 - Lex Length Check
 - Activation fee of ADSL Service on an End User line (activation of line profile).
 - VC Configuration Fee for ADSL Service on an End-User Line (activation of a VC deactivation of a VC, modification).
 - Additional fee for Telecom Installation.
 - De-activation fee of ADSL Service on an End User line (de-activation of the line profile and of the last VC is not included).
 - Modification of End-User line profile (Line profile)
 - Change Date fee.
 - Cancellation fee
 - Migration fee
 - Change Use fee (Convert)
 - Move from LDC to LEX
 - Pending due to useless end-user visit
 - Improved SLA
 - Small Network Adaptations.
 - Wrongful repair request
- Monthly recurring fee per End User line

99110 Tariffs applicable for the ATM Transport

- Monthly recurring fee for ATM Transport between DSLAM located in a specific Lex and Belgacom ATM Access Point to which the Beneficiary is connected. The monthly recurring fee is based on the total bandwidth (VCs and VPs) arriving at each ATM Access Point (No ventilation between connection to single and various ATM Access Points).
- One-time Fees
 - Fees for activation of VPs
 - Fees for change of ATM transport parameters (VP modification)
 - Bandwidth Rerouting Fees

100111 Tariffs applicable for the Access Line

- Tariffs applicable for Customer-Sited Access Line
- Tariffs applicable for Belgacom-Sited Access Line

101112 Belgacom reserves its right to modify the lay out and the presentation of its invoice to the Beneficiary.

Appendix B: Contact Persons

The Invoices will be sent to the under mentioned contact persons:

Contact person in Belgacom

Name	
Division	National Wholesale
Address	Koning AlbertII-laan 27, 1030 Brussels
Tel	+32 2
Fax	+32 2
Bank Account	

Contact persons Beneficiary

Name	
Division	
Room	
Address	
Tel	
Fax	
Bank Account	

Billing address Beneficiary

Name	
Division	
Room	
Address	
Tel	
Fax	

BROBA II SDSL ~~2008~~

Annex 6

Pricing and Billing

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Preliminary notes

All prices included in this Price List are expressed in Euro, VAT excluded.
Structure and prices of the below Price List are subject to further adaptations.

For prices related to ATM in VP switching mode, reference is made to the BELGACOM Reference Offer for Bitstream Access - BROBA II ADSL Annex 6 – Pricing & Billing.

1. Pricing

1.1. Startup fee

1. The start-up fee is charged to Beneficiary, operator, consultant or other that requires explanations by Belgacom BROBA specialists (Product Management and/or Customer service) on the offer content (e.g. this fee is not charged for negotiation meetings). This fee is due until the first installation of the Beneficiary of a VP to a DSLAM.

Information on BROBA	Price
Rate per hour per Belgacom person	€ 99,49

1.2. Tariffs applicable for the end-user line

1.2.1. XML Inquiry Fee

2. The XML inquiry fee will be invoiced only in case the Beneficiary does not place a firm order within 45 working days after the inquiry has been proceeded by Belgacom. In such case, this Beneficiary will be invoiced the following amount for the work performed by Belgacom.

	Euro
Inquiry Fee	€9,94

1.2.2. LLU Inquiry Tool

3. The Beneficiary will be invoiced the following amount per inquiry done.

	Euro
Per inquiry done	€0,00

1.2.3. Activation fee of the SDSL service on an end-user line

Activation Fee per line	Euro
Activation fee for BROBA II SDSL (VC or VP-switching) without customer visit	€121,855
Activation fee for BROBA II SDSL (VC or VP-switching), installed by certified technician	€25,73

4. The activation fees are inclusive the price of the activation of the first VC on the End User Line.
5. For the Activation of a BROBA II SDSL without customer visit on an End User Line, the above-mentioned fee includes the Splitter installation, travel to the end-user and hardware costs.
- ~~5. a certain percentage of the NTP installation and hardware costs, following allocation rules approved by the BIFT.~~
- ~~6. An activation fee for Broba II SDSL without customer visit will be created once the NTP process will be in place. In parallel, the activation fee for BROBA II SDSL with customer visit will be reviewed~~
6. If during a repair action performed by Belgacom on a newly installed BROBA SDSL line installed by a certified technician, in case the trouble covered by the Trouble Ticket was due to an incorrect installation performed by the certified technician, an additional fee for repair will be due. This fee will be invoiced on top of the Activation fee for BROBA II SDSL, installed by certified technician.

<u>Additional fee for repair due to incorrect installation by certified technician</u>	<u>Price</u>
<u>BROBA II SDSL installed by certified technician</u>	<u>€129,03</u>

1.2.4. Rush Order

7. When Rush order has been requested the standard activation fee will be doubled.

~~1.2.4.~~ 1.2.5. Fees related to VCs

	Euro
Activation/Modification/De-activation fee per VC (in VC switching mode)	€11,08
Activation/Modification/De-activation fee per VC (in VP switching mode)	€7,69

- ~~7.~~ 8. For the first VC activated together with the activation of the End-User Line, the above-mentioned fees for the VC Activation must not be added to the Activation Fee per line.

8.9. For the last VC de-activated together with the de-activation of the End-User Line, the above-mentioned fees for the VC de-activation must not be added to the De-activation Fee per line.

~~1.2.5.1.2.6.~~ **Modification of End-User Line Profile**

	Euro
Modification of Line profile (in VC switching mode)	€11,08
Modification of Line profile (in VP switching mode)	€7,69

9.10. In case of simultaneous Modification of a Line Profile and of a VC of the same End-User Line, both fees will be invoiced.

~~1.2.6.1.2.7.~~ **De-activation Fee of the SDSL Service on an End User line**

10.11. This is the fee that the beneficiary has to pay in case the beneficiary wants to stop an already activated service.

	Euro
De-activation fee	€19,43

11.12. The above-mentioned fee is inclusive the price of the de-activation of the last VC on the End User Line.

~~1.2.7.1.2.8.~~ **Change Date Fee**

12.13. When a Beneficiary (or Belgacom) requests to change the date of implementation, Belgacom (or the Beneficiary) will invoice this Beneficiary (or Belgacom) the following Change Date fee:

Change Date Fee	Euro
Change before DD-1 (12 pm)	€6,59

13.14. In case such change is requested after due date-1 (12 pm), the same fee will be paid by the Beneficiary (or Belgacom) up to the condition that the new activation date is within 20 working days.

~~1.2.8.1.2.9.~~ **Cancellation Fee**

14.15. The Beneficiary requesting the cancellation of an order shall pay to Belgacom the administrative fee mentioned in the table below:

Cancellation Fee	Euro

Cancellation before DD-1 (12 pm)	€6,99

~~15.16.~~ In case cancellation is requested after DD-1 (12 pm), half of the related activation fee and half of the de-activation fee (instead of the cancellation fee) will have to be paid by the Beneficiary (refer to point 1.2.3. of this section)

~~1.2.9.1.2.10.~~ **Pending order due to useless end-user visit**

Pending order due to useless end-user visit	Euro
Per intervention	€20,04

~~16.17.~~ This fee is due when an end-user of the Beneficiary is not present at his premises on the appointment date, if the validate message has been sent by Belgacom to the Beneficiary in the timing described in Annex 5 (SLA), so that the Beneficiary has had the opportunity to propose an alternative date-hour if necessary, and if the installation is performed by Belgacom.

~~1.2.10.1.2.11.~~ **Improved SLA on repair**

~~17.18.~~ One-time fee for configuration of systems and resources. The setup fee is to be paid one time only, for the first Improved SLA BROBA II ("Improved SLA Broba II ADSL & SDSL VP switching" or "Improved SLA SDSL VC switching").

	One-time fee
Setup fee	€2.000,47

~~18.19.~~ One-time fee per line for setup of ISLA in case of a new line.

	One-time fee
Activation fee	€8,23

~~19.20.~~ One-time fee per line for change of the SLA from Basic to Improved (or reverse) in case of an existing line.

	Per local loop
Change SLA type fee	€8,23

~~20.21.~~ Rental fee per local loop with the ISLA type in addition to the monthly fee.

	Monthly Rental
Extra Rental Fee	€8,74

~~21.~~ Extra monthly rental fee for the ATM transport repair timer.

	Monthly Rental
Extra ATM Fee	€5,75 per VC

1.2.12. Improved SLA on provisioning

22. For application of the ISLA, a one-time fee for follow-up and coordination will be applicable per customer visit.

	<u>One-time fee</u>
<u>Per customer visit</u>	<u>€10</u>

~~1.2.11.~~1.2.13. Small Network Adaptations

~~22.~~23. In case Belgacom needs to perform additional work, also called Small Network Adaptations, both the Small network Adaptations and the installation of the line will always be performed by Belgacom, according to the terms and definitions as defined in this Offer. T, the following fee will apply in surplus of the installation Activation fee relevant to an installation by Belgacom.

	Euro
Small Network Adaptations	€441,66

~~23.~~24. This fee will only be billed after having given to the Beneficiary the proof of the effective need and execution (with number of pairs introduced) of the Small Network Adaptations. This has to be done in written form. If no proof is given, the relevant fee is not due by the Beneficiary. Only the number of pairs related to the request are due, on a pro-rata base.

~~1.2.12.~~1.2.14. Wrongful Repair request

~~24.~~25. In case of wrongful repair request by a Beneficiary, Belgacom will invoice this Beneficiary an administrative fee of 104,61 Euro.

~~25.~~26. If Belgacom has performed specific work due to this wrongful repair request made by Beneficiary, Belgacom will invoice these additional costs to Beneficiary.

~~26.~~27. In case of wrongfull repair request by a Beneficiary, the invoicing of 104,61€ is to be done only in accordance with the provisions of section 5 ("Wrongful Repair Requests") of the Annex 5, in either case. Belgacom will provide the following information to the Beneficiary as well as to the BIPT: detailed data about the relevant cases, the ticket numbers, the date and hour of opening and closing of the tickets, the identification numbers (e.g. directory numbers) and that's the reason why Belgacom's responsibility is not involved.

~~1.2.13.~~1.2.15. Monthly Recurring fee per End User line

Monthly Recurring Fee	Euro
BROBA II SDSL specific costs	€ 6,91

BRUO 2006 Raw Copper	Price applicable for the invoiced period
Total monthly rental fee	BRUO Raw Copper + BROBA II SDSL specific costs

1.3. Tariffs applicable for the ATM Transport

27:28. Reference is made to the BELGACOM Reference Offer for Bitstream Access BROBA II ADSL Annex 6 – Pricing & Billing.

1.4. Tariffs applicable for the Access Line

28:29. Reference is made to the BELGACOM Reference Offer for Bitstream Access - BROBA II ADSL Annex 6 – Pricing & Billing.

1.5. Migration fees

~~29:30.~~ Those fees only refer to migrations towards a BROBA SDSL service. The tariffs for migrations

- towards a BROBA ADSL service are described in the Annex 6 of BROBA II ADSL.
- towards a BRUO service are described in the Annex H “Price List” of BRUO.

1.5.1. Single Line Migration fees

~~30:31.~~ The Physical Migration fee is applicable in the following cases:

- a. Change ownership: transfer of a line from Beneficiary 1 to Beneficiary 2.
- b. Convert: Product modification from any product to BROBA II SDSL.
- c. A combination of a. and b.

Physical Migration fee	Price
Change owner/Convert to BROBA II SDSL, installed by Belgacom	€ 63,98
Change owner/Convert to BROBA II SDSL, installed by certified technician	€ 41.06

~~32.~~ The Physical Migration fee includes both the activation and the deactivation parts of the migration, and will be entirely invoiced to the destination Beneficiary.

33. [If during a repair action performed by Belgacom on a line migrated to BROBA SDSL line installed by a certified technician, in case the trouble covered by the Trouble Ticket was due to an incorrect intervention performed by the certified technician, an additional fee for repair will be due. This fee will be invoiced on top of the Migration fee for BROBA II SDSL, installed by certified technician.](#)

Additional fee for repair due to incorrect intervention by certified technician	Price
BROBA II SDSL installed by certified technician	€ 55.82

~~31:34.~~ For scenarios for which no specific Single Line migration process is developed (see list of active scenarios in Annex K Migrations), the provisioning will be realized in two steps, the first will be the deactivation of the previous situation and the second one the activation of the new situation. Therefore a deactivation fee will be invoiced to the Beneficiary of the previous situation and an activation fee will be billed to the Beneficiary of the new service. In case of product modification within the installed base of the same Beneficiary, this Beneficiary will be billed the deactivation fee and the activation fee.

1.5.2. Project Migration fee

~~32:35.~~ Because of the specific character of the Project Migration, pricing will be proposed on a case-by-case quotation.

1.6. Use of e-tool and databases

1.6.1. Repair e-Tools

~~33~~36. The e-tool for repair BROBA and the repair line measurement

Repair e-Tools	Price
Repair and Line Measurement	Free of Charge

1.6.2. Street Information

~~34~~37. The Beneficiary will be invoiced for the KVD inquiry performed.

Received in one inquiry:	Price
First KVD Inquiry (1 KVD + 1 half hour for looking up the info)	€ 17,25
For every extra KVD	€ 0,59
For every extra 20' started A maximum of €17.25 * {# of requested KVD's} will be billed	€ 16,66

~~35~~38. The Network Street Relation Database can be obtained in MS Access format.

Network Street Relation Database	Price
Initial License Fee	€ 16.660
1 update/year annual fee	€ 2.000
6 updates/year annual fee	€ 5.000

1.7. Training and certification costs of certified technicians

- 39. The program of the training to follow by each candidate certified technician is determined by Belgacom individually, based on the Belgacom trainings already received by each candidate and on its professional experience. For each candidate to the certification it will result in a personal training program, based on a series of theoretical and practical training modules, followed by an individual test. The duration of each training module is a multiple of half days. The duration of the test is less than a half day.
- 40. After its certification, each certified technician will have to follow mandatory updating sessions organized periodically by Belgacom to refresh its technical skills on the services covered by the project Certified Technician and communicate him the evolution of the processes and of the documentation systems. The duration of each updating session is a multiple of half days.
- 41. The cost of a theoretical training module, or of an updating session, of an half day is: € 80,00 per certified technician.
- 42. The cost of a practical training module of an half day is: € 68,00 per certified technician.
- 43. The cost of the test is: € 53,00 per certified technician.
- 44. If the certified technician is an employee of a Beneficiary, the cost of the training modules and of the test will be invoiced by Belgacom to this Beneficiary.
- 45. If the certified technician is a subcontractor or an employee of a subcontractor of one or several Beneficiaries, the cost of the training modules and of the test will be invoiced by Belgacom to the subcontractor.

~~1.7.1.8.~~ Billing

~~1.8.1.9.~~ Preliminary

~~36.46.~~ Parties are defined in the present document as Belgacom a telecommunication operator in Belgium and Beneficiary, an undertaking authorized to practice the activities covered by this agreement under the Belgian regulatory framework.

~~37.47.~~ The Belgacom billing process is based on a number of steps in which the two Parties have specific responsibilities. In order to implement this process, both Parties need to put in place (a) system(s) that will be used for the purposes of accounting and billing.

~~38.48.~~ For each BROBA product, Belgacom will invoice Beneficiary accordingly

~~39.49.~~ Belgacom shall record, store and process the Billing Data in accordance with Section 2 of this Document.

~~40.50.~~ The "Billing Data" is the data that is necessary to ascertain the charges payable by Beneficiary under the Agreement. The Billing Data is recorded via the Billing System as described in Section 2.2 of this Document.

~~41.51.~~ All information related to the Billing procedures between Belgacom and Beneficiary is covered by the obligation of confidentiality set out in the Agreement. Specifically, such information will be kept strictly confidential by the Parties and will only be used for the purposes of accounting, and invoicing between the Parties and will only be disclosed between the Parties, or as legally required or in the framework of formal dispute procedures. Belgacom will be under no obligation to provide to Beneficiary direct access neither to its Billing system nor to any other system or facility generating the Billing Data.

~~42.52.~~ Belgacom reserves the right to modify the layout and the presentation of the invoice to the Beneficiary.

~~1.9.1.10.~~ Recording and storage of billing data

~~43.53.~~ For each service chargeable under the Agreement, Belgacom shall record via its Billing System at least the following Billing Data:

- Product/service ID;
- Type of request
- Subscription date;
- End of month of Subscription date;
- Customer ID;
- Account ID;

~~44.54.~~ The general list of billing data indicated above is not exhaustive. Pricing is set in the Section 1 of this Annex.

~~45.55.~~ Billing Data shall be stored for 60 days after the due date of the related invoice. In case of a dispute on the Billing Data, Belgacom will use all reasonable effort to keep the storage of the concerned Billing Data. The storage of these detailed Billing Data shall be limited to the disputed amount of Billing Data.

~~1.10.1.11.~~ Confirmation of charging principles

~~46.56.~~ All charges payable under this Agreement shall be calculated in accordance with the rules set out in the relevant provisions of this Agreement and its Annexes.

~~47.57.~~ For internal purpose, Belgacom will use 6 decimals in Euro. The use of decimals is set as follows:

- Per line items up to 4 decimals can be used in Euro.
- The revenues, VAT and the totals use decimals in Euro.

~~48.58.~~ All the non-recurring charges will be mentioned in the Invoice of the Billing Period covering the Bringing Into Service Date.

~~49.59.~~ The recurring charges for the product fees will be mentioned in the Invoice of the Billing Period, which the Bringing In Service Date encompasses. The Charges will be calculated on the proportion of the Billing Period in which the product and service fee were operational

~~50.60.~~ Beneficiary amount of charges will be divided in the groups of one-time fees and recurring fees for the services described in the pricelist of this offer (Section 1 of this Annex)

~~1.11.1.12.~~ Invoices

~~51.61.~~ Subject to the specific rules applying to specific types of Services as set out in Appendix A, Belgacom shall submit to the Beneficiary, invoice(s) for the charges under the Agreement during the applicable Billing Period.

~~52.62.~~ For each Billing Period, Belgacom shall provide to Beneficiary the Invoice described hereafter. The Invoice will be established in accordance with the following rules:

- Invoice Details: the Invoice will list all the services by products that are provided by Belgacom to the Beneficiary.
- The above-mentioned Invoice will be transmitted via ordinary mail to the representatives or departments of Beneficiary as listed in Appendix B Contact persons.

~~53.63.~~ Any invoice or credit note transmitted by Belgacom will contain the following information, in addition to any legally required mentions and information:

- relevant Billing Period;
- total net amount in Euro;
- due VAT amount;
- total amount due in Euro (including VAT);
- Due Date.

~~54.64.~~ Belgacom shall use its best endeavors to issue invoices as of the start of the applicable Billing Period. Though, in respect of the development of billing systems by both Parties and the sending of invoices, Belgacom cannot ensure that the invoicing for the products and services provided will be performed within specific delays. Delays in the production of invoices can occur under these circumstances following notification by the Billing Party. Neither party may construe any late billing by the other party as a renunciation to its right to payment of the said bills.

~~55.65.~~ Notwithstanding the foregoing, if an adjustment is required following a change in the referred Price List, a pending Dispute (for which the appropriate Dispute resolution mechanisms have been timely activated in accordance with this Agreement) or the outcome of commercial negotiations having a retroactive effect, the amount of such adjustment shall be established and Belgacom shall issue an invoice or a credit note as the case may be, within 30 days from the date of the relevant adjustment.

~~56.66.~~ All changes to amounts invoiced in accordance with this Section 4 will be made through credit notes or additional invoices.

~~1.12.1.13.~~ Payment

~~57:67.~~ All charges due by Beneficiary to Belgacom under the Agreement shall be paid within 30 Calendar Days after issuance of the invoice (the “Due Date”).

~~58:68.~~ If Beneficiary has sent to Belgacom a Notice of Dispute related to an amount invoiced by Belgacom and if such Dispute has not been resolved by the Due Date the disputed amount may be withheld until the dispute is resolved provided that the remaining balance is payable on the Due Date.

~~59:69.~~ Credit notes will be set off against any payments due of the next invoice and are refundable when there are no outstanding invoices.

~~60:70.~~ If payment is not received by Belgacom on or before the Due Date, Belgacom will be entitled to an interest calculated on the basis of the legal interest rate + 2 percent points on the unpaid balance for late payment interests, administrative and recovery costs, but is only due if the dispute has been resolved in favor of Belgacom. This interest shall accrue from the Due Date until the date of payment in full of the amount to be paid. Such interest shall accrue day by day and shall not be compounded. In the event that Belgacom as has initiated a Dispute resolution procedure provided by the Agreement (including Section 6 of this Document), this interest shall be limited to the legal interest rate.

~~61:71.~~ Value Added Tax as well as any other applicable taxes, if any, shall be added to all or any part of the charges due under this Agreement and shall be paid by the Beneficiary responsible for making such payment.

~~62:72.~~ Any payments under this Agreement will be made in Euro and will be made by bank transfer on the bank accounts mentioned in the Invoice. Payment costs are borne by the Beneficiary. Costs of credit notes are borne by Belgacom.

~~1.13.1.14.~~ Disputes

~~63:73.~~ The Parties shall use their reasonable endeavors to resolve, pursuant to this Section 6 disputes related to the calculation and settlement of the charges invoiced or to be invoiced pursuant to this Document. Notwithstanding the foregoing, either Party will be allowed to trigger at any time the dispute resolution procedure provided under the main body of the Agreement provided that such Party reasonably believes that the Dispute at stake involves aspects of the Parties’ rights and obligations broader than the mere calculation and settlement of charges pursuant to this Document. The fact that a Dispute involves aspects broader than the mere calculation and settlement of charges pursuant to this Document will not release the Disputing Party from its obligation to pay any undisputed amount pursuant to Section 2.5.2.

~~64:74.~~ Any Dispute under this Section 2.6 will be triggered by a Notice of Dispute sent by registered letter by the Beneficiary to Belgacom before the Due Date. Such Notice of Dispute will indicate the disputed amounts, as well as a summary of the grounds for the Dispute and the position of the Disputing Party. Any amount invoiced under the Agreement will be deemed accepted unless a Notice of Dispute has been sent in accordance with above.

65:75. Upon receipt of the Notice of Dispute, the Parties shall exchange by ordinary mail any information necessary or useful for solving the Dispute.

66:76. Within 15 Working Days from the date of the Notice of Dispute, Belgacom will provide, by registered mail, an answer ("Notice of Reply") to the Beneficiary. If Belgacom does not accept some or all the arguments of the Beneficiary, the Notice of Reply will contain a justified reply to the arguments of the Beneficiary. If Belgacom accepts all or some arguments of the Beneficiary, Belgacom will, together with the Notice of Reply, issue a credit note for the relevant amount.

67:77. If, within 15 Working Days from the receipt of the Notice of Reply, the Beneficiary confirms its position in writing by registered letter, the Parties will escalate the Dispute within their respective organization as provided under Section 2.6.6. If the Beneficiary fails to confirm its position within 15 Working Days from the date of the Notice of Reply, any outstanding amounts will be paid promptly and without delay and the Dispute will be deemed settled.

68:78. If the Parties have been unable to settle the Dispute as provided under the foregoing provisions, they will refer the matter to Implementation Committee, which, if deemed necessary by either Party, will be organized for this specific purpose. If after such meeting, the Dispute remains, the Parties will follow such additional steps in the escalation procedure as provided in the main body of the Agreement, or, if requested by either Party, the Dispute will be submitted to a certified accountant to be either jointly appointed by the Parties, or, failing agreement between the Parties in this respect, to be appointed by "Belgisch Instituut voor Bedrijfsrevisoren"/"Institut Belge des Réviseurs d'Enterprise". This certified accountant will investigate and determine a solution for the Dispute, acting as an expert and not as an arbitrator. Unless there is evidence of a manifest error, decision of the certified accountant will be final in respect of those elements covered by the Dispute referred to him/her and will be binding on the Parties. The Parties will co-operate with this investigation. The costs of the certified accountant will be borne as determined by him/her in proportion to the outcome of the Dispute. Prior to undertaking his/her mission, the certified accountant will provide the Parties with an estimate of the relevant fees and costs. Upon final settlement of the Dispute, any necessary credit note will be issued and any outstanding amount will be paid promptly and without delay.

Appendix A: Billing parameters

~~69:79.~~ Product covered under this billing and accounting document:

~~70:80.~~ The general list of billing services below is not exhaustive, and may be adapted.
Pricing is set in Section 1 of this Annex.

~~71:81.~~ Tariffs applicable for the End User line

- One time fees
 - Inquiry fee
 - Lex Length Check
 - Activation fee of SDSL Service on an End User line (including activation of the line profile)
 - VC Configuration Fee for SDSL Service on an End-User Line (activation of a VC, deactivation of a VC, modification).
 - De-activation fee of SDSL Service on an End User line (excluding de-activation of the line profile and of the last VC)
 - Modification of End-User line profile (Line profile)
 - Change Date fee.
 - Cancellation fee
 - Pending order due to useless end-user visit
 - Improved SLA
 - Small Network Adaptations.
 - Wrongful repair request
- Monthly recurring fee per End User line

~~72:82.~~ Tariffs applicable for the ATM Transport

- Monthly recurring fee for ATM Transport between DSLAM located in a specific Lex and Belgacom ATM Access Point to which the Beneficiary is connected. The monthly recurring fee is based on the total bandwidth (VCs and VPs) arriving at each ATM Access Point (no ventilation between connection to single and various ATM Access Points).
- One-time Fees
 - Fees for activation of VPs
 - Fees for change of ATM transport parameters (VP modification)

~~73:83.~~ Tariffs applicable for the Access Line

- Tariffs applicable for Customer-Sited Access Line
- Tariffs applicable for Belgacom-Sited Access Line

~~74:84.~~ Belgacom reserves its right to modify the layout and the presentation of its invoice to the Beneficiary.

APPENDIX B: Contact Persons

The Invoices will be sent to the under mentioned contact persons:

Contact person in Belgacom

Name	
Division	National Wholesale
Address	Koning AlbertII-laan 27, 1030 Brussels
Tel	+32 2
Fax	+32 2
Bank Account	

Contact persons Beneficiary

Name	
Division	
Room	
Address	
Tel	
Fax	
Bank Account	

Billing address Beneficiary

Name	
Division	
Room	
Address	
Tel	
Fax	

APPENDIX C: Calculation methodology for bandwidth

Reference is made to the BELGACOM Reference Offer for Bitstream Access - Data Connectivity
BROBA II ADSL Annex 6 – Pricing & Billing.

BROBA II ADSL/SDSL ~~2008~~

Annex 8

Prepayment Terms & Conditions

Prepayment Terms and Conditions

1. Belgacom will send on a monthly basis a pre-invoice at least on the 2nd working day after the starting of the month preceding the considered billing month. For Beneficiaries that are in service, the first pre-invoice shall be based on the average of the invoices for Services issued by Belgacom during the last three months. For Beneficiaries not yet in service and concluding a new Contract, the first pre-invoice shall be based on the valuation of the average of the invoices for Services to be issued by Belgacom within the first three months of services.
2. The amount of the pre-invoice shall be adapted on a quarterly basis, i.e. increased or lowered as the case may be, based on the amounts due by the Beneficiary for the Services provided under the Contract during the previous quarter.
3. The Beneficiary agrees to pay the amount of the pre-invoice at the latest the 10th calendar day from the date of the pre-invoice.
4. The amount of the pre-invoice shall be paid on a specific account number to be communicated. The interests generated by the amount of the pre-invoice paid on this account during the period starting from the date the pre-invoice is paid until the date the final invoice is paid shall be accrued to the Beneficiary.
5. Within 15 calendar days after sending the final invoice, Belgacom will send a credit note regarding the pre-invoice.
6. If for the same month the amount of the pre-invoice is higher than the amount of the final invoices, Belgacom shall reimburse the balance.
7. If for the same month the amount of the pre-invoice is lower than the amount of the final invoices, the Beneficiary will pay the surplus.
8. Within 15 days following the final invoice, the Beneficiary will make the payment by wire transfer. If payment is not received by Belgacom on or before this due date, Belgacom ~~is will~~ be entitled to ~~the an~~ interest calculated on the basis of the legal interest rate + 2 percent points on the unpaid balance for late payment ~~interest, and~~ administrative and recovery costs. For disputed amounts, this interest is only due if the dispute has been resolved in favour of Belgacom as defined in the Contract.
9. If the Beneficiary disagrees with an invoice received from Belgacom, it must notify in writing Belgacom thereof before the due date of such invoice in accordance with the relevant provisions of the Contract.
10. Without prejudice to other legal or contractual remedies and notwithstanding anything to the contrary in the Agreement, in the event the Beneficiary fails to pay on due time any undisputed amount due under the present Prepayment terms and conditions, Belgacom shall be entitled to:
 - Suspension of any SLA obligations that are not foreseen in the Basic SLA;
 - Refusal in writing of any new Services, including Migration Services.
 - Suspension of the existing Services in accordance with article 84 of the Annex 1 – General Terms and Conditions.

Wholesale Broadband Access VDSL2

Main Body

This document starts to produce effects as of 21st of June, 2010 and will be valid until a subsequent Reference Offer is validly published.
As from 21st of June, 2010, interested Beneficiaries are in a position to use the Open Calendar facilities.
However, the rights and obligations related to Certified Technician will only be applicable as from 11th of October, 2010.

Communicated-Submitted to the Belgian Institute for Postal Services and Telecommunications on 18/11/2009 08/03/2010

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□ FILENAME WBA VDSL2 Main Body_100305.doc □ □ FILENAME WBA VDSL2 Main Body_091118.doc □

~~This document starts to produce effects as of 18/11/09 and until a subsequent Reference Offer is validly published~~

With a view to the signature of the contract, the Wholesale Broadband Access VDSL2 can be negotiated by the parties and does not substitute for the parties' will.

Except otherwise agreed by the parties, the contract shall be adapted if the Wholesale Broadband Access VDSL2 is modified. This adaptation shall be in accordance with this Wholesale Broadband Access VDSL2 modification.

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1. Glossary

- Certified Technician: Any technician employed either by a Beneficiary or by one of Beneficiary's subcontractors, trained and certified by Belgacom in order to perform, in place of a Belgacom technician, the installation of the WBA VDSL2 without voice lines.
- **Customer Equipment:** Any equipment that belongs to the Customer
- **IP-DSLAM:** Digital Subscriber Line Access Multiplexer. IP-DSLAMs are located in Belgacom Local Exchanges and they are owned and managed by Belgacom.
- **LDC:** Belgacom Local Distribution Center
- **Lex:** Belgacom Local Exchange
- **Network Termination Point (NTP):** The termination point of a loop at the End User premises. The Network Termination Point is a part of the Belgacom network.
- **NNI:** Network Node Interface.
- **OAL:** OLO (Ethernet) Access Line. An Access Line is an interface between the Customer Equipment and a Belgacom Service Router located in the Service PoP of the Service Area.
- **OLO:** Other Licensed Operator
- **P-bit:** priority bit.
- **ROP :** Remote Optical Platform.
- **Service PoP:** a Service PoP provides access to the Belgacom Ethernet network through NNI connection with a Belgacom Service Router.
- **UNI:** User to Network Interface.
- **VDSL2 :** VDSL2 is an access service based VDSL2 (Very high Speed Digital Subscriber Line 2) technology that allows simultaneous transport of data and voice service, using the same local exchange service loop, to be sent over existing facilities.
- **VLAN:** Virtual Local Area Network. Unless specified otherwise, the word "VLAN" equally refers to a shared or to a dedicated VLAN.
- **WBA:** Wholesale Broadband Access.
- **WBA VDSL2:** Unless specified otherwise, the word "WBA VDSL2" equally refers to the two types of service: with shared or with dedicated VLANs.

2. Scope

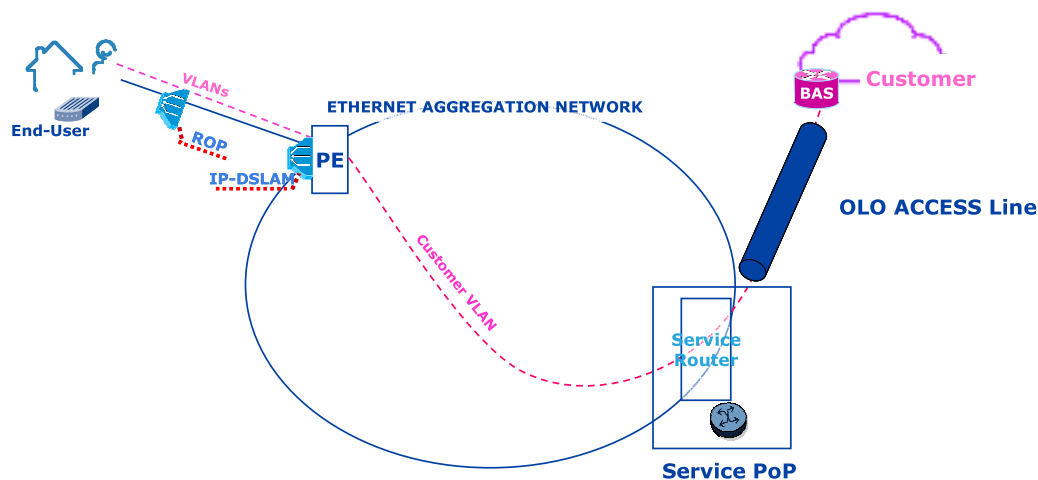
1. This document provides a description of the Belgacom's WBA VDSL2 Service, including the method of connection.
2. This document entails the conditions related to the provision by Belgacom to the Customer, of the WBA VDSL2 service, which will enable the Customer to define its own VDSL2 products and to market, distribute and sell under its name and on its behalf its own VDSL2 products towards End Users, using Belgacom installed and existing Network infrastructure, pursuant to the technical limitation of this existing infrastructure for offering the service.
3. This offer and its tariffs are only applicable for connecting user premises either connected to an IP-DSLAM located in Belgacom premises (LEX or LDC) or connected to a ROP equipped with a remote IP-DSLAM module.
4. This document contains the technical, operational and financial conditions, as well as a possible method of connection and the applicable terms and conditions related to such service

5. The provision of the hereunder-described service supposes the following list of prerequisites that will need to be met at all times and in all circumstances:
- WBA VDSL2 Connection between the network of the Customer and the Belgacom network (hereafter the "Network") is established pursuant to the principles set out in this document;
 - A line from the End User to a Belgacom IP-DSLAM must be available.
 - The WBA VDSL2 Service is only offered if technically feasible and in accordance with VDSL2 deployment in Belgacom network. Belgacom will perform a technical feasibility study on the user line (line condition, distance etc.) after having received the order of the Customer;

3. Description of the WBA VDSL2 service

3.1. General

6. The WBA VDSL2 will allow the Customer to connect on Belgacom network at a Belgacom Service PoP and to receive any Ethernet frame from the End User using VDSL2 technology. The transport end-to-end between the End User and the Customer is Ethernet.
7. The offering of service covers:
 - The provision by Belgacom of one or several OLO Access Lines between the Customer Equipments and the Belgacom Service PoPs;
 - The provision by Belgacom of bandwidth (VLANs) between the IP-DSLAMs in which the Customer wants to connect End Users and the Belgacom Service PoPs to which the Customer Equipments are connected; These VLANs can be either shared between several users of a Customer in a same LEX or dedicated per separate user.
 - The provision and the configuration by Belgacom of Ethernet Transport between the IP-DSLAMs and the Customer Equipments.
 - The provision by Belgacom of VDSL2 lines to the user.



Graph 1: end to end overview

8. The WBA VDSL2 service is offered on basis of the equipment delivered by Belgacom's supplier at the moment of the equipment's bringing into service in a given site.
9. Belgacom will ensure the management of the IP-DSLAMs and their proper configuration.

3.2. *OLO Access Line between a Belgacom Service PoP and the Customer Equipment*

10. The connection between the network of the Customer and the Belgacom network is realized through OLO Access Lines (OAL) between the Customer Equipments and the Belgacom Service Routers, sited in the Belgacom Service PoPs.
11. To use the WBA VDSL2 to connect users of a Service Area, the Customer must interconnect with Belgacom in at least one Service PoP of this Area. If the Customer wants to be active anywhere in Belgium, he needs at least one interconnection per Area.
12. The list of Belgacom Service PoPs is available in Appendix B.
13. The description of the OLO Access Lines, and in particular the exhaustive list of combinations of bandwidth, protection mode and type (Belgacom-sited or Customer-sited) offered by Belgacom in the scope of this agreement is described in the Appendix A of this document.
14. The Customer is responsible for
 - the choice of the Service PoPs on which terminate its OALs,
 - their dimensioning,
 - the choice of their protection modes,
 - and the choice of their types.
15. The Customer shall pay to Belgacom the installation and rental fees of its Access Lines, as set forth in the Annex "Pricing and Billing".
16. For information on the Technical Specifications of the OLO Access Lines, reference is made to Annex 2 (Section 10: OLO Access Line).
17. The connection between the Belgacom Service Router and the Customer Equipment is subject to successful testing procedure, as set forth in Annex 2, (Section 10.3: Testing the OAL).

3.3. *Ethernet Transport between the IP-DSLAM and the Customer Equipment*

18. This WBA VDSL2 service is offering an Ethernet connectivity between the OLO Access Lines and the user VDSL2 lines.
19. Four service qualities are offered for the WBA VDSL2 service, differentiated by the Ethernet p-bit (P):
 - P=0: best effort.
 - P=1: low priority.
 - P=3: medium priority.
 - P=5: highest priority.
20. Shared and dedicated VLANs
 - *Shared* VLANs: per service quality and per LEX, the Virtual LANs (VLANs) of the user lines of a Customer are aggregated and transported in 1 VLAN to a Service PoP where

an Access Line of the Customer is connected. This Service PoP has to be located in the same Service Area as the LEX himself.

In each LEX where Belgacom installed IP-DSLAM's, Belgacom will create for the Customer maximum 4 *shared* VLANs - each dedicated to a different service quality - to which the Customer's End Users are connected in order to transport their VDSL2 traffic from the DSLAM to the Customer Equipment and reversely.

- *Dedicated* VLANs: per Customer's user, all Virtual LANs (VLANs) are transported transparently in 1 *dedicated* VLAN to a Service PoP where an Access Line of the Customer is connected. This Service PoP has to be located in the same Service Area as the LEX of the Customer's user.
21. There are 5 Service Areas for the whole of Belgium, each of them covering 1 geographical area. Per Service Area there are 2 Service PoPs, located in 2 different buildings. The list of Belgacom Service Areas, their definition and the address of the related Service PoPs is available in Appendix B.
 22. VLANs will be configured by Belgacom, on behalf of the Customer, to transport the VDSL2 traffic of the Customer's End Users from the IP-DSLAMs on which Customer's End Users are connected up to the Customer's Equipment and reversely.

3.4. Bandwidth between the Local Exchanges and the Belgacom Service PoP to which the Customer equipment is connected

3.4.1. For shared VLANs

23. The Customer will order bandwidth and more precisely shared VLANs between each LEX in which the Customer wants to connect End Users and where Belgacom installed IP-DSLAM's and the Belgacom Service PoP(s) to which the Customer is connected.
24. The bandwidths that can be ordered by the Customer between a LEX and a Belgacom Service PoP are summarized in the following table, in function of the service quality chosen by the Customer for the related VLAN.

Offered VLAN Bandwidth	P=0	P=1	P=3	P=5
50Mbps	yes	yes	yes	yes
100Mbps	yes	yes	yes	yes
200Mbps	yes	yes	yes	no
300Mbps	yes	yes	yes	no
500Mbps	yes	yes	no	no
1gigbps	yes	no	no	no

25. Higher bandwidths could be possible in the future, if sufficient justification can be submitted by The Customer to Belgacom.

3.4.2. For dedicated VLANs

26. There is no pre-provisioning of the dedicated VLANs. Each dedicated VLAN is configured by Belgacom at the moment of the implementation of the user line, following specifications of the dedicated VLAN profile given by the Customer in the VDSL2 line ordering. The Customer is responsible for the choice and definition of each dedicated VLAN profile.

27. The Customer can obtain up to 10 dedicated VLAN profiles, and may only use its own dedicated VLAN profiles.
28. Each dedicated VLAN profile has following attributes:
 - Layer 2 (p-bit) or Layer 3 Qos (precedence, DSCP),
 - Maximum Upstream bandwidth per P-bit/precedence, DSCP,
 - Maximum Downstream bandwidth per P-bit/precedence, DSCP.

3.5. Interconnection at LEX level

29. Beside the connection of The Customer on Service Pop level described in section 3.1, 3.2, 3.3 and 3.4, which allows The Customer to use WBA VDSL2 to connect users of the whole Service Areas, The Customer may also interconnect with Belgacom at LEX level.
30. In case of interconnection of The Customer on a LEX, The Customer may only use WBA VDSL2 to connect users connected to this LEX, and transport Ethernet frames from and to users of this LEX.
31. In case of interconnection of The Customer on a LEX, Belgacom will provide, on behalf of The Customer who will define their dimensioning, types and protection types
 - One or several OLO Access Lines between the Customer Equipments and the Belgacom Service Routers, sited in this LEX,
 - bandwidth (VLANs) between the IP-DSLAMs of this LEX and the OAL(s) connected to this LEX. These VLANs can be either shared between several users of a Customer in this LEX or dedicated per separate user.

3.6. Activation of WBA VDSL2 on a specific End User line

32. Subject to the conditions that the Customer has ordered the necessary infrastructure (OLO Access Line and VLAN(s)¹), the Customer will be able to offer to End Users services based on VDSL2 technology, using Belgacom's installed and existing Network infrastructure, pursuant to the technical limitation of this existing infrastructure for offering VDSL2 technology.
33. Belgacom will deliver WBA VDSL2 service to specific End Users according to the Customer's orders transmitted to Belgacom. Belgacom is able to configure the individual lines of End Users at the IP-DSLAM level on basis of following characteristics:
 - With or without voice service
 - 'With voice' means: data service offered in combination with a Belgacom PSTN/ISDN line.
 - 'Without voice' means: data service offered without combination with a Belgacom PSTN/ISDN line.
 - With shared or with dedicated VLANs
 - "With shared VLANs":
 - Maximum 4 VLANs per user line, each dedicated to a different service quality. The 4 service qualities are:
 - P=0: best effort.
 - P=1: low priority.

¹ Only for WBA VDSL2 lines on shared VLANs.

- P=3: medium priority.
 - P=5: highest priority.
- The VLANs of different Customer's user lines are aggregated per service quality and per LEX and transported in 1 shared VLAN to a Service PoP where an Access Line of the Customer is connected.
- "With dedicated VLANs":
 - Maximum 4 Ethernet service qualities per VDSL2 connection, each service quality being differentiated by the Ethernet p-bit (P). The 4 service qualities are:
 - P=0: best effort.
 - P=1: low priority.
 - P=3: medium priority.
 - P=5: highest priority.
 - All VLANs of a separate Customer's user line are transported transparently in 1 dedicated VLAN to a Service PoP where an Access Line of the Customer is connected.
- Configuration by Belgacom of the VDSL2 line profile, according to the rules set forth in section 3.13, VDSL2 Deployment Rules:

LP name	Max Upstream	Max Downstream	Min Upstream	Min Downstream
LP701	2.000 Kbps	20.000 Kbps	640 Kbps	14.500 Kbps
LP702	2.000 Kbps	16.500 Kbps	640 Kbps	10.000 Kbps
LP703	1.000 Kbps	14.500 Kbps	640 Kbps	10.000 Kbps
LP704	512 Kbps	9.000 Kbps	256 Kbps	4.600 Kbps

34. For VDSL2, the splitter is dependent on the type of telephone line (PSTN or ISDN). Consequently, any cancellation or any conversion on the telephone services may possibly affect the Customer VDSL2 based service and require the installation of new equipment at the End User premises. Such installation will be at the Customer's expenses.

3.7. Use of the distribution pairs

35. The WBA VDSL2 Service will only be delivered by Belgacom on the direct pairs of the distribution cables, as defined in the Annex C "Technical Specifications" of BRUO, in the section 5 "Common technical specifications for the equipment to be connected to the loop or subloop", sub-section 5.1. "VDSL2", as described in the addendum of 24/10/2007 "Addendum to BRUO Annex C Technical Specifications regarding VDSL2".
36. The Customer can check the availability of direct pairs for a certain user, based on the user dial number, its address or its circuit ID, through the use of a web tool, the LLU Inquiry Tool, available on the Customer's personal page on the CWS secured site.

3.8. Internal cabling

37. To order a WBA VDSL2 Service for a specific user, the OLO must respect, at the customer premises of this user, the technical specifications regarding internal cabling defined in the Annex C "Technical Specifications" of BRUO, in the section 5 "Common technical specifications for the equipment to be connected to the loop or subloop", sub-section 5.1. "VDSL2", as described in the addendum of 24/10/2007 "Addendum to BRUO Annex C Technical Specifications regarding VDSL2".

- 38. If the specifications mentioned in the paragraph 37 are not fulfilled, one WBA VDSL2 line could disturb the other VDSL2 lines in the same cable bundle.
- 39. Therefore, the non-respect of the specifications mentioned in paragraph 37, will trigger at Belgacom the downgrade of the line towards a repair profile.

3.9. Network Termination Point

- 40. The Network Termination Point is the first termination point of a loop at the End User premises. The Network Termination Point is a part of the Belgacom network.
- 41. The NTP required for WBA VDSL2 is the model TF2007, equipped with its specific centralized splitter. This splitter protects the transmission of the VDSL2 signal towards the VDSL2 modem.
- 42. When correctly placed as first introduction point, the TF2007 and its specific full rate splitter are specially designed to respect the internal cabling rules mentioned in Section 3.8, "Internal Cabling".
- 43. This full rate splitter presents transmission characteristics specific to VDSL2, but is also suitable for ADSL and ADSL2+.
- 44. The access to the high bandwidth at the End User will be at the splitter egress of the centralized splitter.

3.10. WBA VDSL2 modem

- 45. The provision of VDSL2 on an existing End User line also requires the installation of a modem at the End User side. This modem will be provided and installed by the Customer, or the Customer's end user, according to the requirements set forth in §46.
- 46. The modem used by the End User must be in conformity with the applicable standardization and must be interoperable with the Belgacom network. Currently, only the modem defined in the Annex 2, Technical Specifications (Section 8: Modem) is supported on the Belgacom network, and may be installed at End User side. The technical specifications of this modem are described in the Annex 2 (Section 8: Modem).

3.11. WBA VDSL2 user line installation

3.11.1. With shared VLANs

- 47. The Customer may order the provisioning of a WBA VDSL2 line with shared VLAN according to two installation types: without or with user visit.
- 48. Customer or Customer's End User is always responsible for the delivery and installation of the full rate splitter on the NTP.

Without user visit

49. The Customer or the Customer's user performs the installation at the user premises. Customer or Customer's user is responsible for the delivery and installation of the NTP.
50. Notwithstanding the deployment rules set forth in Section 3.13, an installation without user visit is only possible if:
 - The End User is connected to direct pairs as described in Section 3.7;
 - The internal cabling requirements defined in Section 3.8 are met;
 - The NTP defined in Section 3.9 is present and correctly connected to the BGC network.

The Customer should make sure these conditions are met, e.g. by using the LLU inquiry tool, by questioning its user at the order intake or by performing an on-site survey at user premises.

51. If during a repair action performed by Belgacom on a newly installed WBA VDSL2 line with shared VLAN installed without End User visit [by Belgacom](#), it is found that the trouble covered by the Trouble Ticket was due to the absence of the NTP defined in Section 3.9, Belgacom will be entitled to invoice its repair intervention following the tariffs defined in the Annex 6, Pricing and Billing.

[52. If during a repair action performed by Belgacom on a newly installed WBA VDSL2 without voice line with shared VLAN installed without User visit by a certified technician, it is found that the trouble covered by the Trouble Ticket was due to the incorrect installation performed by the certified technician, Belgacom will be entitled to invoice its repair intervention following the tariffs defined in the Annex 6, Pricing and Billing.](#)

With user visit

[52:53.](#) The Customer may also order the provisioning of a WBA VDSL2 line with shared VLAN with user visit, in order to let Belgacom [or a certified technician](#) perform the NTP installation at the user premises. Belgacom [or the certified technician](#) is then responsible for the delivery and installation of the NTP. [In case of installation by Belgacom, t](#)²his installation includes the placement² of maximum 20 meters cable between the introduction and the NTP.

[53:54.](#) If an activation for WBA VDSL2 line with shared VLAN is ordered [with installation by Belgacom and](#) without user visit, but during the activation process of the line Belgacom finds that a End User visit is required (e.g.: to swap the End User from a return to a direct pair), Belgacom will inform the Customer and perform the installation with End User visit. [The installation will then be invoiced following the tariffs of installation with user visit defined in the Annex 6, Pricing and Billing](#)

[54:55.](#) If no Network Termination Point is present, it will be installed by Belgacom [or by a certified technician](#) at the moment of the line provisioning. This is automatically the case for:

- Small Network Adaptations (at no extra cost for the Customer, i.e. this cost is included in the SNA fee);

[56. If during a repair action performed by Belgacom on a newly installed WBA VDSL2 without voice line with shared VLAN installed with User visit by a certified technician, it is found that the trouble covered by the Trouble Ticket was due to the incorrect installation](#)

² Only in case no NTP initially present on site, no vertical cable, no drilling work, and placement in existing cable gutter.

performed by the certified technician, Belgacom will be entitled to invoice its repair intervention following the tariffs defined in the Annex 6, Pricing and Billing.

3.11.2. With dedicated VLANs

55:57. During the provisioning of a WBA VDSL2 line with dedicated VLAN Belgacom or the certified technician is responsible for the delivery and installation of the NTP at the user premises. In case of installation by Belgacom, ~~t~~ This installation includes the placement³ of maximum 20 meters cable between the introduction and the NTP.

56:58. Customer or Customer's End User is always responsible for the delivery and installation of the full rate splitter on the NTP.

57:59. If no Network Termination Point is present, it will be installed by Belgacom or by a certified technician at the moment of the line provisioning. This is automatically the case for:

- Small Network Adaptations (at no extra cost for the Customer, i.e. this cost is included in the SNA fee);

60. If during a repair action performed by Belgacom on a newly installed WBA VDSL2 without voice line with dedicated VLAN installed by a certified technician, it is found that the trouble covered by the Trouble Ticket was due to the incorrect installation performed by the certified technician, Belgacom will be entitled to invoice its repair intervention following the tariffs defined in the Annex 6, Pricing and Billing.

3.12. Small Network Adaptations

58:61. The Introduction Cable (also referred to as drop wire) is defined as the physical part of a user line that connects the Distribution Cable to the user Network Termination Point.

59:62. In case no suitable Introduction Cable is available for the provisioning of a WBA VDSL2, the following solutions, called Small Network Adaptations, will be applicable:

- Realization of a new introduction in the building of the Beneficiaries User
- Renewal of the introduction in the building of the Beneficiaries User
- Splicing additional pairs in the existing introduction splice of the building of the Beneficiaries User
- Moving existing introduction from an existing Distribution Cable to another existing Distribution Cable.

60:63. These solutions will only be available upon specific request of the Customer and providing that the Belgacom standard conditions for access are fulfilled. This requires that a free duct or an open trench is available on the private domain. If a free duct or an open trench is not available on the private domain, Belgacom can be asked to also perform this part of the work on condition that the Customer agrees to pay the price for that part of the work performed by Belgacom. This price will be determined on a case-by-case basis.

64. The certified technicians will never perform Small Network Adaptations.

64:65. Belgacom will only perform the Small Network Adaptations if the splicing is done in front of the premises of that specific User. Belgacom will provide an Introduction Cable with a standard length of 20 meters to provide connection between the Distribution cable

³ Only in case no NTP initially present on site, no vertical cable, no drilling work, and placement in existing cable gutter.

and the Network Termination Point. In case an introduction with a length more than 20 meters has to be provided, Belgacom will charge the Customer the relevant price for the extra work. On the private domain, duct and trench must be provided by the Customer.

62-66. In case no more free pairs are available in the Distribution Cable, the request for WBA VDSL2 without voice will be rejected. The construction or trenching of new distribution cabling, new street cabinets or new feeder cabling is outside the scope of the present offer.

3.13. VDSL2 deployment rules

63-67. The VDSL2 Line Profiles defined in §33 will be provisioned by Belgacom on an end user line according to the following deployment rules:

Att _{Loop} [dB]	Length _{Loop} [m]	Line Profile name
<0,7	<700	LP701
<1	<1.000	LP702

Where:

- Att_{Loop} = the loop attenuation at 800 Hz between the ROP and the user premises,
- Length_{Loop} = the loop length between the ROP and the user premises,
- The conditions on loop attenuation and loop length must be fulfilled simultaneously to assign a specific Line Profile on an end user line.

64-68. Those conditions are applicable both for with voice (PSTN or ISDN) and without voice WBA VDSL2 lines.

65-69. Those values are only deployment rules and not a performance guarantee. The values are subject to evolution and could be reviewed.

3.14. Termination of the voice subscription with WBA VDSL2 with voice

66-70. In case of a WBA on VDSL2 with voice service where both Belgacom and the Customer provide services to an End User, it can occur that the End User cancels his voice subscription for that WBA VDSL2 with voice service. In that case, independent of the reason for termination of the voice subscription, Belgacom will ensure that the service on the high bandwidth remains into service.

67-71. Belgacom will inform the Customer that the WBA on VDSL2 with voice service has been converted to a WBA on VDSL2 without voice service, for which the Customer will be charged the monthly rental fee for WBA VDSL2 on a non-active loop instead of WBA VDSL2 on an active loop. For the change to WBA on VDSL2 without voice, a conversion fee as specified in Annex 6 Pricing and Billing is applicable.

4. Operational Processes

68:72. The provisioning and repair processes for the OAL, the VLAN and the End User lines are detailed in the Annex 4, Planning and Operations.

5. Pricing and Billing

69:73. Principle: all Standard Fees as described in Annex 6, Pricing and Billing, will be invoiced to and are to be paid by the Customer whenever relevant.

70:74. The Customer will receive a monthly invoice containing the fees (recurring and non-recurring) for that period. Invoices related to any relevant fees are to be paid within the foreseen deadlines as set out in the Annex 6, Pricing & Billing document.

6. Unique reference for without PSTN or ISDN Belgacom services

71:75. In case a Customer sends a request to take over a BRUO/BROBA/WBA VDSL2 service “without PSTN or ISDN Belgacom services” from another Customer or a Belgacom xDSL without voice service, there will be an issue in the identification of the copper pair on addresses with for example more than one pair in service.

72:76. For a request from a BROBA/BRUO/WBA VDSL2 without PSTN or ISDN Belgacom service or from a Belgacom xDSL without voice service, the Customer will include the circuit ID of the service communicated to the prior Customer as identification of the service to be transferred.

73:77. The circuit ID that has been communicated by Belgacom at the provisioning of a new BRUO/BROBA/WBA VDSL2 service or of a new Belgacom xDSL without voice service is a unique reference that will identify both the service and the copper pair.

74:78. The Customer communicates, for all services without PSTN or ISDN Belgacom services, the circuit ID provided by Belgacom to its End User. This should be done by including this reference on the bills and contracts that are sent to the End User for the service based on BRUO/BROBA/WBA VDSL2. By that, in case of transfer, the circuit ID can be exchanged between a Customer and the End User, just like is done with the dial number in the case of a with voice product. As a consequence the Circuit ID can be included systematically in the orders and this will avoid further problems in this case.

75:79. The Belgacom xDSL without voice service is identified by a circuit-id which can be found at the invoice.

Appendix A: Description of the OLO Access Line

- 76:80. The OLO Access Line is a point-to-point, high-speed data transfer service, offering a speed from 1Gb, between your site and the Belgacom Ethernet network.
- 77:81. The OLO Access Line is based on Belgacom's fibre optic infrastructure. This is a comprehensive service which includes the network infrastructure, the transmission equipment and proactive management by Belgacom.
- 78:82. OLO Access Line is available throughout Belgium. Nevertheless, for each request, Belgacom will carry out a preliminary feasibility study to determine the infrastructure works that are required (works in the public and/or private domain, installation of fibre optic cables, entry points into buildings, etc.).
- 79:83. The terms, conditions and requirements set out in this section determine the general framework between Belgacom and the Customer on OLO Access Line Service in the framework of the provision of a connection between a Belgacom Service Router, located in a Belgacom Service PoP, and the Customer Equipment, in the framework of this service. This Service will be referred to hereafter as "OLO Access Line".
- 80:84. For the provision of OLO Access Line, the Customer will subscribe a one (1) year contract, under which the OLO Access Line is made available to the Customer for a fixed term of one year. At the end of this period, the contract will be tacitly renewed for an indefinite duration and can be terminated at any time with a notice of at least one calendar month. If the Customer wishes to terminate the contract during the initial one-year term, the Customer will pay to Belgacom a termination fee equal to the total of the rental fees until the end of such term.
- 81:85. The OLO may order Customer-Sited OLO Access Lines, in case the line terminates in the Customer premises, outside any Belgacom colocation or Belgacom-Sited OLO Access Lines, in case the line must terminate in its colocation in the same building as the Service PoP.

1. Customer-Sited OLO Access Line

a. Description

82:86. Customer-Sited OLO Access Line is a connection system that is provided in its entirety by Belgacom between the Customer Connection point at the Customer premises, and a Belgacom Service Router.

83:87. Belgacom will install the necessary transmission equipment at the premises of the Customer.

84:88. The Customer-Sited OLO Access Line Service consists of one (1) or more Gigabit Ethernet (GbE) systems.

85:89. The 1 GbE Systems provided under this Service Plan do not have Diversity of routing.

86:90. The Customer Connection point is located at the Customer's premises.

b. Implementation

87:91. The implementation of Customer-Sited OLO Access Line Service will be in accordance with the Technical Specifications provided in Annex 2, Technical Specifications – (Section 10: OLO Access Line).

c. General Conditions

88:92. A Customer-Sited OLO Access Line Service can be ordered by the Customer between a specified Belgacom Service PoP (Connection Point) and the specified Customer's premises.

89:93. The Customer shall provide and maintain, at its expense, the cabling from the Point of Connection in the Customer Premises to the Customer equipment including any cross connections that are required.

90:94. All Belgacom transmission equipment shall comply with the appropriate Belgacom Technical Specifications provided in Annex 2, Technical Specifications – (Section 10: OLO Access Line).

d. Specific Conditions

91:95. Belgacom will identify each 1GbE Customer-Sited OLO Access Line provided pursuant to the conditions of this Section through attributing them a codification number.

2. Belgacom-Sited OLO Access Line

a. Preliminary

92-96. A Belgacom-Sited OLO Access Line Service can be brought into service with regard to a specified site, and the Customer can be entitled to install the equipment required to this effect in the Belgacom building concerned, if and only if the Customer has prior to this time signed an appropriate Colocation Agreement with regard to the site concerned.

93-97. The Belgacom-Sited OLO Access Line Service can only be used for all connection purposes with Belgacom Ethernet data network.

94-98. For the sake of clarity, it is noted that OLO Access Lines covered by this document are 1 GbE OLO Access Lines.

b. Description

95-99. Belgacom-Sited OLO Access Line Service will only be available in Belgacom Service PoP.

96-100. A “Belgacom-Sited OLO Access Line Service” is a connection service where Belgacom offers the possibility to a Customer to provide the entire OLO Access Line including the customer transmission equipment that is installed in a Belgacom technical building. The Customer will install its cable infrastructure at least up to an introduction duct designated by Belgacom in the immediate vicinity of the Belgacom Service PoP (building) in which any Belgacom Service Router is located.

97-101. The Customer Point of Connection for this type of OLO Access Line is located in the Belgacom premises on the indoor cable connecting the Customer's transmission equipment to the Belgacom DDF, at the place where that cable enters the collocation room.

98-102. In the event that Belgacom is caused to replace the collocation room in which the transmission equipment of the Customer is to be installed, then both Parties will cooperate to find a mutually acceptable solution.

99-103. The Customer shall install equipment in its collocation area and following the rules set out in the collocation agreement.

c. General Conditions

100-104. All Customer transmission equipment shall comply with the Technical Specifications provided in Annex 2 – (Section 10: OLO Access Line).

101-105. The Customer shall provide to its employees full information regarding the content of the rules to be respected regarding Belgacom-Sited OLO Access Lines.

d. Procedures

~~102-106.~~ The Customer is responsible for determining the number of Belgacom-Sited OLO Access Line Service that the Customer requires. In this respect, Belgacom does not make a representation that it will at all times be in a position to provide the full capacity ordered by the Customer. In particular, it is not excluded that, taking into account possible evolutions in the future, Belgacom may be confronted with a high number of requests for the installation of additional collocation spaces in different buildings that would not allow Belgacom to respect all relevant timers. In these cases, Belgacom will have to inform the market.

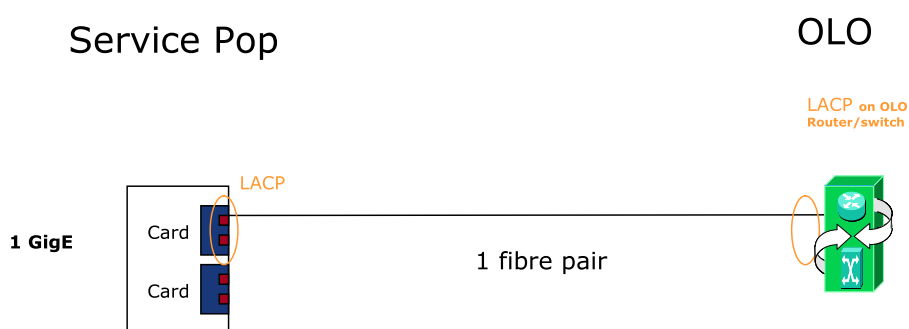
3. Product Options

The Belgacom-sited and Customer-sited implementations, generate following “product options”, and offering different levels of redundancy.

Options	Protection
1 GE BGC-sited	-
1 GE Customer-sited	-
1+1 GE BGC- and Customer-sited	Port + fibre + card in BGC Service Pop

a. 1 GE / BGC sited

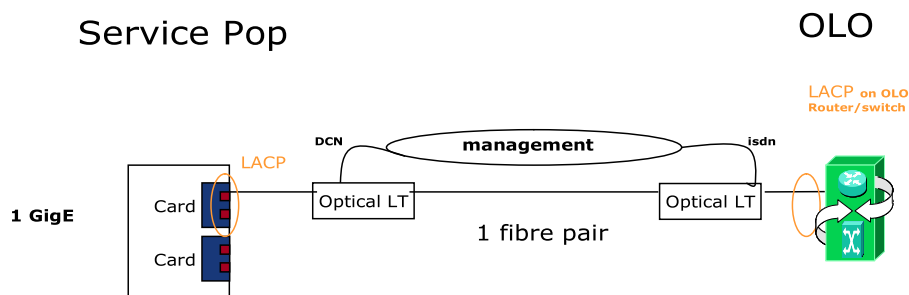
1GE / BGC sited



Graph 2: design of the OLO Access Line 1GE Belgacom-sited

b. 1GE / Customer sited

1GE / Customer sited

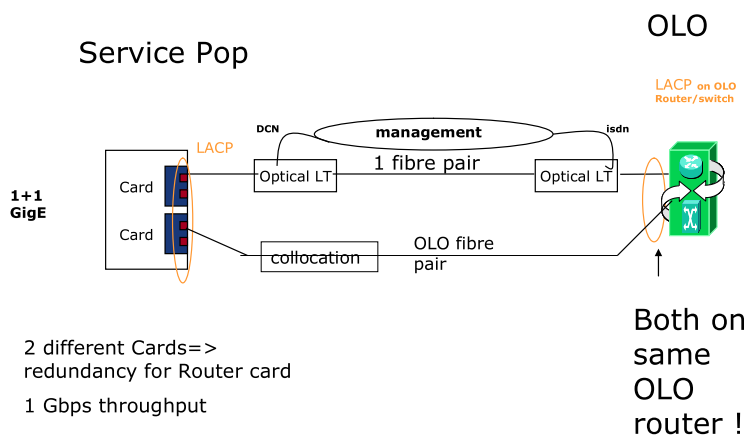


Graph 3: design of the OLO Access Line 1GE Customer-sited)

c. 1+1 GE / Belgacom + Customer sited

The BGC link is working / The OLO fibre pair is stand-by.

1+1 GE / BGC + Customer sited

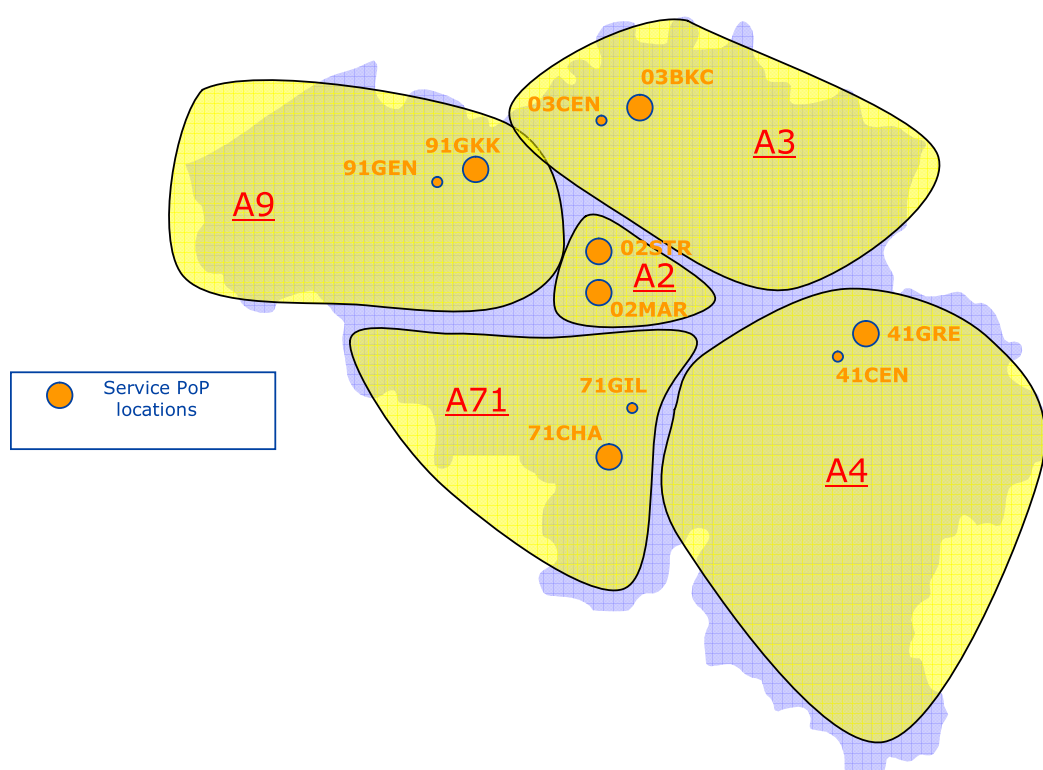


Graph 4: design of the OLO Access Line 1+1 GE Belgacom- & Customer-sited

Appendix B: List of Service Areas and Service PoPs

a. Overview

5 Service Areas and 10 Service PoPs



b. Definition of the Service Areas

Service Area Included Telephone Zones

A3:	03, 011, 012, 013, 014, 015, 016, 089
A2:	02
A4:	019, 04, 061, 063, 080, 081, 082, 083, 084, 085, 087
A71:	010, 060, 064, 065, 067, 068, 069, 071
A9:	050, 051, 052, 053, 054, 055, 056, 057, 058, 059, 09

(*): For the sake of clarity, it is confirmed that the zone codes indicated above in the context of the present offer are limited to the numbers which identify fixed network termination points. In particular, 09 and 04 are respectively limited to the number series 092, 093 and 042, 043. As far as the code 080 is concerned, the numbers starting with 0800 are excluded.

c. List of Service PoPs

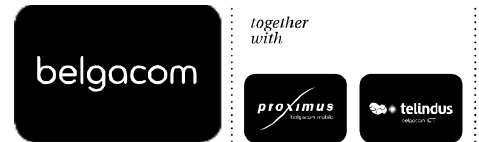
Area		City	Address	NCOW
A9	91GKK	Gent - Keizer Karel	Keizer Karelstraat 1	9265
A9	91GEN	Gent - Centrum	Sint Niklaasstraat 27	9223
A3	03CEN	Antwerpen - Centrum	Lange Nieuwstraat 106	3224
A3	03BKC	Antwerpen - Berchem	Karel Coggestraat 2	3227
A2	02MAR	Brussels - Marais	Rue du Marais - Broekstraat 72-74	2220
A2	02STR	Brussels - Paille	Rue Lebeau - Lebeauststraat 2	2513
A71	71GIL	Charleroi - Gilly	Sentier de la Limite 80	7141
A71	71CHA	Charleroi - Centre	Rue de la science 2	7127
A4	41CEN	Liège - Centre	Rue de l'université 30	4223
A4	41GRE	Liège - Grétry	Rue d'Harscamp 17	4349

◆◆◆◆◆ End of document ◆◆◆◆◆

Wholesale Broadband Access VDSL2

Annex 1

General Terms & Conditions



General information

This document constitutes an integral part of the Wholesale Broadband Access VDSL2 Services (hereafter referred to as WBA VDSL2) communicated to the Belgian Institute for Post and Telecom (here-after the BIPT). It includes the general terms and conditions applicable to the provision of Wholesale Broadband Access VDSL2 to establish end-to-end Data Connectivity services based on VDSL2 . These Wholesale Broadband Access VDSL2 services are provided in conformity with the relevant laws and decrees in effect. The present Terms and Conditions shall remain applicable until they are replaced by other terms and conditions.

A distinction should be made between the following:

The Main Body

This document describes in broad terms the conditions of the Wholesale Broadband Access VDSL2 service offered by Belgacom as it has been communicated to the BIPT.

The Annex 1, “General Terms and Conditions”

The General Terms and Conditions comprehensively list the rights and obligations of Belgacom and the Customer with regard to the provision of the Wholesale Broadband Access VDSL2 Services.

The Annex 2, “Technical Specifications”

The technical conditions define the technical specifications and the quality standards of the Wholesale Broadband Access VDSL2 Services.

The Annex 4, “Planning & Operations”

The Planning & Operations Manual describes the conditions of delivery of the Wholesale Broadband Access VDSL2 Services.

The Annex 6, “Pricing and Billing”

The Pricing and Billing indicates the rates and the billing and payment conditions for the Wholesale Broadband Access VDSL2 Services.

The General Terms and Conditions, Main Body, the Planning and Operations, Technical Specifications, Price list, SLA, Improved SLA, [Prepayment terms and conditions](#) and, if any, the specific terms and conditions agreed upon by the Parties constitute the Wholesale Broadband Access VDSL2 Offer (hereinafter, the “WBA VDSL2 Offer”).

With a view to the signature of the WBA VDSL2 Contract, the WBA VDSL2 Offer can be negotiated by the parties and does not substitute for the parties’ will.

Except otherwise agreed by the parties, the WBA VDSL2 Contract shall be adapted if the WBA VDSL2 Offer is modified. This adaptation shall be in accordance with this WBA VDSL2 Offer’s modification.

Anyone may examine the General Terms and Conditions relating to the Wholesale Broadband Access VDSL2 Service, and the up-dated price lists as they are approved by BIPT and applicable at the time of consultation. These may be obtained either from Belgacom's Internet site or from Belgacom's Customer service department. The other Annexes are available on the Secured website of Belgacom and may be consulted further to the signature of a non-disclosure Agreement.

Glossary

The capitalized terms in the present General Terms and Conditions for Wholesale Broadband Access VDSL2 Services have the meaning as defined below:



together
with



WBA VDSL2 Contract	Any agreement concluded between Belgacom and a Customer following the negotiations between Belgacom and the Customer on the basis of the present General Terms and Conditions, technical, operational, billing, planning and financial conditions for the WBA VDSL2 as described in the Offer of Belgacom. The WBA VDSL2 Contract is concluded as mentioned in the first chapter of the present General Terms and Conditions.	Contract procedure Request by the Customer 1. In view of the offering of a Wholesale Broadband Access VDSL2 based service to End-Users pursuant to the provisions of the Contract, the Customer must submit his request for a Service to the Customer Service department of Belgacom by completing and signing the appropriate order form. When submitting an order request in electronic format, the Customer will comply with the rules described in the Planning & Operations Manual. The ~~specific~~ terms and conditions for delivering the Services are described here-after.
Request	The Customer's demand concerning the delivery of a WBA VDSL2 Service as described in this Offer.	2. The Customer shall consult the general terms and conditions and, the relevant WBA VDSL2 Offer as well as the list of technical requirements. These can be obtained from Belgacom's Internet site or by requesting them from Belgacom's Customer Service department.
Certified Technician	Any technician employed either by a Customer or by one of Customer's subcontractors, trained and certified by Belgacom in order to perform, in place of a Belgacom technician, the installation of WBA VDSL2 lines.	3. Belgacom may not refuse to execute the Customer's request conform the WBA VDSL2 Offer, without prejudice to the negotiations between Belgacom and the Customer, except on one of the following grounds: a) the Customer or his authorized agent refuses to provide Belgacom with official documents to identify himself; b) in an emergency situation (i.e., exceptional cases of <i>force majeure as defined here after</i>), for the purpose of ensuring the safe operation of the Belgacom network, after all necessary measures taken by Belgacom to ensure access to the service are without effect; c) following the Customer's failure to observe obligations arising from the present General Terms and Conditions for the use of the service;
Contract	A contract for a WBA VDSL2 line.	
Wholesale Broadband Access VDSL2 Services	All the Services described in the Wholesale Broadband Access VDSL2 Offer that are ordered by the Customer.	
Party	Either Belgacom or Customer.	
Parties	Collectively, Belgacom and Customer.	



together
with



d) for the purpose of maintaining Belgacom network integrity or the interoperability of the services or for any other technical reasons that make the delivery of the service impossible;

e) the Customer has refused to provide proof of the existence of the unconditional financial guarantee as specified in the provision [Financial Guarantees](#) here-under.

4. In the event of a refusal [on one of the grounds listed in article 3 above](#), Belgacom shall notify within 3 working days the Customer of its decision and the grounds for the decision by ordinary mail. A copy will be sent to the BIPT in the same delay.

5. The Customer may lodge an appeal against this decision by the procedure provided under the Dispute Resolution Procedure and in accordance with these General Terms and Conditions.

Conclusion, entry into force and duration of the Contract

6. The provision of the WBA VDSL2 Service is subject to the conclusion of a Contract between Customer and Belgacom according to the present General Terms and Conditions and the negotiations between the parties. [The Contract is concluded when Belgacom has accepted in writing or via electronic way \("Validate" XML\) the Order Form submitted by the Customer.](#)

7. Unless otherwise stipulated, the Contract takes effect on the day after the date on which the WBA VDSL2 Service (as described here-after) is made available to the Customer. Belgacom shall confirm this date to the Customer in writing, [or via electronic way \("Done" XML\).](#)

8. The Service is made available to the Customer for an indefinite term.

9. The OLO Access line is made available to the Customer for an initial one-year term. At the end of this minimum term, if the Customer does not terminate the contract in accordance with the procedure specified in the BROTSOLL General Terms and Conditions the contract shall be tacitly renewed for an indefinite term.

Services covered by these General Terms and Conditions

10. Belgacom shall provide to Customer and maintain on behalf of Customer Data Connectivity Services in accordance with WBA VDSL2 [Reference Offer](#) and its Annexes and/or Appendixes.

11. Subject to the successful completion of testing as defined in and pursuant to the provisions of WBA - VDSL2, the Parties will bring the Data Connectivity Services into service on the agreed Bringing Into Service Date. [When Customer chooses to have the line installed by one of his Certified Technicians, the Customer alone decides upon the Bringing into Service Date and informs Belgacom of this date.](#)

12. The data connectivity between the respective networks of the Parties shall be implemented in accordance with the technical specifications of the OLO Access Line in Annex 2 "Technical Specifications".

13. The Data Connectivity Service purchased by Customer according to the foregoing will enable Customer to define its own VDSL2 products and to market, distribute and sell under its name and on its behalf its own VDSL2 products towards End-Users. In this respect Belgacom will inform the Customer of any modification of the technical specification, enabling a modification of the services offered, at the latest 3 months before the commercial launch by Belgacom of a

The



together
with



commercial service based on these technical specifications.

14. For each End-User to whom Customer will sell an VDSL2 product in accordance with the foregoing, Belgacom will, in accordance with and subject to the limitation set out in WBA - VDSL2, install, implement and provide connectivity from the End-User premises up to the demarcation point between Belgacom network and Customer network, as defined in WBA - VDSL2 in Annex 2 "Technical Specifications". [If the Customer chooses to install a specific WBA VDSL2 line with a Certified Technician, Belgacom will provide to the Customer the exhaustive list of tasks to be performed in relation to the physical installation of this specific line, which tasks will all be executed by the Certified Technician chosen by the Customer.](#)

15. Within the limits of what is permitted under the applicable regulatory framework, both Parties shall exchange appropriate operational information as provided in WBA - VDSL2 (including but not limited, in particular, maintenance contact numbers, network information, information required to comply with law enforcement and other security agencies of the government and such other information as the Parties shall mutually agree).

Obligations of the Parties

Obligations of the Customer

16. The Customer is at all times fully responsible in particular for the following tasks in respect of the establishment of the connection between the Customer network and the Belgacom network:
- To order an OLO Access Line between Belgacom Service PoP and the Customer Equipment;
 - To inform Belgacom immediately and in writing of any change that may

have an impact on the Belgacom network integrity, or on the performance of other services delivered by Belgacom towards End-Users. The present rule does not imply that such changes can be made by the Customer independently;

- To use the Belgacom network in conformity with the prevailing regulations on telecommunications and data protection and in conformity with the applicable law in general and especially the normal behaviour of a professional Customer;
 - To ensure that its End-Users behave in a manner that is fully compatible with these elements and take also responsibility for such behaviour;
 - To comply with the instructions that Belgacom may issue to the Customer from time to time to ensure the security and correct operation of the Belgacom network and of any other network or infrastructure used by Belgacom for the supply of the connection between the End-User premises and the demarcation point between the Belgacom network and the Customer's network, or used in any other manner by Belgacom.
17. In respect of the necessary interventions of Belgacom related to connectivity between Belgacom and the Customer, the latter will communicate in good faith to Belgacom, in relevant cases and in a sufficiently timely and complete manner, all information needed by Belgacom for performing repair on the Customer VLAN's. Customer may refuse to communicate confidential data for which Customer motivates it is not relevant for the requested purpose. Belgacom may ask to BIPT the communication of this data if Belgacom is able to prove his need to obtain this information.
18. In respect of the offering of a service based on a WBA VDSL2 service to End-Users pursuant to the provisions of the Contract, [Customer is responsible:](#)



together
with



- to communicate orders for WBA VDSL2 connection of End-Users to Belgacom;
- to communicate to Belgacom via the “Open Calendar” interface, as described in the Planning & Operations Manual, if the installation of the WBA VDSL2 line must be performed by a Belgacom technician or by a Certified Technician;
- in case of installation performed by a Certified Technician, to dispatch to the Certified Technician chosen by the Customer all the operational informations needed to perform the installation of the WBA VDSL2 line;
- in case installation by Certified Technician is chosen by the Customer, to be responsible for the installation of the Service;
- to communicate to Belgacom the type of equipment present at the End-User premises in case the End-User has an ISDN line;
- to ensure accurate communication of End-Users information to Belgacom in accordance with the relevant provisions of the Contract;
- to ensure the marketing, selling, distribution of its own WBA VDSL2 products based on these Terms and Conditions, as well as the billing and collection of the fees to be charged to End-User, without this affecting the Customer's liability towards Belgacom;
- to communicate to Belgacom network related problems;
- to ensure by the Customer, or to have the latter impose on its End-User, to use the Modem conformed to the provisions of the Offer;
- to be the single and only point of contact of End-User with regard to the VDSL2 service offered by the Customer to the End-User and abstain from redirecting this End-User towards Belgacom in any circumstance for any problem related to the VDSL2 service offered by the Customer to the End-User on the concerned line;
- To not modify Belgacom infrastructure and equipment at End User premises (as specified in appendix B of the Main Body), except in case of installation by Certified

Technician and to the extent necessary to perform the installation tasks as explicitly foreseen in the tasks list communicated by Belgacom to the Customer;

- To pay to Belgacom the prices pursuant to the Contract;
- To handle responsibility related to network/equipment issues that aren't related to Belgacom.

Obligations of Belgacom

19. In case of installation performed by a Certified Technician, Belgacom will provide to the Customer all operational informations needed to perform the installation of the WBA VDSL2 line.

~~19.20.~~ Belgacom will provide and maintain WBA VDSL2 technology on behalf of the Customer from the End-User premises up to the demarcation point between Belgacom network and the Customer network. In this respect, Belgacom and Belgacom only will be entitled to carry out physical modifications to the Belgacom network.

~~20.21.~~ Belgacom will not provide WBA VDSL2 on behalf of the Customer on a specific End-User line and thus reject the Order of the Customer, if Belgacom has determined on the basis of a technical objective assessment that:

- (a) WBA VDSL2 is not technically feasible over existing facilities;
- (b) WBA VDSL2 will cause interference problems, according to the rules submitted to the BIPT or to the rules stated by the legal and regulatory framework, within the Belgacom network or other facilities. In this respect, WBA VDSL2 is incompatible with:
 - some line transmission systems in the same cable bundle;
 - pair gain systems;

(applicable rules are described in BRUO Spectrum Management)

- (c) Cable is spectrally saturated according to the rules submitted to the BIPT or to the rules stated by the legal and regulatory framework.

(applicable rules are described in BRUO Spectrum Management)

26. In such cases of rejection, Belgacom will communicate to the Beneficiary Customer:

- in case of inquiry, the reason why it has been rejected.
- in case of firm order, the type of rejection, i.e., definitive rejection or temporarily rejection;

On demand of the Customer, Belgacom will communicate the cost of the study needed to determine when and at what costs it can be remedied to the rejection; alternatives will be tested and proposed to the Customer. The study will be done only after agreement of the Customer. In case the Customer agreed on the study, but does not take the proposed solution by Belgacom, the study cost will be charged.

The Customer has the possibility to ask a detailed justification as well as verification with or without site visit, if necessary, in case where many rejections occur at a specific moment, in a specific place.

~~21.22.~~ Belgacom shall respect all service levels, timers and other guarantess mentioned in the SLA document or otherwise shall conform to the applicable penalties.

~~22.23.~~ Belgacom further reserves the right to reject requests for implementation of WBA VDSL2 on behalf of the Customer on a specific End User line based on wrong data which would not allow Belgacom to identify the user line unmistakably and to provide him the line.

Certified Technician

24. Belgacom allows the Customer to perform the installation of the WBA VDSL2 lines itself, via Certified Technicians, i.e. its

own employees or employees of its subcontractor who are trained and certified by Belgacom. When the Customer chooses to work with Certified Technician, the installation works will not be performed under instruction of Belgacom, but on behalf of Customer itself, and at its own expenses.

25. Employees of Customer and employees of Customer's subcontractor may qualify as Certified Technician, if they fulfill the conditions described in the Specific Terms and Conditions relating to Certified Technician. In order to be certified, they will successfully follow training by Belgacom and sign the necessary confidentiality agreements.

26. Employees of Customer's subcontractor will only be certified, if Customer's subcontractor accepts the right of Belgacom to bring a direct claim against him for any damage caused by his employees to Belgacom, its employees, or third parties when installing the WBA VDSL2 lines. The Customer's subcontractor must also provide to Belgacom a "liability insurance" certificate of EUR 2.500.000 per claim and per year to cover his liability for any damages caused by his employees, acting as Certified Technician (see also art. 62).

27. Except for this right of direct claim of Belgacom against Customer's subcontractor and a confidentiality agreement, no contractual relationship exists between Belgacom and Customer's subcontractor.

28. The Customer shall allow Belgacom access to its Certified Technicians (both its own employees as well as its subcontractor's employees) for technical discussions. Such direct contact shall, in no cases, be considered as creating a direct contractual link between Belgacom and these Certified Technicians, nor shall it create any responsibility of Belgacom for the acts of the Certified Technicians.

29. When the Customer chooses to work with Certified Technician, he agrees to be responsible for all tasks related to the physical installation of the line (which are foreseen in the list of tasks provided



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by Belgacom to the Customer for each particular line), and releases Belgacom of any responsibility in this respect. Also, Belgacom cannot be held responsible for incidents during delivery of the Data Connectivity Service after installation of the line, nor for any non compliance of the line with Technical Specifications, to the extent that these incidents/non compliance are caused by a wrongful installation by Certified Technician.

30. The Customer guarantees that the Certified Technician will respect the rights and obligations applicable on the Customer under the WBA VDSL2 Reference Offer (e.g. confidentiality obligation, liability).

31. The Customer may only appeal upon Certified Technician for installation of the WBA VDSL2 lines, not for repair or maintenance. The exact scope of activities which may be performed by Certified Technicians is described in the Specific Terms and Conditions relating to Certified Technician.

32. The Certified Technician may lose its certification in any of the following events:

- he no longer fulfills the conditions for certification as described in the Specific Terms and Conditions relating to Certified Technician;
- he repeatedly or seriously breaches the obligations applicable upon the Customer under the WBA VDSL2 Reference Offer;
- his work does not meet the quality standards, and repeatedly needs correction by Belgacom technician.

33. In case the installation of the WBA VDSL2 line is not correctly performed by Customer's Certified Technician, Belgacom will perform the necessary repair actions, at the expense of Customer, without prejudice to Belgacom's right to claim compensation for any other damages.

Financial Conditions

Billing and Payments

In consideration for Wholesale Broadband Access VDSL2 Services provided by Belgacom under the Contract, Customer shall pay the charges and fees provided in WBA VDSL2

Financial Guarantees

General Principle - Pre-payment

~~23.~~34. Notwithstanding anything to the contrary in the Contract, in order to guarantee the payment by the Customer of the prices due for Services provided by Belgacom that are invoiced on a monthly basis under the Contract, the Customer will provide Belgacom with a monthly pre-payment based on the average of the monthly amount due by the Customer. The amount of the pre-payment shall be based on the average of the invoices issued by Belgacom during three months for the Services ordered in accordance with the Contract. The amount of the pre-payment shall be reviewed every three months. The terms and conditions of this prepayment are described in Annex "Prepayment Terms and Conditions".

~~24.~~35. In addition, the customer will provide an additional guarantee equal to two months of pre payment. Belgacom reserves the right to require from the Beneficiary Customer the immediate adaptation of this additional guarantee at any time if and when the amount of the monthly prepayment increases.

~~25.~~36. Without prejudice to any other legal or contractual remedies and notwithstanding anything to the contrary in the Contract, in the event Customer fails to pay in due time any undisputed amount due under the pre-payment conditions as defined in the present section and in Annex "Prepayment Terms and



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Conditions”, Belgacom shall be entitled to execute the following alternatives until full payment is made:

- suspension of any SLA obligations that are not foreseen in the Basic SLA;
- refusal in writing of any new Order, including Migration Services, and excepted Cancellation and Deactivation;
- Suspension of the existing Services in accordance with article 8469 hereafter.

Sufficient Creditworthiness

26:37. This monthly pre-payment will not be required in the following circumstances.

27:38. The Customer has sufficient creditworthiness as evidenced by either of the following alternatives:

- the Customer has obtained a “Ba2” rating or above for its debt (Moody’s); or
- the Customer has obtained a rating similar to Moody’s “Ba2” rating, provided that (i) such rating is generally accepted by the market as giving similar reliability as Moody’s, (ii) such rating is reviewed and updated on a regular basis.

28:39. In the event that the Customer would lose the above described creditworthiness at some point in time (either through the loss of “Ba2” credit rating or similar, or upon the occurrence of any default or delay of payment), Customer will have to provide Belgacom with a pre-payment or with another financial guarantee as defined in the present chapter within 10 working days of Belgacom’s request thereto.

Other Financial Guarantees

29:40. The Customer obtains an irrevocable and unconditional parent corporation guarantee for the

debts incurred by the Customer for the Services ordered in accordance with the Contract provided that such parent company is issued by a company that has sufficient creditworthiness as defined above. In the event that the Parent Company would lose the above described credit worthiness at some point in time, the Customer will provide Belgacom with a pre-payment or with another financial guarantee as described in the present article within 10 working days of the request of Belgacom.

30:41. The Customer has constituted a Deposit on an escrow account with a reputable bank or financial institution established in the EU. The amount of that deposit will be equal to an estimate of three months of invoices due by the Customer for the Services ordered in accordance with the Contract. Based on the actual evolution of the amounts due for the Services, the Customer and Belgacom will have the right to require an adaptation of the amount of the deposit every three months. Upon the request for adaptation of the amount of deposit, necessary steps will be taken to ensure adaptation within three (3) to working days. In case of default by the Customer to pay sums due under the Contract, the sums deposited on the escrow account will accrue to Belgacom. The interests accrued on the escrow account will be payable to the Customer. In the event the sums deposited are accrued to Belgacom, or if the amount of the deposit is not adapted despite Belgacom’s request thereto, Customer will provide Belgacom with a pre-payment or with another financial guarantee as defined in the present article within 10 working days of the request of Belgacom.

31:42. The Customer has provided Belgacom with a irrevocable and unconditional bank guarantee on first demand issued by a reputable bank or financial institution established in the EU. That bank



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guarantee will be issued for a minimum period of three years and for an amount equal to an estimate of three months of amounts due by the Customer for the Services ordered in accordance with the Contract. Based on the evolution of the amounts due for the Services, Customer and Belgacom will have the right to require an adaptation of the amount of the bank guarantee every three months. Upon the request for adaptation of the amount of bank guarantee, necessary steps will be taken to ensure adaptation within three (3) +0 working days. Upon expiration of the bank guarantee or after the Belgacom has called upon the bank guarantee, or if the amount of the bank guarantee is not adapted despite Belgacom's request thereto, the Customer shall provide Belgacom with a pre-payment or with another financial guarantee as defined in the present article within 10 working days of the request of Belgacom.

Principles

Retail Pricing & Billing

32-43. Customer shall be responsible for the setting of the tariffs that Customer will apply to the End-Users to whom Customer will sell telecom service using the Wholesale Broadband Access VDSL2 Services and for the billing and invoicing of such End-Users.

33-44. Except as provided otherwise in the Contract or its Annexes, no deductions or reductions shall be made from the payment of any charges or fees due for the Services for any bad or unpaid debts or any unrecoverable claims (including, in particular, claims arising from fraud cases) that Customer may have against End-Users or any other third parties in relation with these Services.

Branding

34-45. The Parties agree not to offer any service under any brand, including any trademark, trade name or company name, of the other Party unless the use of the brand(s) of the other Party is explicitly provided under the Contract. Such use of the brand will then be strictly limited to the service at stake.

35-46. Customer shall offer telecom services to End Users under its own brand without any use of, or reference to Belgacom's brands.

36-47. Notwithstanding the foregoing, Parties acknowledge that, as provided in WBA VDSL2, the installation of equipment on the site of the relevant End Users who have subscribed to an offering of Customer, may, when relevant under the terms and conditions of WBA VDSL2, be realized by Belgacom personnel. Both Parties agree that Belgacom shall have no obligation to unbrand or rebrand its service technicians or trucks. Belgacom will act in accordance with its general standard of integrity that it has internally developed and enforced.

37-In any case, Belgacom will not make any publicity or remarks to the detriment of the Customer or its image. Belgacom must in all circumstances stay neutral, in accordance with the technical nature of its intervention. Where Belgacom makes use of standard documents vis-à-vis users, it will submit these for prior approval by BIPT.

48. When Customer chooses to have installation of the WBA VDSL2 lines performed by Certified Technician, Customer will see to it that the Certified Technician acts with integrity and makes no publicity or remarks to the detriment of Belgacom or its image.



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End User Terms and Conditions

~~38-49.~~ Customer shall cause the terms and conditions governing Customer's contractual relationships with the End-Users to be compliant with the rules and principles set out in the Contract and its Annexes. Notwithstanding the above, nothing in the present Reference Offer can be construed as creating or evidencing a contractual relationship of any kind between Belgacom and Customer's users or as providing to Belgacom any right to consult the contracts signed between Customer and its Users.

~~39-50.~~ Customer shall indemnify Belgacom against all losses, claims or liability suffered by Belgacom due to the fact that Customer will have failed to incorporate the above mentioned rules and principles in its terms and conditions.

Coordination between the Parties

Single Points of Contact

~~40-51.~~ As soon as possible after signing this Contract, each of the Parties will both appoint an individual as its respective single point of contact ("SPOC") who will act, within the organization of such Party, as the other Party's contact person.

~~41-52.~~ The SPOC of either Party will have full authority to act and decide on behalf of the respective Party on all technical and operational matters regarding the day-to-day management of the performance of their WBA VDSL2 Contracts. All the decisions taken by any working group constituted by the Parties during the performance of this WBA VDSL2 Contracts will need to be expressly and formally validated by the SPOC of either Party to be binding on such Party. Except as otherwise expressly provided by the relevant Party, each Party's SPOC will have no authority to modify the conditions described in the

Contract, or to act outside the day-to-day management of the performance of the Services..

~~42-53.~~ Notwithstanding anything to the contrary in the foregoing, each Party will be authorized to replace its SPOC by notice sent to the other Party. Such notice will have immediate effect.

Working Group

~~43-54.~~ The Parties will be free to set up any other working group in charge of discussing and agree on any technical or operational issue as the Parties may deem fit in the performance of the Services.

Liability

General rules

~~44-55.~~ Taking into account the nature of the respective activities of the parties, the risks and potential profits associated with these activities and the consideration obtained by each Party from the Contract, Parties expressly agree that their respective liability shall be limited as follows.

~~45-56.~~ If either Party is held liable to the other Party (including such other Party's employee(s) and contractor(s)) under the Contract that liability shall be limited to the following:

- if such liability results from any personal injury or death incurred as a direct result of the non-performance of the relevant Party's obligations under the Contract, then such liability shall be only subject to the limitation provided in article ~~5746~~;
- if such liability results from any conduct attributable to the relevant Party, which is, under Belgian law, characterized as being gross negligence (faute lourde – zware fout) or intentional negligence (dol –

bedrog), then such liability shall be subject to no limitation, except as provided by law;

- if such liability results from any material damage (including any dysfunction of the Belgacom's Network), other than those referred to above, arising out of or in any way connected with the performance by the relevant Party of the Services or the breach of such Party's obligations under these Terms and Conditions, then the total amount which can be recovered from such Party for all acts or omissions shall, in no event, exceed an aggregate amount equal to EUR 1,250,000 (one million two hundred fifty thousand euro), subject to the limitation provided in article 5746.

46-57. Neither Party shall be liable for indirect damages (pure and consequential), including without limitation loss of profit, loss of revenue, loss of data, loss of use, loss of savings, loss of goodwill, interruption of business or claim by third parties.

47-58. Customer will be responsible for, and will indemnify Belgacom against, any claim for damages issued by Customer's End Users in connection with the performance of this Contract, except if the customer is able to prove that the damage or claim result of a fault of Belgacom as regard his obligations described in this Contract.

48-59. In addition, Customer will indemnify Belgacom against any claim or loss related to the illegal use, or the use for illegal purpose of the Wholesale Broadband Access VDSL2 Services by Customer, Customer's End Users or by any person using the Wholesale Broadband Access VDSL2 Services.

Certified Technician

60. In addition, and notwithstanding the above, the Customer will be held liable to Belgacom, its employees or third parties for damages caused by one of

its Certified Technicians (Customer's own employees, as well as Customer's subcontractor employees), when performing the installation of the WBA VDSL2 lines. The Customer shall indemnify and hold Belgacom harmless from any and all damage, costs or third party claims incurred as a result of any act or omission of Customer's Certified Technician, including claims against Belgacom based upon art. 544 Civil Code ("burenhinder/troubles de voisinage").

61. If a Customer chooses to install some or all of his WBA VDSL2 lines by one or several Certified Technician(s), he will have to provide to Belgacom, prior to his first request to have installation done by Certified Technician, a "liability insurance" certificate of EUR 5,000,000 per claim and per year to cover his liability for any damages caused by his employees or his subcontractors to Belgacom, its employees or third parties when provisioning the lines.

The insurance policy has to be contracted with a first class insurance company in an E.U. country and must be maintained during the total duration of the agreement between parties. The policy must contain the following provision : the suspension, cancellation or the end of the insurance policy will be opposable to Belgacom, 15 calendar days after the reception of a registered letter from the insurance company informing Belgacom of the end of the policy. At the expiry of the insurance certificate, the Customer will be diligent in providing Belgacom an updated certificate, confirming the prolongation of the insurance policy.

62. The Customer will also procure that its subcontractors, who wish to qualify certain of its employees as Certified Technician, accept the right of Belgacom to bring a direct claim against Customer's subcontractor as to hold Belgacom harmless from any and all damage, costs or third party claims incurred as a result of any act



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or omission of the Certified Technicians employed by Customer's subcontractor, including claims against Belgacom based upon art. 544 Civil Code ("burenhinder/troubles de voisinage"). In the event that damage is caused by Customer's subcontractor, Belgacom can choose to bring a claim towards the Customer, or to Customer's subcontractor, or to both.

The Customer's subcontractor will provide to Belgacom a "liability insurance" certificate of EUR 2.500.000 per claim and per year to cover its liability for any damages caused by its employees, acting as Certified Technician, to Belgacom, its employees or third parties when provisioning the lines. The insurance policy has to be contracted with a first class insurance company in an E.U. country and must be maintained for the total duration of certification of any of Customer's subcontractor employees. The policy must contain the following provision : the suspension, cancellation or the end of the insurance policy will be opposable to Belgacom, 15 calendar days after the reception of a registered letter from the insurance company informing Belgacom of the end of the policy. At the expiry of the insurance certificate, the Customer's subcontractor will be diligent in providing Belgacom an updated certificate, confirming the prolongation of the insurance policy.

adequate evidence of the occurrence and extent of the Force Majeure, as well as an estimate of the expected duration of the Force Majeure. As soon as practicable after receipt of such Notice, the Parties shall consult with each other in order to find an equitable solution to the problems and difficulties caused by the Force Majeure.

~~51-65.~~ The Party claiming Force Majeure shall use all reasonable endeavours to minimise the consequences of such Force Majeure, and to ensure, in as far as reasonably possible, the continuity of the services provided under the Contract and shall perform those of its obligations not affected by a Force Majeure. To the extent that a Party is prevented as a result of Force Majeure from providing one or several of the services or facilities to be provided under , the Contract, the other Party shall be released to the equivalent extent from its obligations to make payment for such services or facilities or complying with its obligations in relation thereto.

~~52-66.~~ Upon cessation of the effects of the Force Majeure, the Party initially affected by such Force Majeure shall promptly notify the other Party of such cessation.

Accidents at work and Safety Rules

Force Majeure

~~49-63.~~ Neither Party will be liable for any delay or failure to fulfil its obligations under the Contract arising from any event beyond its reasonable control, such as for instances but without limitation natural disasters and strikes (all such events being hereafter referred to as "Force Majeure").

~~50-64.~~ The Party claiming Force Majeure shall as soon as possible send to the other Party a Notice of the Force Majeure. Such Notice shall contain

~~53-67.~~ Each Party hereby undertakes to provide insurance cover against accidents at work for its own employees in conformity with the applicable legal requirements. Customer also procures that its subcontractors provide insurance cover against accidents at work for their employees in conformity with the legal requirements. Each Party hereby renounces any possible claim against the other Party, and undertakes to procure that its insurer shall not pursue against the other Party, or against any third party for whose acts or omissions the other Party may be responsible,



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any claim relating to accidents at work. [Customer undertakes to procure that its subcontractors and subcontractor's insurer renounce any possible claim against Belgacom relating to accidents at work.](#)

[54-68.](#) Each Party shall comply with safety practices and procedures reasonably applicable when entering the premises and installations of the other Party in order to carry out work [\(see, for Belgacom, safety rules and procedures in Specific Terms and Conditions relating to Certified Technician\)](#). Each Party undertakes to ensure that its personnel [or its subcontractor personnel](#), while upon the premises and installations of the other Party, will respect any internal rules and codes of conduct therein applicable, provided that such rules and/or codes shall have been made available to them in advance. Without prejudice to the provisions of the chapter relating to Liability [General rules or the chapter relating to Liability Certified Technician, depending on the situation](#), each Party shall indemnify and hold harmless the other Party for any and all damages, costs or expenses incurred as a result of any act or omission of a Party's personnel [or a Party's subcontractor personnel](#) while upon the premises and installations of the other Party.

Operational Matters

Operational Matters and Network Management

[55-69.](#) The Wholesale Broadband Access VDSL2 Services provided under the Contract shall be implemented and provided by the Parties in accordance with the technical specifications set forth in the Annex 2 "Technical Specifications" and the operational rules and procedures contained in the Annex 4 "Planning and Operations".

[56-70.](#) Both Parties shall cooperate to install and maintain reliable services. Both Parties shall exchange appropriate information as provided in the Annex Planning and Operations (including in particular, maintenance contact number, networks information, information required to comply with law enforcement and other security agencies of the government and such other information shall mutually agree) to achieve this desired reliability.

[57-71.](#) Each Party shall apply sound network management principles by invoking network management controls to ease the operation of their respective systems and to alleviate or to prevent congestion. Each Party shall ensure that the network management controls are applied in such a way as to ensure that there is no discrimination in favour of that Party's own traffic.

Essential Requirements

[58-72.](#) The Parties shall ensure that the Essential Requirements, as defined and applicable under the regulatory framework, are adequately and sufficiently protected, in as far as the establishment, maintenance and operation of the services offered under the Contract are concerned.

[59-73.](#) It is acknowledged that the Contract and its Annexes and/or Appendixes (in particular, the Annexes WBA VDSL2 and the Annex "Planning and Operations" of the relevant service) contain a number of specific principles and rules that have been developed to ensure the protection of the Essential Requirements. Furthermore, the Parties shall consult with each other in order to ensure that the Essential Requirements are protected in an adequate and sufficient manner.



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~~60-74.~~ It is a condition for the provision by Belgacom of Wholesale Broadband Access VDSL2 Service under this Document that Customer's request is not detrimental to the operation of the telecommunications networks and telecommunications services in question or to their integrity or interoperability, and that the protection of service and internal data, network equipment, software and stored data, including personal data, confidential information and privacy can be sustained.

~~61-75.~~ The conditions for and restrictions on use applying at any time appear from the Annex the "Technical specifications" Document.

~~62-76.~~ Belgacom shall further be entitled to cause interruptions, disturbances or modifications of Belgacom's public network and services to the detriment of the supply of the services under the Contract in connection with measures that are deemed necessary for technical, maintenance and operating reasons taking into account the balance of the interests of both Parties or that are ordered by the regulatory authorities. Belgacom shall give in good faith Customer the longest possible notice of interruptions, disturbances and modifications, by any means it deems appropriate (e.g. via electronic communication) and state the reason for them.

Amendments and Revisions

General Principles

~~63-77.~~ Except as otherwise provided in the Contract or its Annexes, any agreement departing from the Contract or its Annexes shall only be valid if duly agreed upon in writing by the respective representatives of the Parties.

Term, Termination and Suspension

Term

~~64-78.~~ Customer has the right to terminate one or more WBA VDSL2 contract as provided in the WBA VDSL2 Offer annexed to the Contract. Belgacom has the right to terminate one or more WBA VDSL2 contracts annexed to these Terms and Conditions in order to preserve Belgacom's network integrity and security.

~~65-79.~~ Without prejudice to the above, the Customer must request the termination of the WBA VDSL2 Contract when the telecom services are cancelled for any reason whatsoever on a specific loop. Said termination request shall automatically give rise to the deactivation of the WBA VDSL2 Service on the line without delay.

~~66-80.~~ A WBA VDSL2 Contract shall automatically be terminated without prior notice to Customer upon the activation by Belgacom of another Service on the same line based on the valid migration request of either Belgacom retail or another Customer. Belgacom will further inform Customer of the new request without revealing the identity of the latter.

Suspension

~~67-81.~~ In the event Customer uses or allows the use of Services provided under the Contract in an illegal manner or for illegal purposes (such as for instances but without limitation: spamming, violation of intellectual property rights of third parties), or if Customer by its action or omission causes, or could reasonably be expected to cause a damage to the working or the security of the telecommunication network of Belgacom, and Customer



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fails to take appropriate measures in order to remedy to the situation within a period of thirty (30) days from the receipt of a Notice of Suspension sent by Belgacom, Belgacom will have the right to suspend the provision of some WBA VDSL2 Contracts or of the whole Wholesale Broadband Access VDSL2 Service. Notwithstanding the foregoing, Belgacom will have the right to take proactive actions in order to protect the other xDSL lines prior to sending the above mentioned Notice in urgent cases (such as, for instances but without limitation, if the resynchronization rate exceeds 50 resynchronization per day) where unstable lines disturb the transmission quality and link stability of other xDSL lines. Those actions could be a change in the line profile such as a reduction of the target bitrates, the lock of the xDSL port or the physical disconnection of the line. In that case, Belgacom will inform the parties involved about the actions taken at the latest 24 hours after the suspension.

68-82. If the Customer uses or allows the use of Services provided under the Contract in a manner not corresponding to the Technical Specifications set forth in the Annex "Technical Specifications", and Customer fails to take appropriate measures in order to remedy to the situation within a period of thirty (30) days from the receipt of a Notice sent by Belgacom, Belgacom reserves the right to suspend all or some of the services.

69-83. Belgacom will have the right to suspend Wholesale Broadband Access VDSL2 Services in the event that it is requested to do so by an order of a court or a competent authority. Belgacom will inform Customer as soon as possible of the cause of such suspension.

84. Without prejudice to article 36, in the event that Customer fails to pay outstanding invoice for any amount

due under the WBA VDSL2 Reference Offer for a period of 15 calendar days as from the Due Date of the relevant invoice (invoice, preinvoice or final invoice). Belgacom shall, after having duly informed the BIPT, inform the Customer via Notice sent at least 7 calendar days before the end of the above mentioned delay of 15 days, that if the default of payment is not cured:

- all WBA VDSL2 Services will be suspended without further notice after the expiration of the above mentioned delay of 15 days as of the Due Date;
- all WBA VDSL2 Services will be terminated without further notice after the expiration of a delay of 30 days as of the Due Date.

85. Article 84 does not apply to amounts duly disputed by the Customer in writing, before the Due Date, including a clear summary of the grounds for the Dispute and the position of the Customer as to this dispute.

86. In the event that Customer fails to provide, renew, adapt or reconstitute the financial guarantee as provided in the chapter on Financial Guarantee here above, Belgacom shall be entitled, after having duly informed the BIPT,

- to suspend all Customer Services without further notice if the default is not cured within a period of 15 days following written Notice;
- to terminate all Customer Services without further notice if the default is not cured within a period of 30 days following the same Notice.

87. The provisions of this chapter on Suspension of the Services are without prejudice to any other right or claim for compensation to which the non-defaulting Party may be entitled to in the event of suspension of the services.



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~~67. In the event that Customer fails to pay outstanding invoice for any amount due under the Contract for a period of 15 calendar days as from the Due Date of the relevant invoice, or fails to provide, renew, adapt or reconstitute the financial guarantee as provided in the chapter on Financial Guarantee here-above, Belgacom shall be entitled, after having duly informed the BIPT, to refuse any new order for Wholesale Broadband Access VDSL2 or to suspend the Services with immediate effect subject to a prior Notice of Suspension sent at least 7 calendar days before the end of the above mentioned delay of 15 calendar days. This provision does not apply when disputed amounts are at stake.~~

Consequences of Suspension

~~68. The provisions in this chapter on Suspension of the Services are without prejudice to any other right or claim for compensation to which one of the Parties may be entitled to in the event of suspension of the Services.~~

Termination for Cause

~~69. Notwithstanding the provision on Dispute resolution procedure, in the event that either Party defaults in the payment of sums due for the Services offered under the Contract or is in default to provide a financial guarantee as provided in the relevant chapter here-above and such default is not substantially cured within thirty (30) calendar days after written Notice of Termination is given specifying the default, then the non-defaulting Party may by giving notice to the other Party and after having duly informed the BIPT, terminate all the Wholesale Broadband Access VDSL2 Services with immediate effect. This provision does not apply when disputed amounts are at stake.~~

~~73-88.~~ In the event that either Party is declared bankrupt or enters into liquidation, then the other Party may terminate all the Wholesale Broadband Access VDSL2 Services, without any further legal or other procedures, by sending Notice of termination with immediate effect to the other Party.

~~74-89.~~ In the event of suspension of this Contract, Customer will be responsible to inform the relevant End Users of the consequences of the suspension of this Contract in a neutral manner.

Consequences of Termination

~~75-90.~~ The provisions in this chapter on Termination of the Services are without prejudice to any other right or claim for compensation to which ~~one of the~~ non-defaulting Parties may be entitled to in the event of termination of the Services, or in the event of termination of one or several Wholesale Broadband Access VDSL2 services ordered under this Contract.

~~76-91.~~ In the case of termination of the Services for any reason, or in the event of termination of one or several Wholesale Broadband Access VDSL2 services ordered under this Contract, Belgacom shall be entitled to payment for all Services performed prior to such termination in accordance with the conditions that were applicable between the parties at the time of termination.

~~92.~~ The provisions of the Contract which by their nature are determined to survive the termination of the Services (including, in particular but without limitation, the provisions on

74. Confidentiality

~~78-93.~~ Confidentiality and Applicable Law and Jurisdiction shall remain in full force and effect after the termination.



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79-94. In the event of termination of this Contract, Customer will be responsible to inform the relevant End Users of the consequences of the termination of this Contract in a neutral manner.

Confidentiality

Confidential Information

80-95. For the purpose of this Chapter, the term "Confidential Information" shall mean:

- information communicated by one Party (or from any of its Associated Companies) (the "Disclosing Party") to the other Party (or to its employees and advisors) (the "Receiving Party"), or obtained by the Receiving Party in connection with the performance of the Services, provided that such information is, at the time of its disclosure, reasonably designated "confidential" or with an equivalent term. If such information was disclosed orally, it shall constitute Confidential Information provided that the Disclosing Party informs the other Party at the time of such disclosure, that such information is confidential and that (i) a written notice containing a summary of the information disclosed orally and mentioning that such information is confidential, is issued by the Disclosing Party to the other within five Working Days from the date of disclosure, or (ii) such disclosure is recorded in minutes of a meeting that are designated, labelled or marked "confidential" or designated, labelled or marked with an equivalent term.

- Shall in any event be considered as Confidential Information, any information or data obtained regarding customers of the other Party, regarding customers of other licensed operators, or any other information or data which the Customer or his subcontractor obtain

via access to the tools which Belgacom puts at the disposal of the Certified Technician.

81-96. For purposes of these General Terms and Conditions, "Confidential Information" does not include:

- a. information that is properly and lawfully in the public domain otherwise than by breach of the Contract or any other obligation of confidence;
- b. information that was disclosed by a third party to the Receiving Party without restriction on disclosure or use, unless the Receiving Party knew or should reasonably have known that this information was acquired unlawfully or by a breach of contract or fiduciary relationship.

82-97. Except as specified in writing, by the Disclosing Party at the time of disclosure, Confidential Information shall continue to be deemed as such until the end of a period of three (3) years after its initial communication under the Contract.

Non-Disclosure

83-98. The Receiving Party shall refrain from disclosing the Confidential Information to any third party and shall use the Confidential Information only for the performance of the Services offered in accordance with the Contract. In addition, the Receiving Party shall take any reasonable measures to ensure the confidentiality of this information. In any event, the Receiving Party shall use efforts at least commensurate with those that such Party uses for protecting the confidentiality of its own Confidential Information.

84-99. Notwithstanding the foregoing and without prejudice to the provisions regarding the Disclosure to Personnel, Advisors, Suppliers ~~Disclosure to Personnel, Advisors, Suppliers~~ or Resellers hereunder, either Party shall be allowed to disclose the Confidential



together
with



Information to third parties provided it has obtained the prior written consent of the other Party. Such written consent will be given case-by-case upon a discretionary basis. Such written consent shall only be valid and enforceable for the specific information listed therein. The written consent to disclose Confidential Information shall identify the third party or parties to which the information can be disclosed and shall set forth the terms and conditions to which such disclosure is subject.

85.100. The Disclosing Party shall remain free to disclose to any third party Confidential Information disclosed to the Receiving Party.

Disclosure to Personnel, Advisors, Suppliers or Resellers

86.101. A Receiving Party shall disclose the Confidential Information received from the other only to its directors, employees, suppliers, agents, advisors, contractors, sub-contractors, or resellers who have a need to know such information. Such Party shall ensure that such directors, employees, suppliers, agents, advisors, contractors, sub-contractors or resellers are bound by the obligations of confidentiality in respect of the Confidential Information, which is at least equivalent to the confidentiality obligation that are set forth in the Contract.

87.102. Notwithstanding anything to the contrary in the foregoing provisions, the Receiving Party shall not disclose or use the Confidential Information, with the aim of providing commercial advantage to business divisions of the Receiving Party, or business divisions of the Receiving Party's Associated Companies, which are engaged in activities competing with the other Party.

85. ~~Either Party may disclose Confidential Information that they received from the other Party, to their suppliers or~~

~~contractors provided and to the extent that such suppliers or contractors effectively require to have access to such information in order to supply the relevant goods and services. The Parties shall do whatever is necessary in order to impose on the suppliers or contractors which have obtained access to Confidential Information obligations to keep this information confidential, which are at least equivalent to the obligations imposed under the Contract.~~

103. The Customer guarantees that the Certified Technicians, whom he uses for the installation of the WBA VDSL2 lines, comply with the confidentiality obligations described herein, and he will see to it that his Certified Technicians do not divulge or use Confidential Information belonging to Belgacom or to other licensed operators, when performing installation services on behalf of the Customer. The Certified Technicians will also conclude a confidentiality agreement with Belgacom directly before starting their training by Belgacom in order to obtain certification.

89.104. Each Party shall be liable under the limitations provided in the Chapter relating to Liability here-above, for any unauthorized disclosure or use of the Confidential Information by its directors, employees, suppliers, agents, advisors, ~~or~~ contractors or subcontractors. The Party responsible for an unauthorized disclosure or use of the Confidential Information shall, in any event, take any reasonable measures (including but not limited to court proceedings) to mitigate the damage resulting there-from.

Disclosure Required by Law

90.105. If the disclosure of Confidential Information to third parties is required by reason of legal, accounting or regulatory requirements beyond the control of the Receiving Party, the Receiving Party may disclose such information to the extent necessary to



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comply with such requirements. Without prejudice to the application of the foregoing, the Parties shall endeavour to ensure the confidential treatment of the Confidential Information by the third parties receiving such information as a result of such requirement.

91.106. Without limitation to the generality of the foregoing, either Party will have the right to disclose Confidential Information to the BIPT, whenever required by law, or deemed reasonably necessary in the context of any proceedings or discussions held in front or with the BIPT. If any such disclosure of Confidential Information is made, the Party communicating the information will ensure that the attention of the BIPT is properly drawn to the fact that the information is confidential and that the information needs to be kept confidential.

Dispute Resolution and Applicable Resolution

Dispute resolution procedure

92.107. The SPOC shall, on an ongoing basis, attempt to solve any dispute, controversy or claim between the Parties concerning the interpretation, application and implementation of the present General Terms and Conditions and/or the Contract and its Annexes (a "Dispute") through discussions held in good faith.

93.108. In the event that the Parties have been unable to solve any Dispute, then upon Notice of either Party, each of the Parties will appoint a designated senior business executive (other than their respective SPOC) whose task it will be to meet for the purpose of endeavouring to resolve the Dispute. Each Party shall ensure that their respective designated executive has sufficient authority or decision-making power concerning the matter at stake. The designated

executives will meet as often as the Parties reasonably deem necessary in order to gather and furnish to the other all information with respect to the matter in issue which the Parties believe to be appropriate in connection with its resolution. Such executives will discuss the Dispute and will negotiate in good faith in an effort to resolve the Dispute without the necessity of any formal proceeding relating thereto.

94.109. In the event the Parties fail to reach such a solution and/or settlement within fifteen (15) Working Days as from the receipt of the above Notice, they shall escalate the matter to a higher level within their respective organizations. Discussions at that level will be conducted as described in article 108.93. The Parties may, at any given escalation level, agree to extend the time limits described in this article and in article 108.93 when they consider it necessary in order to facilitate that an agreement be concluded on the subject-matter of the dispute.

95.110. Except in the cases of urgency, as determined in good faith by the Party calling the Dispute, and unless otherwise in these general Terms and Conditions, no formal proceedings for the resolution of a Dispute may be started until the earlier to occur of (a) a good faith conclusion by the designated executives that amicable resolution through continued negotiation of the matter in issue does not appear likely or (b) the Parties have failed to reach an agreement on the Dispute within 15 Working Days of the escalation of the Dispute as described in article 108.92.

Applicable Law and Jurisdiction

96.111. The WBA VDSL2 Offer and the contract and its Annexes shall be governed by Belgian law.



together
with



97-112. Without prejudice to article 11095, any dispute concerning the validity or the interpretation of the WBA VDSL2 Offer and the Contract, or the performance of the Wholesale Broadband Access WBA VDSL2 Services, or of subsequent contracts derived here-from shall be finally submitted to the Courts of Brussels, Belgium. This provision is without prejudice to the right of each of the Parties to submit the dispute to the BIPT with a view to reach conciliation or to submit the dispute to the Competition Council.

between Annex 1 - General Terms and Conditions and another Annex, attachment or an appendix to said other Annex, the Annex 1 - General Terms and Conditions shall prevail unless otherwise specifically stated. Should a conflict arise between an Annex and an attachment or an appendix to this Annex, the Annex shall prevail unless otherwise agreed by the Parties, in writing or otherwise specifically stated.

Notices – Address for Invoicing

Miscellaneous

General Principles

98-113. All the terms and conditions of this Contract, including its Annexes and/or Appendixes, are agreed upon by the Parties without prejudice to the rights and obligations that either Party may derive from the applicable provisions of the regulatory framework. The fact that either Party has agreed to any provision in this Contract will not be construed as a renunciation by such Party to invoke (i) any right that such Party may derive from any imperative provision of the applicable regulatory framework or (ii) any obligation that may be imposed to the other Party pursuant to any imperative provision of the applicable regulatory framework.

100-115. Unless stated otherwise in this Contract, any Notice under this Contract will be sent to the respective SPOC of the Parties, in writing and by registered mail or by fax confirmed by registered mail to the following respective addresses:

99-114. In the framework of the applicable Belgacom WBA VDSL2 Offer for Wholesale Broadband Access VDSL2, should a conflict arise between the Main Body, and any or several Annexes, attachment or appendix to an Annex, the Main Body shall prevail, except for (a) Annex 1 - General Terms and Conditions, which will prevail over the Main Body unless otherwise specifically stated, (b) when otherwise agreed by the Parties, in writing or (c) when otherwise specifically stated in the Main Body or Annex, Attachment or Appendix. Should a conflict arise



together
with



To Customer:

***Customer Full name

[Address]

Fax: [Fax]

Attention: ***

To Belgacom:

Belgacom N.V./S.A.

27 Bd Albert II

B-1030 Brussels

Fax: [Fax]

Attention: ***

Notwithstanding the foregoing, Parties shall send to each other invoices and credit notes by ordinary mail to the following addresses:

To Customer:

***Customer Full name

[Billing Address]

Attention: ***

To Belgacom:

Belgacom N.V./S.A.

[Billing Address]

Attention: ***

No Assignment

~~101-116.~~ Neither of the Parties is entitled to assign the Contract, in part or in its entirety, to any third party or to any other entity unless with the prior written approval of the other Party.

~~102-117.~~ No approval will be required for an assignment of the Contract in case of transfer to a successor, to which a transfer has taken place of, at least, the Assigning Party's activities covered by the Contract. In such a case, the assigning Party shall immediately give Notice to the other Party of any such assignment permitted to be made under the

Contract without requesting the other Party's consent.

~~103-118.~~ Without prejudice to the foregoing, no assignment shall be valid unless the assignee agrees in writing to be bound by the provisions of the Contract and its Annexes.

Waiver

~~104-119.~~ A failure by either Belgacom or Customer to insist on the performance of any term of the Contract or to exercise any right or privilege hereunder shall not be construed as a continuing or future waiver of such term, condition, right or privilege. No waiver shall be valid unless it is in writing and signed on behalf of the Party making the waiver.

Fraud

~~105-120.~~ The Parties accept to cooperate to the best of their respective abilities in order to prevent and eliminate any kind of fraud which involves Services provided under the Contract. If any of the Parties suspects such kind of fraud, the Parties shall co-operate in order to identify the origin of the fraud and to use any appropriate means in order to eliminate and prevent such fraud as soon as possible. For the purposes of the application of the present provision, fraud shall mean any manipulation of a communications network, including by Customer connected to the network of one of the Parties, in order to obtain one or more telecommunication services without paying the proper charge for it, or to support other criminal activities (including, in particular, wiretapping, eavesdropping and gathering secret numbers).

~~106-121.~~ It is explicitly acknowledged by the Parties that any cooperation in the context of the present provision will need to be in due compliance

with the entire regulatory framework.

Independent Parties – Approvals

~~107.122.~~ Each Party shall be responsible for obtaining and keeping in effect all approvals from, and rights granted by, competent authorities, other operators, and any other persons that may be required in connection with the performance of its obligations under the Contract. Each Party shall reasonably cooperate with the other Party in obtaining and maintaining any required approvals and rights for which other Party is responsible.

~~108.123.~~ Each of the Parties is and shall remain at all times an independent contractor. Neither Party is authorized and neither of the Parties nor their employees, agents, ~~or~~ representatives or subcontractors shall at any time attempt to act or act on behalf of the other Party to bind the other Party in any manner whatsoever to any obligations. Neither Party nor its employees, agents or representatives shall engage in any acts which may lead any person to believe that such Party is an employee, agent, ~~or~~ representative or subcontractors of the other Party. Nothing in the Contract shall be deemed to constitute a partnership between the Parties.

Wholesale Broadband Access VDSL2

Annex 2 – Technical Specifications

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0. SCOPE

The purpose of this document is :

- To describe the technical specifications of the Wholesale Broadband Access VDSL2 service. Note that the description of the service is available in the Wholesale Broadband Access VDSL2, Main Body.
- To allow the Operator to setup a service based on this service from Belgacom, describing the interfaces in detail.
- To specify the technical requirements due to the use of the modem and of the internal cabling at end-user premises.

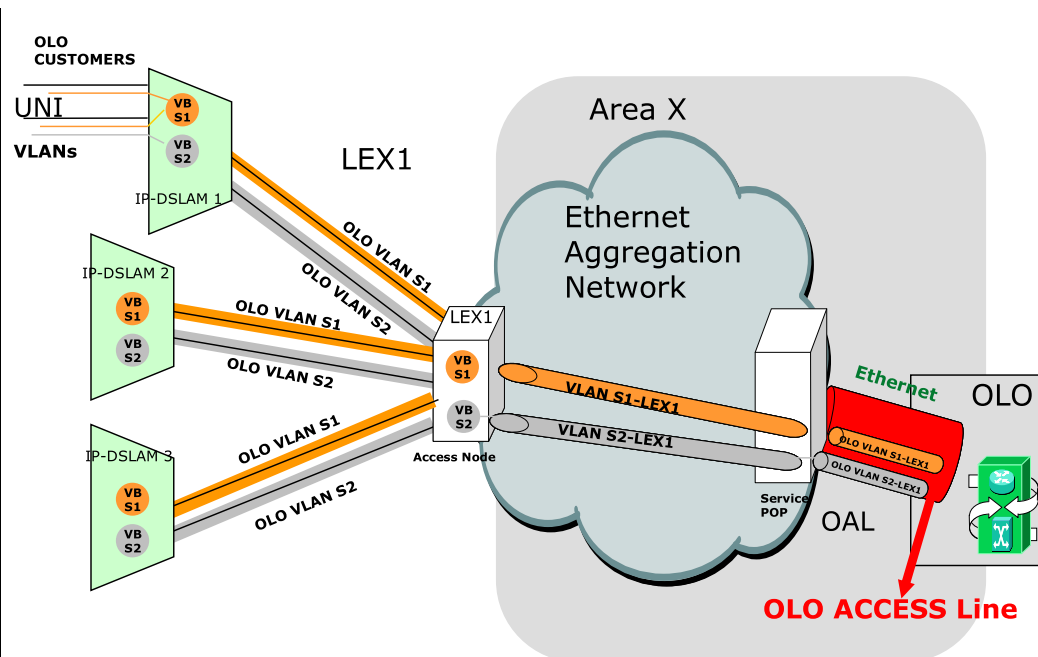
1. ABBREVIATIONS

	Description
DHCP	Dynamic Host Configuration Protocol
DS	Downstream
<u>DSCP</u>	<u>Differentiated Services Code Point</u>
GE	Gigabit Ethernet
GUI	Guided User Interface
IPoE	Internet Protocol over Ethernet
LACP	Link Aggregation Control Protocol
LAG	Link Aggregation
LAN	Local Access Network
LEX	Local Exchange
MTU	Maximum Transmission Unit
OAL	<u>QLO (Ethernet) Access Line</u>
OLO	Other Licensed Operator
p-bit	Priority bit
PoP	Point of Presence
PPP	Point to Point Protocol
PPPoE	Point to Point Protocol over Ethernet
UNI	User Network Interface
US	Upstream
U2U	User to User (communication)
VDSL2	Very High Speed Digital Subscriber Line 2 (= Ethernet Based, while VDSL1 is ATM based)
VLAN	Virtual LAN. <u>Unless specified otherwise, the word "VLAN" equally refers to a shared or to a dedicated VLAN.</u>
WBA VDSL2	Wholesale Broadband Access VDSL2. <u>Unless specified otherwise, the word "WBA VDSL2" equally refers to the two types of service: with shared or with dedicated VLAN.</u>

2. OVERALL NETWORK ARCHITECTURE OF WBA VDSL2 WITH SHARED VLANS

2.1 END-TO-END VIEW

Wholesale Broadband Access VDSL2 Solution



Graph 1 : end to end overview (shared VLANs)

This **Wholesale Broadband Access VDSL2** (in short : **WBA VDSL2**) service is offering an Ethernet connectivity between the OLO Access Line and the VDSL2 lines. Four services are defined on the Ethernet Network, differentiated by the Ethernet p-bit:

- P=0 : best effort
- P=1 : low priority
- P=3 : medium priority
- P=5 : highest priority

The VLAN-id scheme on all VDSL2 lines is common for all OLO's.
E.g.: VLAN-id 10 = Best Effort.

The IP-DSLAM is working as a VLAN Ethernet bridge performing translation between the VLAN-id on the VDSL line, to a VLAN, dedicated for 1 service and 1 OLO. This bridge is shared amongst all customers of the same service of the same OLO.

E.g.: All Best Effort traffic of OLO1 customers is bridged to VLAN 2200 on the IP-DSLAM NT.

Per service, the VLAN's of the end-user lines of an Operator will be aggregated on LEX level in the Access Node of the Ethernet Aggregation Network and transported in 1 VLAN to the Service PoP, where the OLO Access Line is connected. They are 2 Service PoPs, located in 2 different buildings, per Aggregation Network,

and 5 Aggregation Networks for whole Belgium. Each of the 5 Aggregation Network is covering 1 geographical Area.

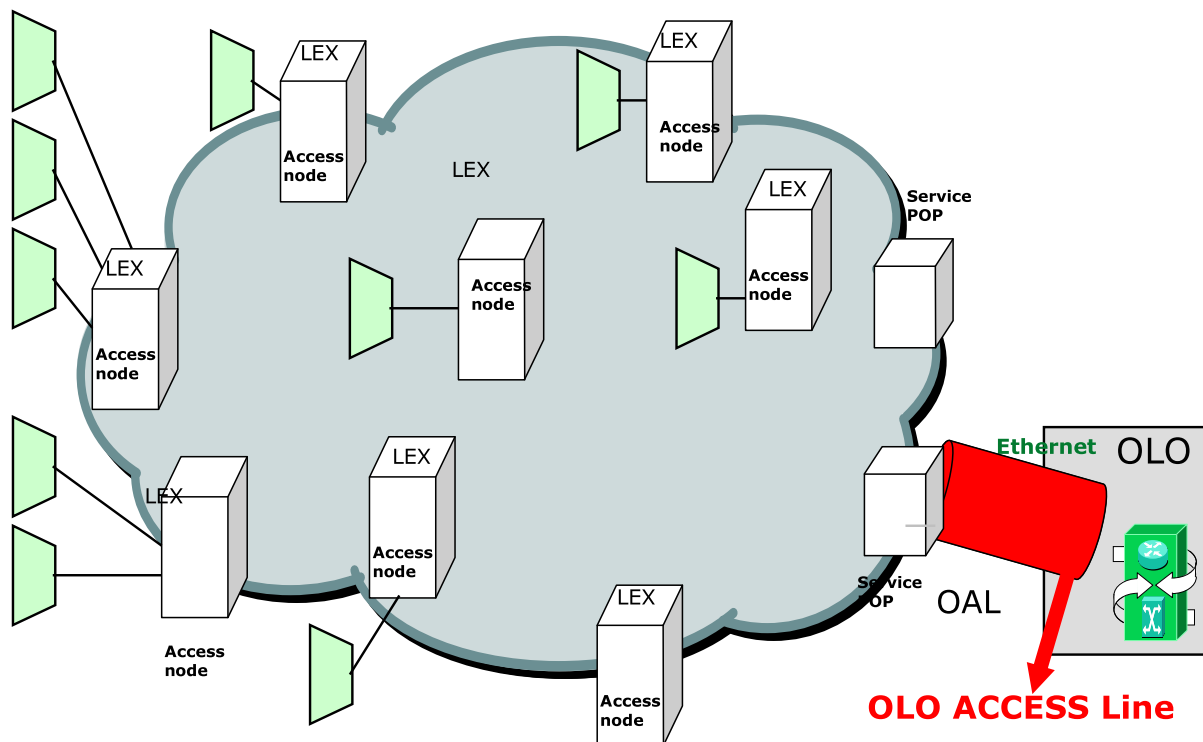
The VLAN ends in 1 VLAN on 1 OLO Access Line.

Per service and per LEX where the Operator wants to be active, he will need to order 1 separate VLAN between the LEX and one of the 2 Service PoPs of the Aggregation Network to whom the LEX belongs. In this LEX, all customers of the Operator with the same service will share this same VLAN.

The OLO will connect the Service PoP to his OLO Access line.

2.2 AGGREGATION NETWORK STRUCTURE

Wholesale Broadband Access VDSL2 Aggregation Network structure



Graph 2 : Aggregation Network Structure

The IP-Dslam is connected to one Access node.

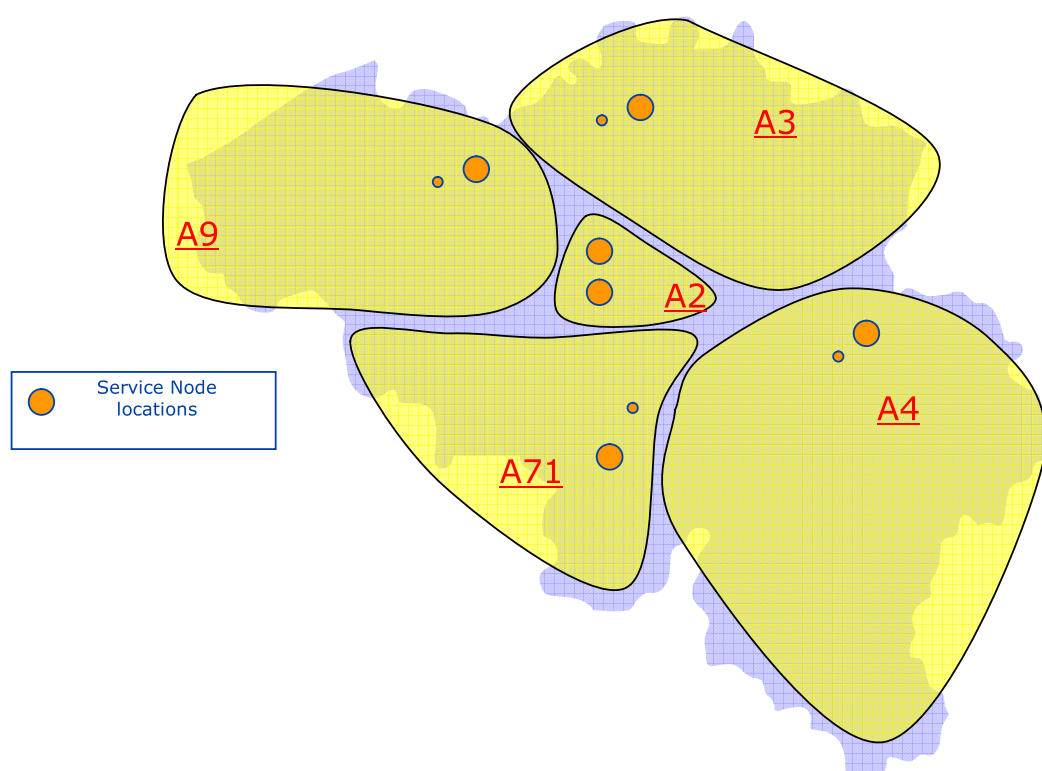
The VLAN is routed from the OLO Access Line to the Access node of the LEX.

Redundancy:

- rerouting of the VLANs.
- The OLO access line redundancy is an option.
- The IP-DSLAM is connected to its Access node via GE lines.

2.3 AGGREGATION AREAS

Ethernet Aggregation Network: 5 areas



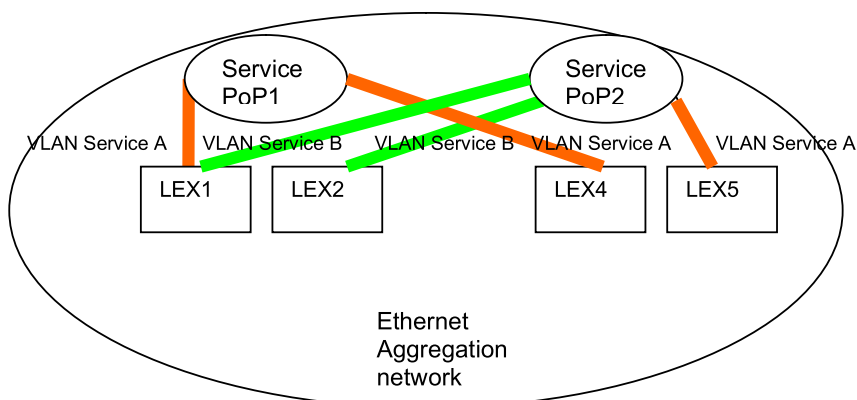
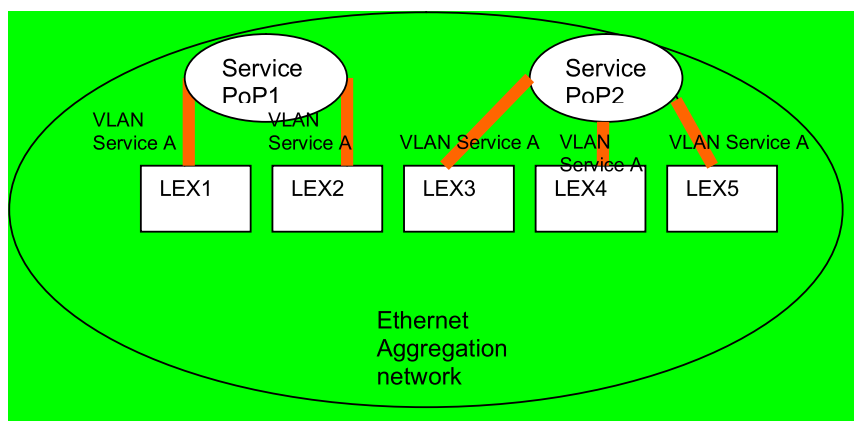
Graph 3 : Aggregation Networks and Service PoP's location

As prerequisite to the ordering of the WBA VDSL2 service in one of the 5 Areas, the Operator must interconnect with Belgacom by ordering at Belgacom one or several dedicated Access Lines between the Operator's Equipment and the Belgacom Service PoPs of this Area.

To collect and terminate the traffic of an Area, the Operator only needs to connect to 1 of the 2 Service PoP's per area. The interconnection on the 2 service PoP's of a same area lets the OLO share its traffic over the 2 Service PoP's for more security. Nevertheless, this is not loadsharing: the OLO must choose himself to which Service PoP he connects the different LEXs.

E.g.: for one service A, it will be possible to connect LEX's 1 and 2 to Service PoP1 and LEX's 3, 4 and 5 to Service PoP2 (with Service PoP1 and Service PoP2 belonging to the Area of these LEX's). For one service A, it is not possible to connect one LEX to the 2 Service PoPs.

Alternatively, it is also possible to connect the same LEX to Service PoP1 for service A and to service PoP2 for service B (with Service PoP1 and Service PoP2 belonging to the Area of this LEX).



Graph 4 : examples of connection between LEX's and Service PoP

To reach a national coverage, the Operator needs at least 1 interconnection in each Ethernet Aggregation area.

2.4 VLAN CHARACTERISTICS

- Each VLAN is transporting 1 service (=p-bit) to 1 Access node (1 per LEX).
- The offered VLANs allow very little amount of Multicast & Broadcast Ethernet frames => No Multicast service is possible !**
- The following table summarizes the VLAN Bandwidths available in function of the service chosen by the OLO:

Offered VLAN Bandwidth	P=0	P=1	P=3	P=5
100Mbps	yes	yes	yes	yes
200Mbps	yes	yes	yes	no

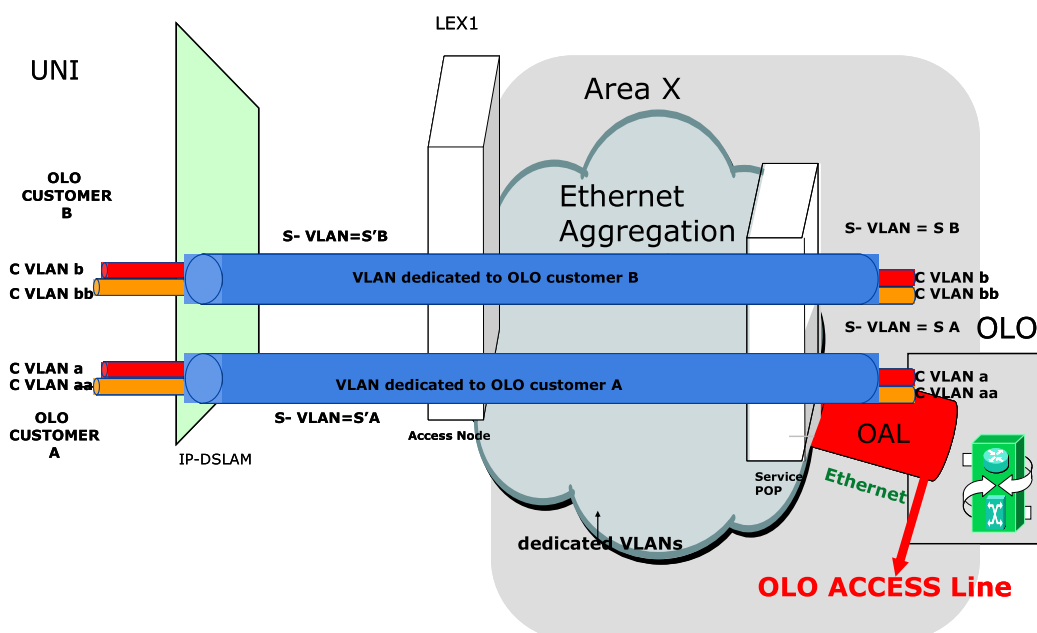
300Mbps	yes	yes	yes	no
500Mbps	yes	yes	no	no
1gigbps	yes	no	no	no

Table 1 : VLAN Bandwidth per service

3. OVERALL NETWORK ARCHITECTURE OF WBA VDSL2 WITH DEDICATED VLANS

3.1 END-TO-END VIEW

Wholesale Broadband Access VDSL2
with Dedicated VLAN



Graph 5 : end to end overview (dedicated VLANs)

This **Wholesale Broadband Access VDSL2** (in short : **WBA VDSL2**) service is offering an Ethernet connectivity between the OLO Access Line and the VDSL2 lines. Four services are defined on the Ethernet Network, differentiated by the Ethernet p-bit or Layer 3 IP Qos (DSCP or precedence bits):

- P=0 : best effort
- P=1 : low priority
- P=3 : medium priority
- P=5 : highest priority

The VLAN-id scheme on all VDSL2 lines is free (except for management VLAN of VDSL2 modem) for all OLO's, because it is transparently transported towards the OAL.

For each separate WBA VDSL2 line, the IP-DSLAM is adding in upstream a S-tag to any VLAN leaving the VDSL2 modem of the line and is transporting the S-tagged frame up to the OAL of the OLO in a **dedicated VLAN, completely dedicated to this OLO customer.**

Neither bridging nor MAC-learning is performed in the Belgacom network; the **dedicated VLAN** is transparently carried, except that the QOS parameters (see section 4.5.2) agreed between the OLO and Belgacom are policed).

The **dedicated VLAN** ends on 1 OLO Access Line, connected to a Service PoP of the Area to whom the end-user line belongs.

- No “inter Area” dedicated VLAN is possible.
- No rerouting to any other OAL is foreseen.
- The same OAL may be used for “shared” and for “dedicated VLAN” services.

At the OAL, Belgacom will deliver the VLAN, S-tagged carrying all C-VLANs of the VDSL2 line, unchanged. The S-tag is taking 1 VLAN-id; The standardized VLAN-id field size (12 bits) is thus limiting the number of VDSL2 sites, connectable to 1 OAL.

3.2 AGGREGATION AREAS

See Graph 3, “Aggregation Networks and Service PoP’s location”, in section 2.3.

As prerequisite to the ordering of the WBA VDSL2 service in one of the 5 Areas, the Operator must interconnect with Belgacom by ordering at Belgacom one or several dedicated Access Lines between the Operator’s Equipment and the Belgacom Service PoPs of this Area.

To collect and terminate the traffic of an Area, the Operator only needs to interconnect to 1 of the 2 Service PoP’s per area. The interconnection on the 2 service PoP’s of a same area lets the OLO share its traffic over the 2 Service PoP’s for more security. Nevertheless, this is not loadsharing: the OLO must choose himself to which Service PoP he connects each separate end-user line.

To reach a national coverage, the Operator needs at least 1 interconnection in each Ethernet Aggregation area.

4. UNI

Unless specified otherwise, the section 4 equally refers to the two types of service: with shared or with dedicated VLANs.

3.14.1 PHYSICAL TRANSPORT (LAYER 0)

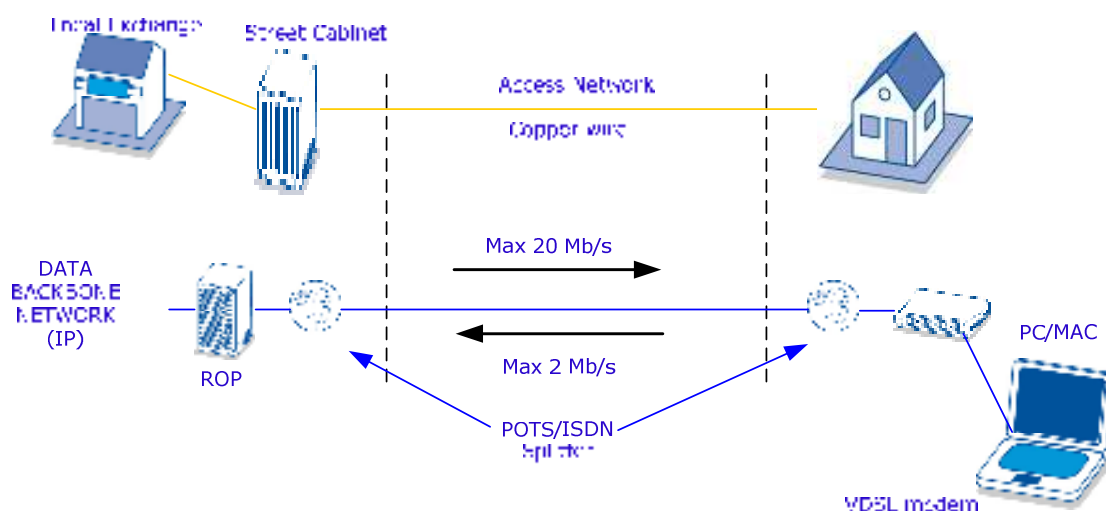
The physical layer is VDSL2 over copper line.

With and without voice products

- "With voice" means : data service offered in combination with a Belgacom PSTN/ISDN line.
- "Without voice" means : data service offered without combination with a Belgacom PSTN/ISDN line.

The most recent Belgacom Physical specification is called "UNI spec for VDSL2" and can be found at: http://www.belgacom.com/group/gallery/content/network/vdsl2_uni_tech_specs_30072007_final.pdf

Regarding the VDSL2 framing, VDSL2 offers packet transport (PTM) with 64/65B encapsulation as described within EFM (Ethernet in First Mile) standard and ITU VDSL2 standard ITU-T G.993.2.



Graph 56: Physical layer between End-User and Local Exchange

3.24.2 DSL PROFILES AT UNI (LAYER1)

The following profiles are chosen by Belgacom, based on the line quality:

LP name	Max Upstream	Max Downstream	Min Upstream	Min Downstream
LP701	2.000 Kbps	20.000 Kbps	640 Kbps	14.500 Kbps
LP702	2.000 Kbps	16.500 Kbps	640 Kbps	10.000 Kbps
LP703	1.000 Kbps	14.500 Kbps	640 Kbps	10.000 Kbps
LP704	512 Kbps	9.000 Kbps	256 Kbps	4.600 Kbps

4.3 ETHERNET ~~FORMAT FORWARDING MECHANISM~~ ON VDSL2

Ethernet format on DSL line:

- Frame format

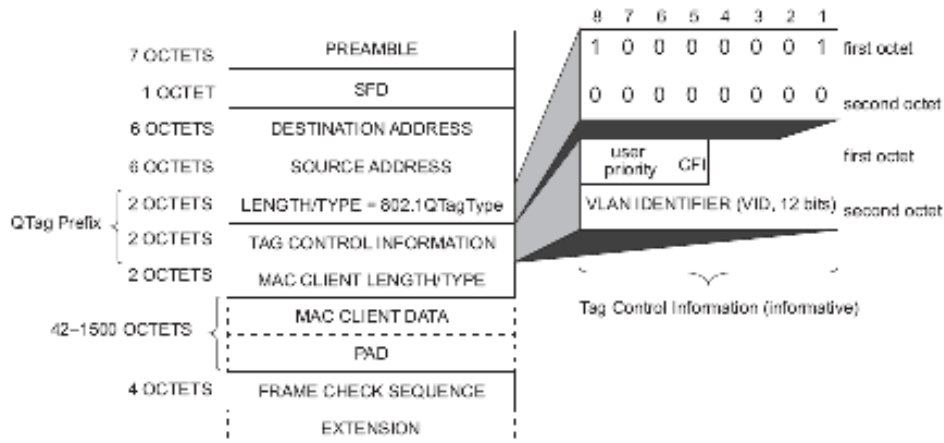


Figure 3-3—Tagged MAC frame format

Graph 67: Tagged MAC frame format

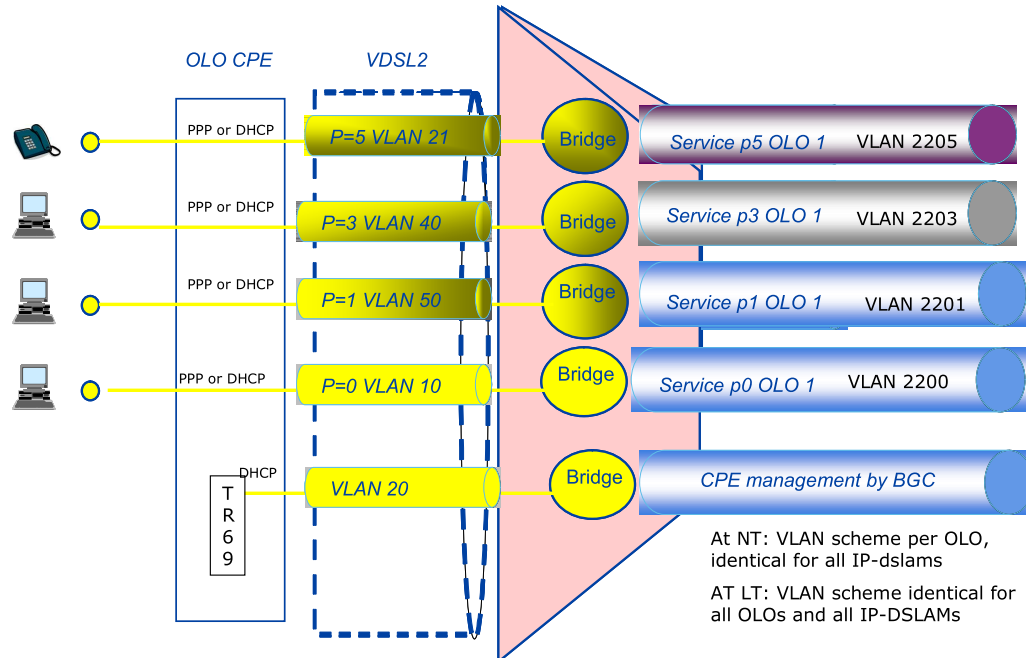
- IEEE 802.1Q also called "Tagged format" (see figure 3-3 from 802.3 – 2005)
- MTU size: the maximum length of the Data – Field (is MAC CLIENT DATA + PAD field in Figure 3-3 from 802.3-2005) is 1500 octets. In case of PPPOE, the PPP header uses 8 octets from those 1500 octets. The SAGEM modem may diminish the IP-payload further until 1500-8-4= 1488 octets.
- Duplex: full duplex (taking into account the asymmetric nature of the VDSL2 physical layer)

4.4 ETHERNET FORWARDING MECHANISM

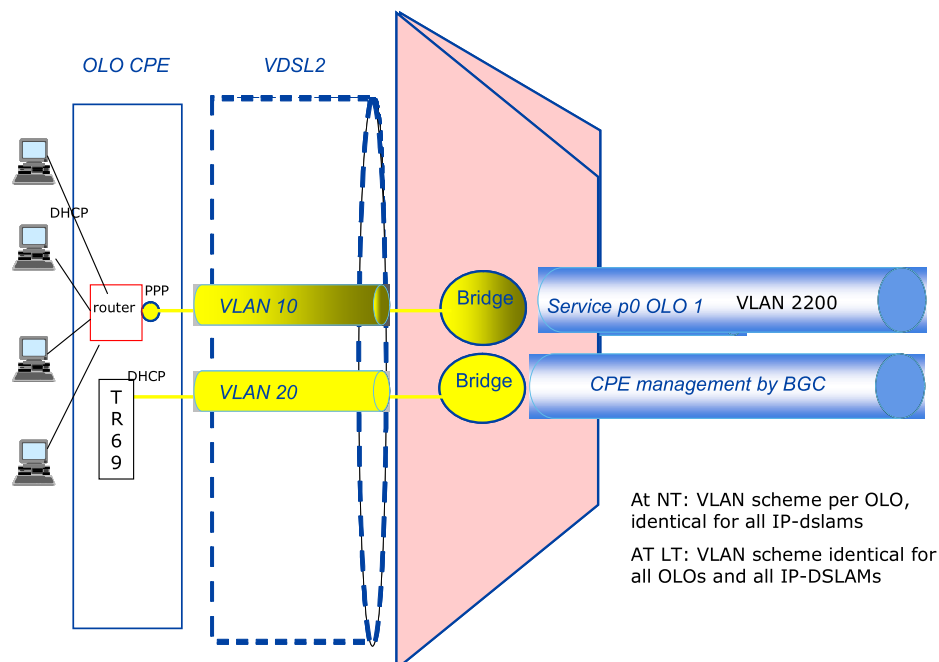
The forwarding mechanism differs in case of shared or dedicated VLAN.

4.4.1 Shared VLAN

Ethernet Forwarding Mechanism Bitstream & CPE in bridging mode



Ethernet Forwarding Mechanism Bitstream & CPE in routing mode



Graph 7-8: Ethernet Forwarding Mechanisms on VDSL2 (shared VLANs)

The forwarding model for VDSL2 with shared VLAN can be considered as L2 bridge with additional security features. Within this mode it is possible to associate different logical ports to one Virtual LAN. In the upstream direction, frames are forwarded from a VLAN at the user side to a service VLAN at the network side, with a MAC learning process. In the downstream direction, the frames are forwarded based on the MAC address, with a check on the correctness of the VLAN id/MAC address usage.

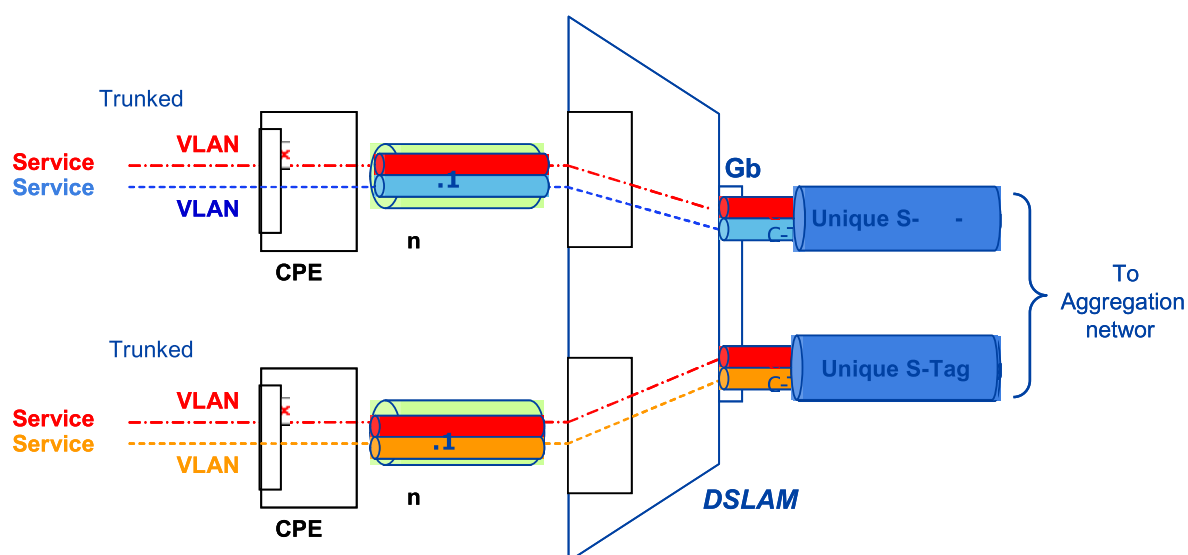
Each subscriber VLAN/Service on UNI is mapped to the Service VLAN(s) of the respective OLO at the uplink of the IP-DSLAM with VLAN Translation.

4.4.2 Dedicated VLAN

The forwarding mode for VDSL2 with dedicated VLAN can be considered as a (S-VLAN) XC model. In S-VLAN cross-connect mode, two levels of VLAN tags are used:

- the customer VLAN: C-VLAN
- the service provider VLAN: S-VLAN

The forwarding is transparent for the C-VLANs, also for the Management VLAN of the SAGEM CPE. Access Node applies S-Tag per DSL port. S-Tag must be unique within the Access Node. All control traffic (DHCP, ARP, IGMP...) is handled in a transparent way



Graph 9 : Ethernet Forwarding Mechanisms on VDSL2 (dedicated VLANs)

3.44.5 VLAN ID ALLOCATION AND QOS AT UNI

The VLAN ID allocation differs in case of shared or dedicated VLANs.

4.5.1 Shared VLAN

On UNI it is possible to provision up to 4 VLAN IDs. Belgacom will use VLAN 20 for management and upgrade of the CPE.

Mapping Table :

p-bit	0	1	3	5
VLAN id =	10	50	40	21

Table 2 : Mapping p-bit and VLAN id

This VLAN id scheme is identical for all OLOs.

No multicast Ethernet packets are allowed!

Upstream Marking: p-bit setting on vlan on bridge port

Policing: No policing in upstream in the IP-Dslam.

Downstream Scheduling:

Hierarchical scheduler:

- P=0: best effort.
- P=1: low priority.
- P=3: medium priority.
- P=5: highest priority.

4.5.2 Dedicated VLAN

Any VLAN at UNI (is C VLAN id) is transparently enveloped by the S-tag and not configured neither visible in the Belgacom network¹.

Qos: The OLO shall associate 1 VLAN profile to every VDSL2 line.
Each OLO can negotiate 10 VLAN profiles with Belgacom.

One "VLAN profile" has following attributes:

- Layer 2 (p-bit) or Layer 3 Qos (precedence or DSCP); applicable for both upstream and downstream
- Maximum Upstream bandwidth per p-bit (bandwidth p0, bandwidth p1, bandwidth p3, bandwidth p5)
- Maximum Downstream bandwidth per p-bit (bandwidth p0, bandwidth p1, bandwidth p3, bandwidth p5)

The attributes of a VLAN profile are identical for all VDSL2 end-user lines using this profile.

The 4 qos classes applicable to an Ethernet packet are the same as for "Shared VLAN" service:

- P=0: best effort.
- P=1: low priority.
- P=3: medium priority.
- P=5: highest priority.

The upstream and downstream Ethernet flows are policed following the VLAN profiles.

The service offers primarily a layer 2 Qos, but in order to accommodate customer equipment that is not able to set p-bits, a one to one mapping between each p-bit value (0, 1, 3 & 5) and one corresponding Layer 3 "precedence or DSCP" value is established at agreement between the OLO and Belgacom about the "VLAN profile".

¹ Also applicable for the VLAN for the VDSL2 modem management (see Section 8, "Modem"). Therefore the OLO customer shall not use this VLAN.

E.g.: Precedence bits "1" may be set as equivalent for p-bit 1. In this case, the bandwidth of "precedence 1" IP packets will be policed instead of the bandwidth of p-bit 1 Ethernet frames.

In the case of a Layer 3 qos, all p-bits shall be set to 0 or shall be lower than the corresponding Layer 3 class. E.g In case of Layer 3 VLAN profiles, lowest priority Layer 3 packets shall not be Layer 2 tagged to p=5.

The VLAN profile is policing all Ethernet packets of the dedicated VLAN and cannot differentiate following eg C-tag.

It is the responsibility of the OLO to underbook, match or overbook the instantaneous available physical bandwidth on the VDSL2 line (upstream and downstream). It is recommended not to overbook higher Qos bandwidths (P5, P3, P1).

3.54.6 LINE IDENTIFICATION

4.6.1 Dedicated VLAN

Not applicable; The ISAM is not adding Line ids to eventual PPP or DHCP frames. The VLAN-id@OAL+OAL identity sufficiently define the identity of the line.

4.6.2 Shared VLAN

Line identification will be enabled for both PPPoE and IPoE (DHCP) on each service VLAN of the OLO.

IPoE:

For IPoE access, per service VLAN a layer 2 DHCP relay function is implemented on the DSLAM as described within DSL Forum TR-101. The DHCP packet format is specified in RFC 2131. The DHCP Relay Agent Information option (option 82) format is specified in RFC 3046.

In upstream, the access loop identification will be encoded within the "Agent Circuit ID" sub-option 1 of DHCP Option 82 during the DHCP session setup.

In downstream, the DSLAM will remove DHCP option 82.

PPPOE:

For PPPoE access, per service VLAN the PPPoE Intermediate Agent function is implemented on the DSLAM as described within DSL Forum TR-101.

In upstream, the access loop identification will be encoded within the "Agent Circuit ID" sub-option 1 of the PPPoE vendor specific tag in the discovery messages (PADI, PADR, PADT) of the PPPoE protocol.

Format agent circuit id for IPoE and PPPoE:

"<Access-Node-Identifier> eth <rack>/<shelf>/<slot>/<dsl-line>:<vlan>"

Example: H02NOR00001 eth 3/2/01/06:20[AP1]

3-64.7 SECURITY

4.7.1 Dedicated VLAN

No security measures are applied in the Belgacom network: the OLO is responsible for the security of its network (eg number of MAC addresses, MAC learning aspects, control frames, multi- and broadcast,...).

4.7.2 Shared VLAN

- No U2U communication
- Prevention of Broadcast storm:
 - o Downstream:
 - broadcast frames are dropped
 - Ethernet frames with unknown destination MAC@ are dropped.
Ageing timer bridge = 900s (=> application shall send a message upstream at startup and every x sec, x<900, in order to keep joinable from the network)
 - o Upstream:
 - Rate limiting control plane (DHCP, IGMP, ARP...).
 - Discard control frames (STP, Pause frames..)
 - Multicast blocking
- Maximum number of MAC@ per DSL port=8
- MAC anti spoofing.

4.5. TECHNICAL SPECIFICATIONS FOR THE USE OF DISTRIBUTION CABLE TO PROVISION WBA VDSL2

The use of the return pairs of the distribution cables, either in ring topology or not, to deliver a WBA VDSL2 service towards the end-user premises is submitted to the limitations regarding distribution cables defined in the Annex C "Technical Specifications" of BRUO, in the section 5 "Common technical specifications for the equipment to be connected to the loop or subloop", sub-section 5.1. "VDSL2", as described in the addendum of 24/10/2007 "Addendum to BRUO Annex C Technical Specifications regarding VDSL2".

5.6. TECHNICAL SPECIFICATIONS FOR THE EQUIPMENT TO BE CONNECTED ON A WBA VDSL2

To use WBA VDSL2, the OLO must respect the technical specifications regarding internal cabling defined in the Annex C "Technical Specifications" of BRUO, in the section 5 "Common technical specifications for the equipment to be connected to the loop or subloop", sub-section 5.1. "VDSL2", as described in the addendum of 24/10/2007 "Addendum to BRUO Annex C Technical Specifications regarding VDSL2".

6.7. NTP & SPLITTERS

- The Network Termination Point (NTP) is the first termination point of a loop at the End User premises.
- The NTP required for WBA VDSL2 is the model TF2007, equipped with its specific full rate splitter.
- When correctly placed as first introduction point, the TF2007 and its specific full rate splitter are specially designed to respect the internal cabling rules mentioned in Section 6, "*Technical specifications for the equipment to be connected ON a WBA VDSL2*".
- This centralized splitter presents transmission characteristics specific to VDSL2, but is also suitable for ADSL and ADSL2+.
- The provider of the TF2007 and of its full rate Splitter is:
M.T.C. BELGIUM , BVBA
Leuvensesteenweg 257
1910 Kampenhout
Tel.: 32 16 60 09 67
Fax: 32 16 60 96 16

7.8. MODEM

7.18.1 REQUIRED MODEM

Until interoperability of the VDSL2 technology, only the modem configured by SAGEM for the WBA VDSL2 service is supported on the Belgacom network, and can be installed at End User side.

7.28.2 TECHNICAL DESCRIPTION OF THE MODEM

The modem configured by SAGEM for the WBA VDSL2 service is based on the generic SAGEM F@st3464. All information on this product must be requested directly by the Customer to SAGEM.

7.38.3 SPECIAL CONFIGURATION REQUESTED BY BELGACOM ON THE SAGEM F@ST 3464 MODEM FOR THE WBA OFFER WITH SHARED VLANS

Belgacom has specified for this modem a firmware interoperable with its WBA VDSL2 service with shared VLANs. The specific settings for this modem are listed here below.

7.3.18.3.1 Specific configuration

- The CPE shows a GUI, which allows choice between 2 options:
 - o Option 0: All 4 Ethernet ports of the CPE are routed to the High Speed Internet Access VLAN (VLAN 10).
 - o Option 1 : transparent L2 bridging for 4 Ethernet services with Layer 2 QOS.
- The VLAN 20 is used by Belgacom for remote management. This will allow Belgacom to upgrade the VDSL2 datapump of this specific SAGEM modem model.
- The TR-069 parameters are configured so that the TR-069 client of the CPE contacts the Belgacom TR-069 ACS server via the management VLAN (VLAN 20).

7.3.28.3.2 Firmware upgrades

VDSL2 technology is currently a work in progress. Since the VDSL2 datapump is expected to evolve after the product launch, Belgacom will possibly upgrade remotely the firmware of this specific SAGEM modem, after its installation at end-user site. Only the datapump part of the firmware will be modified.

The firmware upgrade will preserve the PPP settings of the SAGEM modem.

Until interoperability of the VDSL2 technology, the OLO may not modify the firmware of this modem.

8.4 SPECIAL CONFIGURATION REQUESTED BY BELGACOM ON THE SAGEM F@ST 3464 MODEM FOR THE WBA OFFER WITH DEDICATED VLANS

Belgacom has specified for this modem a firmware interoperable with its WBA VDSL2 service with dedicated VLANs. The specific settings for this modem are listed here below.

8.4.1 Specific configuration

The VDSL2 modem connects transparently the VLANs between the VDSL2 line and the customer CPE. The interface with the CPE is 100Mbps and is in trunked mode only (IEEE 802.1Q) (No native Ethernet).

8.4.2 Firmware upgrades

VDSL2 technology is currently a work in progress. Since the VDSL2 datapump is expected to evolve after the product launch, upgrade of the firmware of this specific VDSL2 modem, after its installation at end-user site, or remotely via VLAN 4090 is possible. Only the datapump part of the firmware will be modified.

Since all VLANs (also the management VLAN 4090 of the VDSL2 modem) are transparently transported to the OAL and further to the OLO network, Belgacom cannot perform this firmware upgrade.

Belgacom practice (for information):

- use VLAN 4090 (C-tag) for IP connectivity between VDSL2 modem and OLO network
- use static IP address (/23) on Sagem
- use TFTP for firmware upgrades on SAGEM CPE; no DHCP.
- Password protected

8.9. OLO ACCESS LINE

The following bandwidths and protection modes are possible :

- 1 GE,
- 1+1 GE, capacity is 1Gig; 1 GE is working and 1GE is standby.

Ethernet aspects of 1GE port:

- MAC frame format for “shared VLAN”: IEEE 802.1Q also called “Tagged format” (see figure 3-3 from 802.3 – 2005)

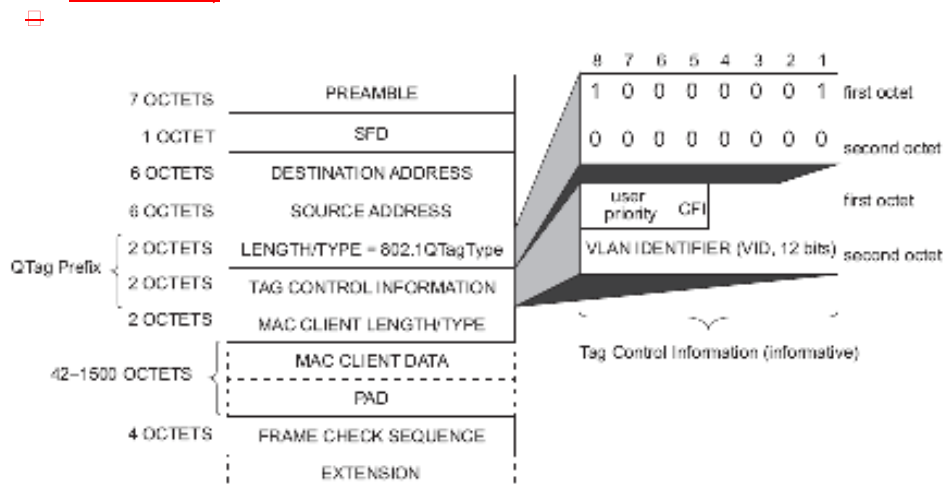
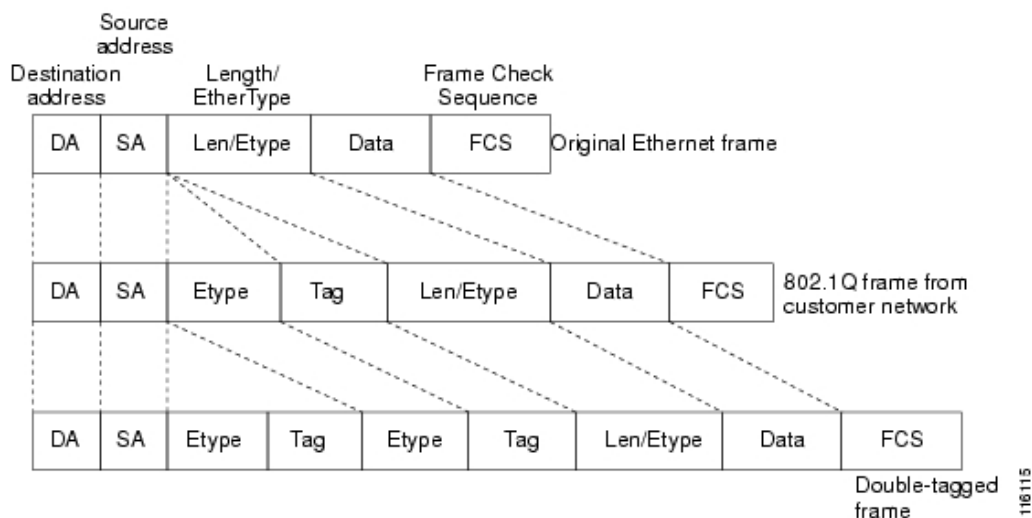


Figure 3-3—Tagged MAC frame format

Graph 810: Tagged MAC frame format

- MAC format for “Dedicated VLAN”

In case of dedicated VLAN, a S-Tag will be added to the C-tags on the VDSL2 line, following IEEE802.1ad (“Q in Q”). The latter are transparently carried by the Belgacom core Ethernet network.



- The Physical connectivity for 1 GE is specified in (IEEE 802.3z) and for multiple GE's, bundled in LAG², using LACP³, as specified in (IEEE 802.3ad).

• ~~IEEE 802.1Q also called "Tagged format" (see figure 3-3 from 802.3-2005)~~

- MTU size: the maximum length of the Data – Field (is MAC CLIENT DATA + PAD field in Figure 3-3 from 803.3-2005) is 1500 octets. In case of PPPoE, the PPP header uses 8 octets from those 1500 octets. ~~The SAGEM modem may diminish the IP payload further until 1500-8-4= 1488 octets.~~
- Duplex: full duplex (taking into account the asymmetric nature of the VDSL2 physical layer)
- Autonegotiation: **OFF**

8-19.1 BELGACOM-SITED

Optical: GigE type LX ; wavelength 1310nm; Range 10Km

Connectivity:

In the colocation, the OLO can connect to an Optical Distribution frame. The standard optical connector at BelgacomGC will be **SC/APC 8°**.

It is available at BelgacomGC as 900µ pigtail which needs to be fusion spliced on the fiber. (4m of 900µ fiber , 2* SC/APC installed, meant to be cut in two and spliced on the fiber).

8-29.2 CUSTOMER-SITED

Optical: GigE type LX ; wavelength 1310nm; Range 10Km

Connectivity

The Optical Line Termination (eg FSP2000) will be installed by Belgacom in the Belgacom rack.

The OLO can connect, using male Optical SC/PC connectors (= default) or LC/PC connectors on customer request.

² LAG = Link Aggregation (also 1 GE will be configured in LAG, in order to be able to add easily other GEs).

³ LACP= Link Aggregation Control Protocol. (not activated for 1 single GE)

8-39.3 TESTING THE OAL

The testing of the OAL is in 3 phases:

- stand alone from Optical Modem to Optical Modem (only in case of Customer Sited)
- RFC 2544 test (only in case of Customer Sited)
- ping test between Belgacom access router to customer router: 1000 pings of 64bytes (may loose 2 pings) ; 1000 pings of 1500bytes (may loose 2 pings); (10exp -9 quality)

This last phase could be the equivalent of the ATM access Line tests, defined in the BROBA offer.

It could be implemented as follows:

1. Belgacom temporarily provides an IP address to the OLO for the tests (WBA VDSL2 does not offer IP connectivity => no IP addresses); The OLO implements it as loopback address on the OLO Router.
2. Make the ping test, described above and let the OLO do the same ping test from his side.
3. Exchange the results
4. The OLO deconfigures the IP address; it will be reused for other OLO tests (other OLOs and / or other OALs).

8-49.4 VLAN ID ALLOCATION ON THE OAL

Shared VLAN: For the WBA VDSL2, Belgacom allocates the VLAN id in the range 120 to 799.

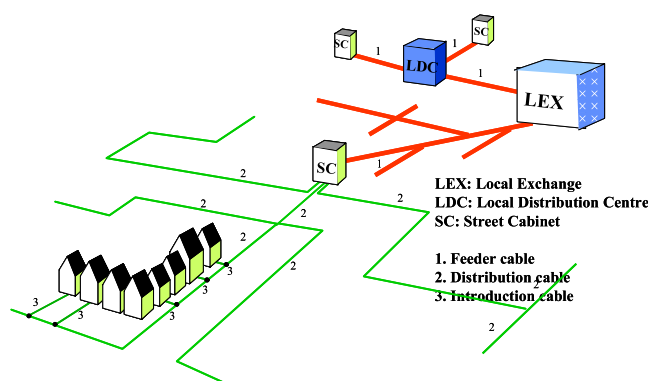
Dedicated VLAN: S-tags 800 - 4095

The Ethernet tests use VLANs 100 and 101 (at delivery AND in case of later problems).

9.10. CHARACTERISTICS OF CABLING - TRANSMISSION PROPERTIES OF THE ACCESS NETWORK

9.10.1 GENERALITIES

1. A subscriber loop consists of sections of twisted pairs cables of different gauges. All the sections are buried and connected together by means of electrical joints, called splices, directly placed in the ground or sometimes in a manhole.



2. In the ideal situation, the Access Network has a star configuration with the feeder cable bundles going from the main distribution frame to the street cabinet. From the street cabinet, via distribution cables and drop wires, the wire pairs are terminated at the NTP (Network Termination Point) in the individual customer sites. The reality shows that cable arrangements leads sometimes to a meshed structure in the feeding network.

3. Each telecom cable consists of a number of copper conductors grouped in quads; these quads can be arranged in bundles or in layers, depending on the type of cable.

9.210.2 PHYSICAL CHARACTERISTICS OF THE CABLES

4. A conductor can be isolated by a layer of paper (in the old generation cables) or synthetic material, usually polyethylene.
5. Most of the conductors have a 0.5 mm or 0.6 mm diameter; distant customers however needs to be connected via conductors of 0.8 and 1.0 mm; 2000 pairs cables going out of the central office are sometimes made of 0.4 mm conductors.
6. In paper insulated cables, the conductors are surrounded by a lead sheath, generally protected by armouring and polyethylene sheath.
7. In plastic insulated cables used in the distribution network, the conductors are surrounded by a polyethylene sheath.
8. In plastic insulated cables used in the feeding network, the conductors are surrounded by an aluminium screen, a polyethylene internal sheath, an armouring and a polyethylene external sheath.

9. The plastic cables are in the majority of the cases longitudinally waterproof.

9.310.3 ELECTRICAL CHARACTERISTICS OF THE CABLES

10. The table below gives some typical characteristics of the access network cables [figures given by the cable manufacturers or by measurements in the field]

Diameter	LR	KC	A800	A40.000	A150.000	A300.000
0.4 mm	275	55	2.0	7.5	11.5	14.5
0.5 mm	180	50-55	1.3	6	9	11
0.6 mm	123	38.5-46	1.0	4	6	8
0.8 mm	69	38.5	0.7	2.5	4	5.5

LR = Loop Resistance in ohm/km

KC = average Kilometric Capacity in nF/km (it depends on the type of cable)

A800 = Attenuation measured at 800 Hz in dB/km

A40.000 = Attenuation measured at 40.000 Hz in dB/km

A150.000 = Attenuation measured at 150.000 Hz in dB/km

A300.000 = Attenuation measured at 300.000 Hz in dB/km

NB: the attenuation values are conditional. The reader must note that these figures are given for cable. A loop is made of several pieces of cables and then additional attenuation and reflections due to the splices and the different cable gauges will occur.

11. The insulation resistance between the 'a' and 'b' wires of a pair (without terminal equipment) or between wire and earth is supposed to be at least 750 kohms.

◆◆◆◆◆ End of document ◆◆◆◆◆

Wholesale Broadband Access VDSL2

Annex 4

Planning and Operations

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1. Introduction

1. This annex describes the Planning and Operations principles, related to the provisioning and repair of the Wholesale Broadband Access VDSL2 Service.
2. Both parties will use at any time their best efforts to ensure an adequate level of service provisioning both between the Parties and towards the End Users concerned.
3. In the event that difficulties or problems arise in respect of Planning and Operations, the Parties will perform all necessary co-operation and consultation with a view to developing appropriate and workable solutions.
4. All relevant technical documentation and order forms if any can be retrieved at the secured part of the website for this offer.

2. Acronyms

ACK	Acknowledged
BGC	Belgacom
CA	Certification Authority
CSD	Customer Support Desk
CWS	Carrier and Wholesale Services
DC	Data Connectivity
DES	Data Encryption Standard
FUT	Friendly User Testing
ISDN	Integrated Service Digital Network
LEX	Local Exchange
MDF	Main Distribution Frame
MIME	Multipurpose Internet Mail Extensions
NACK	Not Acknowledged
PSTN	Public Switched Telecommunications Network
P-Bit	Priority Bit
SOR	Statement Of Requirements
SPOC	Single Point Of Contact
VDSL2	Very High Speed Digital Subscriber Line 2
VLAN	Virtual Local Area Network. Unless specified otherwise, the word "VLAN" equally refers to a Shared or to a Dedicated VLAN.
WBA	Unless specified otherwise, the word "WBA VDSL2" equally refers to the two
VDSL2	types of service: with shared or with dedicated VLANs.

3. Exchange of information

5. This chapter includes some communication guidelines in order to ensure a good interchange of information and to define an effective communication channel that focuses on both improving the comprehension and execution of the processes.

3.1. Single Point Of contact

6. Both Parties will appoint a member of its staff as Single Point Of Contact for Wholesale Broadband Access VDSL2. This person, referred to as "SPOC", will be in charge of all matters regarding the day-to-day management of the performance of this offer. In particular, all firm orders must be submitted by registered mail to the SPOC of Belgacom, unless noticed otherwise.

3.2. Preliminary Exchange of Information for the initial setting up

7. Without prejudice to what is stated above, it is recommended that the Customer provides a Statement Of Requirements (SOR) to Belgacom as early as possible in any discussions between The Customer and Belgacom. The SOR is sent by registered mail to the SPOC of Belgacom. After the receipt of the SOR, Belgacom shall notify to the Customer its observations, if any, concerning the SOR. In particular, when appropriate, Belgacom may request additional information to complete the information contained in the SOR. For more information on the SOR, reference is made to Appendix A of this document.

3.3. Implementation Committee

8. The Implementation Committee is a meeting between both parties to supervise, discuss and examine at a general level technical and operational application of this offer, in particular, the implementation of the respective obligations of the Parties, as described in this offer.
9. The Implementation Committee will meet at least on a quarterly basis. Each Party will be entitled to call additional meetings within reasonable notice, as may be necessary. Each Party will be represented at the Implementation Committee by its SPOC accompanied by any staff as deemed necessary by the relevant Party.
10. In addition to the Implementation Committee, the Parties will be allowed to request for the set-up of any other bilateral working group in charge of discussing and agreeing on any technical or operational issues, including more specialized members on the specific topic.

4. Ordering OLO Access Line

4.1. General

11. Before the Customer can submit an order for the activation of Wholesale Broadband Access VDSL2 on a specific End User line, an Ethernet OLO Access Line needs to be in service in the relevant Service Area.
12. Firm orders of OLO Access Line, between a BGC Service PoP and Customer's equipment, shall be done through the use of the specific templates provided in Appendix D of this document. Templates will be considered as valid only when they are properly completed. In case data is missing or is not correct, the template will be rejected. In the latter case, Belgacom will indicate the reasons of rejection on the template. All firm orders will be submitted by fax to the SPOC of Belgacom for Wholesale Broadband Access VDSL2.
13. Irrespective of the terms and conditions stated below, Belgacom reserves the right to reject orders if the volumes requested by the Customer are not in line with reasonable market demands. In the event of such a rejection, Belgacom will provide the Customer with the reasons for the rejection and the Parties will need to enter into a good faith discussion for finding a solution to deal with the difficulty that has arisen.

4.2. Ordering procedure

14. The Customer can order its OLO Access Line through a firm order. A firm order consists of the requested OLO Access Line, per type of service (Appendix D). Together with the firm order, the Customer includes the date when he wants the OLO Access Line to be ready.
15. Delays for the provisioning of these OLO Access lines take into account the fact that, when public infrastructure works have to be realized, several actions and several actors can extend the time needed for provisioning of the access lines. Examples of interventions can be:
 - Studies
 - Creation of implementation plan
 - Requests to Public Authorities for authorization to realize works on the Public Infrastructure (often 2 months or more)
 - Realization of the works
16. In the event that difficulties or problems arise in this respect, the Parties will use all necessary co-operation and consultation with a view to developing appropriate and workable solutions subject to agreement between the Parties.
17. The Customer is notified that in very exceptional situations, significant delays may be experienced :
 - In case of periods of large demands that could not be foreseen,
 - In an emergency situation (i.e., exceptional cases of *force majeure*),
 - In situations of lightning and any other natural disasters that causes damage to the Belgacom network.

18. When the installation of the OLO Access Line is complete, Belgacom will confirm it to the Customer.

5. Ordering Bandwidth for shared VLANs

5.1. Bandwidth Allocation

5.1.1. General

19. The Customer will order bandwidth between each LEX in which the Customer wants to connect End Users and the Belgacom Service PoP to which the Customer is connected. Belgacom does the set-up and the configuration of the shared VLAN's, between the LEX's from which the End Users depend and the Customer equipment, on behalf of the Customer.
20. Firm orders of bandwidth per LEX shall be done through the use of an XML order as described in the WBA VDSL2 XML content description documents available on the Customer's personal page on the CWS secured site. Orders will be considered as valid only when they are properly completed. In case data is missing or is not correct, the order will be rejected. In the latter case, Belgacom will indicate the reasons of rejection on the reject. Orders are sent via the secured electronic messaging system. [For more detailed information on the ordering process via XML, as described in Appendix B of this document - reference is made to the Belgacom Wholesale secured website – Regulatory information – WBA - Information on ordering.](#) and ~~in~~ to the corresponding WBA VDSL2 XML content description documents. There is one request per XML order. XML with encrypted XML files is the standard procedure.
21. Irrespective of the terms and conditions stated below, Belgacom reserves the right to reject orders if the volumes requested by the Customer are not in line with reasonable market demands, i.e. in case of massive and unexpected orders of a Customer that would paralyze the Belgacom ordering system. In the event of such a rejection, Belgacom will provide the Customer with the reasons for the rejection and the Parties will need to enter into a good faith discussion for finding a solution to deal with the difficulty that has arisen.

5.1.2. Prerequisites

22. An OLO Access Line with sufficient available capacity has to be implemented between a Belgacom Service PoP and the Customer equipment.

5.1.3. Ordering procedure

23. The Customer can order a shared VLAN through a firm order. A firm order consists of the requested shared VLAN with its associated parameters (bandwidth, Service, Service PoP, OAL, ...).
24. The Customer is notified that in very exceptional situations, significant delays may be experienced:
 - In case of periods of large demands that could not be foreseen,

- In an emergency situation (i.e., exceptional cases of “Force Majeure”).
25. When the Customer sends an order to activate the Wholesale Broadband Access VDSL2 on an End User line, Belgacom will provide the Customer with all the necessary information in order to configure the related VLAN at the Customer's side of the network, when the done XML is sent back to the OLO.
 26. The Customer is requested to deliver Belgacom with a technical Customer contact for the synchronization in setting up shared VLAN's.

5.2. Capacity Change

5.2.1. General

27. The Customer can request, within the limits of the shared VLAN specifications mentioned in this offer (Allowed shared VLAN Bandwidth in function of the Service),
 - For an upgrade of the Bandwidth of each shared VLAN he ordered between specific LEX and the Service PoP to which he is connected
 - For a downgrade of the Bandwidth of each shared VLAN he ordered between specific LEX and the Service PoP to which he is connected
28. Firm orders of bandwidth modification shall be done through the use of an XML order as described in the WBA VDSL2 XML content description document available on the Customer's personal page on the CWS secured site. Orders will be considered as valid only when they are properly completed. In case data is missing or is not correct, the order will be rejected. In the latter case, Belgacom will indicate the reasons of rejection on the reject. Orders are sent via the secured electronic messaging system. [For more detailed information on the ordering process via XML, reference is made to the Belgacom Wholesale secured website – Regulatory information – WBA - Information on ordering, as described in Appendix B of this document](#) and ~~in to~~ the corresponding WBA VDSL2 XML Content Description document. There is one request per XML order.
29. Belgacom reserves the right to reject orders if the volumes requested by the Customer are not in line with reasonable market demands, i.e. in case of massive and unexpected orders of a Customer that would paralyze the Belgacom ordering system. In the event of such a rejection, Belgacom will provide the Customer with the reasons for the rejection and the Parties will need to enter into a good faith discussion for finding a solution to deal with the difficulty that has arisen.

5.2.2. Prerequisites

30. The order is relative to an existing shared VLAN and must contain its correct identification (cfr all informations specified in the WBA VDSL2 XML content description document for shared VLAN ordering).

5.2.3. Ordering procedure

31. The Customer can ask to modify the existing parameters of its shared VLAN's through a firm XML order. A firm order consists of the requested shared VLAN's parameters per LEX, per shared VLAN.
32. The Customer is notified that in very exceptional situations, significant delays may be experienced:
 - In case of periods of large demands that could not be foreseen,
 - In an emergency situation (i.e., exceptional cases of *force majeure*).
33. When a shared VLAN is modified by Belgacom, the Customer will be provided with all the necessary information in order to configure the related shared VLAN at his side of the network.

5.3. Capacity Cancellation

5.3.1. General

34. The Customer can request the cancellation of an existing shared VLAN.
35. Firm orders of bandwidth cancellation shall be done through the use of an XML order as described in the WBA VDSL2 XML content description document available on the CWS secured site. Orders will be considered as valid only when they are properly completed. In case data is missing or is not correct, the order will be rejected. In the latter case, Belgacom will indicate the reasons of rejection on the reject. Orders are sent via the secured electronic messaging system. For more detailed information on the ordering process via XML, as described in Appendix B of this document reference is made to the Belgacom Wholesale secured website – Regulatory information – WBA - Information on ordering, and in to the corresponding WBA VDSL2 XML content description document. There is one request per XML order.
36. Belgacom reserves the right to reject orders if the volumes requested by the Customer are not in line with reasonable market demands, i.e. in case of massive and unexpected orders of a Customer that would paralyze the Belgacom ordering system. In the event of such a rejection, Belgacom will provide the Customer with the reasons for the rejection and the Parties will need to enter into a good faith discussion for finding a solution to deal with the difficulty that has arisen.

5.3.2. Prerequisites

37. The order is relative to an existing shared VLAN and must contain its correct identification.
38. A customer may only cancel a shared VLAN in a specific LEX once the service quality of this shared VLAN is not offered anymore on any End User of this Customer in this LEX.

5.3.3. Ordering procedure

39. The Customer can ask the cancellation of its shared VLAN through a firm XML order. A firm order consists of the requested shared VLAN's parameters per LEX.
40. The Customer is notified that in very exceptional situations, significant delays may be experienced:
 - In case of periods of large demands that could not be foreseen,
 - In an emergency situation (i.e. exceptional cases of *force majeure*).

6. Ordering Bandwidth for dedicated VLANs

6.1. General

41. There is no pre-provisioning of the dedicated VLANs. The creation of each dedicated VLAN is included in the process of provisioning a WBA VDSL2 end-user line with dedicated VLAN.
42. Belgacom configures each dedicated VLAN at the moment of the implementation of the corresponding end-user line, following specifications of the dedicated VLAN profile given by the Customer in the VDSL2 line ordering. The Customer is responsible for the choice and definition of each dedicated VLAN profile.

6.2. Modification of dedicated VLAN profile

43. The Customer can request a change of the dedicated VLAN profile of a specific WBA VDSL2 with dedicated VLAN line.
44. Firm orders of dedicated VLAN profile modification shall be done through the use of an XML order as described in the WBA VDSL2 XML content description document available on the Customer's personal page on the CWS secured site. Orders will be considered as valid only when they are properly completed. In case data is missing or is not correct, the order will be rejected. In the latter case, Belgacom will indicate the reasons of rejection on the reject. Orders are sent via the secured electronic messaging system. For more detailed information on the ordering process via XML, reference is made to the Belgacom Wholesale secured website – Regulatory information – WBA - Information on ordering, as described in Appendix B of this document and in to the corresponding WBA VDSL2 XML Content Description document. There is one request per XML order.
45. Belgacom reserves the right to reject orders if the volumes requested by the Customer are not in line with reasonable market demands. In the event of such a rejection, Belgacom will provide the Customer with the reasons for the rejection and the Parties will need to enter into a good faith discussion for finding a solution to deal with the difficulty that has arisen.
46. Prerequisite: the order is relative to an existing WBA VDSL2 with dedicated VLAN line and must contain its correct identification (cfr all informations specified in the WBA VDSL2 XML content description document).
47. The Customer is notified that in very exceptional situations, the theoretic delays may be escalated:
 - In case of periods of large demands at once that could not be foreseen,
 - In an emergency situation (i.e., exceptional cases of *force majeure*).
48. When a dedicated VLAN profile is modified by Belgacom, the Customer will be provided with all the necessary information in order to configure the related dedicated VLAN at his side of the network.

7. Feasibility Check

49. Prior to the request for activation of an individual End User line, the Customer can obtain through the Feasibility Check Tool the confirmation whether the requested service described in this offer is available for this individual End User line, based on the end-user dial number, its address or its circuit ID.
50. The Feasibility Check tool is available on the Customer's personal page on the CWS secured site and is accessible through a login and password. Multiple login's are possible. The Feasibility Check tool is fully separated from the ordering process: the result of the check does not deliver any option to order the activation of Wholesale Broadband Access VDSL2 on an End User line.
51. The Feasibility Check Tool can be accessed by the Customer either through web Interface or through a dedicated XML.

8. Ordering Wholesale Broadband Access VDSL2 on a specific End User line

8.1. General

52. A commercial contract is signed between a End User and the Customer.
53. The Customer introduces a WBA VDSL2 request to Belgacom, with the following mandatory information:
- The Customer requested date of activation;
 - For line with voice, Directory Number and address are mandatory. For line without voice, address is mandatory. Currently, CID is optional in all cases.
 - The name, address and contact person phone number during office hours, of the End User.
 - For a WBA VDSL2 line with shared VLAN: the service quality(ies) requested on the line.
 - For a WBA VDSL2 line with dedicated VLAN: the dedicated VLAN profile requested for the line.
 - The option “certified technician”, for a line without voice, if the Beneficiary has decided to realize the installation with a certified technician.
54. Only for a WBA VDSL2 line with shared VLAN: at the moment the Customer requests the activation of WBA VDSL2 on an End User line, Belgacom verifies the existence on the LEX where this End User line is connected of the VLAN necessary to transport the VDSL2 traffic of this End User between the LEX from which this End User depends and the Customer equipment and reversely. When the existence of the necessary VLAN has been confirmed, Belgacom start the configuration of the individual line of the End User on IP-DSLAM level.
55. In order to activate on an End User line, Belgacom will perform, for each request, some checks, and a.o.
- Technical spectral check of the system at the time of request for activation;
 - Pair gain system check;
 - Spectral saturation of cable;
 - Availability of direct pairs to connect the End User
 - Distance and Attenuation between the ROP and the End User premises

On the basis of these checks, the order will be rejected and/or accepted. The list of reject codes is available on the Belgacom CWS secured website.

If the order is accepted, the Customer order intake will be performed, by a Belgacom technician, or when relevant by a certified technician, including:

- The performance of the necessary preparatory works in the LEX, LDC or KVD for connecting an individual End User line to the IP-DSLAM or the Remote Optical Platform.
- The realization of the necessary documentation to track that the End User line carries VDSL2 technology of the Customer.

8.2. Ordering via the Open Calendar Interface

56. The ordering process can be decomposed into 2 phases:

Phase 1: Negotiation phase

Negotiation is only possible by use of the Open Calendar interface. It allows the Beneficiary to introduce all parameters for the requested ordered product to

- get an overview of the workorders needed to provision the line
- get the available time slot
- indicate whether the installation is to be executed by a Certified Technician or not
- select the suitable timeslot according to the requirement of the enduser and start the ordering process.

The Beneficiary does not need to send an additional order via the classical XML way (No BGCIN). The order is automatically generated in the Belgacom ordering systems by the Open Calendar interface.

Phase 2: Order confirmation

This phase starts by the sending by Belgacom of a validate XML message via the classical xml way ("validate" or "reject" xml). This XML contains the final confirmation of the information exchanged via the Open Calendar interface. If the information exchanged during phase 1 should be modified, this is notified to the OLO by this "Validate" or "Reject" XML.

57. The follow-up of the order is performed by use of the Hold , Cancel , Amend , Reject Done message exchanged via the classical XML interface as described in the chapter Ordering via XML.

58. Reference is also made to the Belgacom Wholesale secured website – Regulatory information – WBA - Information on ordering, for more detailed information on the ordering process via the Open Calendar interface in the following documents:

- Process documentation on Open Calendar interface
- technical documentation on Open Calendar interface

8.3. Ordering via xml

8.3.1. Generals

59. All exchange of information between Belgacom and the Beneficiary will be done through an electronic system.

60. Orders can be placed through the use of an electronic ordering system via xml directly or through the use of the Open Calendar interface as described above.

61. Reference is also made to the Belgacom Wholesale secured website – Regulatory information – WBA - Information on ordering, for more detailed information on the ordering process via XML.

62. The communication process between Beneficiary and Belgacom is based on SMTP Mail for the transfer, an ACK/NACK protocol and a message file in attachment with a predefined format.

63. The messages that are exchanged between the Beneficiary and Belgacom are encrypted and signed by the sender. Each message contains one order form in attachment that is coded in XML. Technical Info and the order forms for XML ordering are included on the secured website.
64. The Beneficiary prepares the file in the predefined XML format, signs it, encrypts it, attaches it to a mail and sends it to the mailbox of Belgacom. The e-mail address for Wholesale Broadband Access VDSL2 is WBS@belgacom.be.
65. In the framework of WBA with voice an existing end-to-end PSTN or ISDN line with Belgacom is a prerequisite.
56. All exchange of information between Belgacom and the Customer will be done through an electronic system. More details are described in [Appendix C](#).
57. The communication process between the Customer and Belgacom is based on SMTP Mail for the transfer, an ACK/NACK protocol and a message file in attachment with a predefined format.
58. The messages that are exchanged between the Customer and Belgacom are encrypted and signed by the sender. Each message contains one order form in attachment that is coded in XML.
59. Only Customers who have signed the “Agreement for the provisioning of WBA VDSL2 in the local loops of Belgacom” will obtain the encryption keys in order to sign and encrypt the message. This will enable the Customer to test the messaging system.
60. The Customer prepares the file in the predefined XML format, signs it, encrypts it, attaches it to a mail and sends it to the mailbox of Belgacom. The e-mail address for Wholesale Broadband Access VDSL2 is WBS@belgacom.be.
61. The order forms for the messages described below will be available in XML format. The Customer will receive the XML templates for the Wholesale Broadband Access VDSL2 service. To facilitate the Customer to dimension its systems, the XML templates are delivered with DTD files, that describe the nature of the data fields (length, type, ...). The details and overview of the valid values that need to be included in the electronic XML templates are described in the WBA VDSL 2 XML Content Description document. The XML data files and the WBA VDSL2 XML content description will be available through the secured part of the Wholesale Broadband Access VDSL2 website and through the SPOC if necessary.
62. Electronic messages will be exchanged between Belgacom and the Customer to manage the orders.
63. XML with encrypted XML files is the standard procedure.

8.2.8.3.2. Definitions

8.2.1-8.3.2.1. Type of Messages

- Acknowledge Message
- Order Message: message to initiate the creation of a new order
- Action Message: message to ask for a precise action on an existing order
- Answer Message: message sent to give an answer to an Order Message or Action Message
- Information Message: message sent to communicate the result of the Test de Bonne Fin

All possible messages are explained below and described in detail (on xml level) in the [WBA VDSL2 XML Content Description Manual, which can be found on the Belgacom secured website - Regulatory Information – WBA – Documentation on ordering.](#)

8.2.2-8.3.2.2. Acknowledge Messages

64.66. For any message exchanged between Belgacom and The Customer, an acknowledge message (ACK/NACK) is sent to confirm

- The message has been received
- The message has been decrypted
- The signature has been successfully validated.

65.67. NACK is sent if decryption or signature check does fail. NACK will contain the reason of rejection.

66.68. If no ACK nor NACK message is received by the sender, the sender is supposed to send again the message. The order is not further processed by Belgacom.

67.69. If an ACK is received by the Customer, this does not automatically mean that the order will be provisioned. The order could still be rejected.

8.2.3-8.3.2.3. Order Messages

68.70. An Order can be:

INITIATED BY THE CUSTOMER

- PROVIDE NEW: the activation of a complete new Wholesale Broadband Access VDSL2 service
- CEASE: the deactivation of a Wholesale Broadband Access VDSL2 service
- CONVERT – cease part and provide part: conversion of his own existing Wholesale Broadband Access VDSL2 product or another type of product towards a (another) Wholesale Broadband Access VDSL2 product
- PROVIDE CHANGE OWNER: transfer of ownership of an existing xDSL belonging to another Customer (Belgacom end-user customer included) with or without conversion of the existing product

- **CHANGE** : Modification of the existing Wholesale Broadband Access VDSL2 product (with shared VLAN: add/delete Service; with dedicated VLAN: modify VLAN profile)

INITIATED BY BELGACOM DUE TO AN ACTION OF ANOTHER CUSTOMER OR FROM THE END-USER CUSTOMER ON HIS VOICE SERVICE

- **CEASE CHANGE OWNER** : launched as a consequence of a validated PROVIDE CHANGE OWNER of another Customer, or an action started by the end-user-customer of Belgacom
- **MOVE – cease part and provide part** : launched as a consequence of a MOVE of the voice of the end-user-customer; the Wholesale Broadband Access VDSL2 product will be moved along if technical possible.
- **CONVERT – cease part and provide part** : launched as a consequence of
 - Change of technology of the voice of the end-user-customer from PSTN to ISDN and vice versa
 - A cease or an export of the voice; the Wholesale Broadband Access VDSL2 with voice will be converted into a Wholesale Broadband Access VDSL2 without voice
 - A new connection or an import of the voice; the Wholesale Broadband Access VDSL2 without voice will be converted into Wholesale Broadband Access VDSL2 with voice
- **CEASE** (for technical reasons) : launched as a consequence of an action on the voice part - e.g. move/conversion of the voice – while the Wholesale Broadband Access VDSL2 product can not be re-established in the new situation due to technical reasons

8.2.4.8.3.2.4. Action Messages

69.71. An Action Message can be:

INITIATED BY THE CUSTOMER

- **AMEND** : this message can be sent by the Customer to change the Due Date of an existing order
- **CANCEL** : this message can be sent by The Customer to cancel an existing order.

INITIATED BY BELGACOM

- **HOLD** : this message can be sent by Belgacom to inform The Customer that Belgacom will not perform the service at Due Date. due to technical reasons; due to absence of the end-user-customer; a new Due Date is communicated to The Customer in this message

70.72. These action messages apply only on pending orders sent by the Customer to Belgacom.

8.2.5.8.3.2.5. Answer Messages

71:73. An Answer Message can be:

- **REJECT** : after the ACK was sent by Belgacom for a certain message, this message may however show some problems that will prevent Belgacom to treat the request correctly:
 - The message contents (file attachment) does not respect predefined format
 - The message does not contain predefined values
 - The message does not respect precedence rules
 - The message refers to a non existing order
 - The new order does not pass through administrative validations: pending order, unknown or non activated Directory Number, non PSTN/ISDN-BA installation, bad payer, ...
 - The new order does not pass through technical validations: no pair available, distribution pairs absent, ...

The rejection message contains at least one, if possible more, rejection codes to inform the Customer of all reasons for rejection so that sender can send again the message and minimise the retry cycle. If rejected, the order does not exist anymore. If The Customer wants to retry, he will have to issue again the same demand, but through a new order.

- **VALIDATE** : this message confirms that the order will be executed on the given due date; Belgacom will provide the Customer with the following information: the circuit-id, if a SNA is needed, the due-date or a due date + an appointment date for the provisioning, the line profile and the Service Line identification.
- **DONE** : this message confirms the execution of the order, the field intervention for service activation is completed.
- **FAIL** : this message is sent when it is not possible for Belgacom to succeed in providing the service with existing infrastructure; the order has not been executed. The message contains the appropriate codes to inform The Customer about the reason(s) for failing. After this message the order is considered as not existent and is removed out of the ordering system.
- **CANCELLED – AMENDED** : those messages confirm the action messages, CANCEL and AMEND

8.2.6.8.3.2.6. Information Messages

72:74. An Information Message is sent to the Customer to communicate the result of the Test de Bonne Fin. Belgacom will send this message to inform the OLO of the line profile set on a VDSL2 line as a result of a remote line test done by Belgacom on this line. The message contains the trigger of the Test de Bonne Fin, the type of the Test de Bonne Fin, the old line profile and the new line profile.

8.3. Description of specific ordering procedures

8.3.3. Small Network Adaptations

75. Beneficiary has the possibility to indicate 'SNA not allowed' when ordering. If 'SNA not allowed' is flagged when ordering, Belgacom will send a reject of the order should the need for a SNA be established at any point in the provisioning phase.

76. In case the order is not flagged 'SNA not allowed', the process is as follows:

~~73.~~ In case of Small Network Adaptations:

- a. If a Small Network Adaptation need is detected during the order validation,

Belgacom will notify this into the XML VALIDATE message by communication in the remark type SmallNetworkAdaptations the word "NEEDED".

- b. If a SNA need is detected during provisioning,

Belgacom will create a HOLD message where a new appointment date will be proposed and with in the remark type SmallNetworkAdaptations the word "NEEDED".

In both cases, the Customer can then contact its End User for further negotiations.

The Customer will be enabled till the day before the Due Date (DD-1) to cancel its request. If there is no cancellation, the SNA will be considered as accepted by the Customer and realized as such.

8.3.4. Rush provisioning

77. Rush Provisioning is the delivery of the implementation of a new line in minimum 3 working days and maximum 5 working days (subject to the conditions of the point below).

78. The rush provisioning is subject to all conditions of regular provisioning, including the presence of the required connectivity to the Belgacom network before ordering. An order is considered as a Rush Provisioning Service when the Beneficiary asks this explicitly to Belgacom.

79. Rush Provisioning will be always during working hours.

80. Rush Provisioning is offered as a service when resources can be found to perform the necessary tasks. In case Belgacom cannot perform the works in the delay requested, Belgacom will continue the provisioning as a default order. Belgacom will inform in that case the Beneficiary

81. Any delay for a Rush Provisioning Process put in place by Belgacom, for instance absence of User on the Customer Requested date, will entitle Belgacom to charge the Beneficiary with 50% of the Rush Provisioning Fee. In any case the process will continue and a new Customer requested Date will be settled following default procedures (Hold & Change Date)

82. The standard order will be submitted by XML, possibly by the means of the Open Calendar interface. The Beneficiary will in a first phase call (phone) Belgacom to prioritize this order and confirm by e-mail to Car LLU. The Beneficiary is requested to specify the exact date requested for the provisioning: the Service Required Date (SRD). If the rush order has been accepted, Belgacom will provide the Beneficiary with the committed RFS date and the data service identifier (Circuit ID), by using the default validation service through XML.

83. Per line for which rush provisioning is requested, the installation fee is doubled.

8.3.5. Escalations

84. An escalation can be requested in case of Belgacom Fault (e.g. Missed Appointment)

85. The Beneficiary will in a first phase call (phone) Belgacom to prioritize the order and confirm by e-mail to Car LLU. Belgacom will verify this request, and handle it in a manual escalation mode if the request for escalation is justified.

86. An escalation order has no additional cost.

9. Forecasting of orders

Forecasting of orders shall be done by the procedure as described in Appendix B.

10. Fault Reporting and Repair

74.87. This section describes the responsibilities of Belgacom and The Customer in fault reporting and repair.

10.1. General Process

75.88. Repairs are carried out on the Network after the Customer has informed Belgacom provided the Customer has made the preliminary investigations and is confident that the problem is in Belgacom Network. The Customer is responsible for the repair of the Wholesale Broadband Access VDSL2 service for which he has the control and is responsible to filter all non-Belgacom related problems. The Customer, when reporting that there is a problem, has to give precise information about the nature of the problem. Belgacom will, when appropriate, confirm the existence of the problem.

76.89. Belgacom will be responsible for the repair of the PSTN/ISDN Belgacom Services offered to the End User.

77.90. If Belgacom becomes aware of a problem on the network, Belgacom automatically coordinates the necessary actions to resolve the problem according to the applicable arrangements.

Note: modification and interruptions

78.91. The maintenance and the development of the Network may require Belgacom to limit the WBA VDSL2 service or to suspend it temporarily. Belgacom undertakes to limit the duration of this period to the time that is required for the execution of the work and that duration will, in no way, be longer than the period that Belgacom would require if her own services needed to be suspended. In such cases, Belgacom will inform the Customer in due time at least 48 hours in advance, and communicate the estimated suspension time and the reason of suspension.

Repair for spectral issues reasons

79.92. If spectral issues occur within a cable as a consequence of the broadband services offered by alternative Operators or by Belgacom (for instance: interference of the Customer system with existing system in service in the cable bundle, connection of non-compatible equipment), Belgacom will first try to solve the issue by treating the most polluting line. If this solution does not solve the issue, Belgacom may solve the problem by removing the concerned Customer service on the concerned End User line under LIFO (Last In First Out) mode. The related costs will be invoiced to the Customer. In case of dispute regarding the costs either party can ask BIPT to verify the claimed costs.

80.93. Note that the Feasibility Check Tool doesn't examine the spectral characteristics of the line and cannot consequently determine with 100% accuracy that the line won't present technical problems.

81-94. Belgacom developed remote testing and monitoring tools allowing him to identify the VDSL2 perturbing lines. Based on the use of those tools Belgacom is authorized to take proactive actions in order to protect the other xDSL lines. Those actions could be, in function of the increasing severity of the perturbation: a change in the line profile, the lock of the xDSL port or the physical disconnection of the perturbing line. Specifically relating to the change of line profile, Belgacom will downgrade the LP701 to LP702, LP703 or LP704, and the LP702 to LP703 or LP704. The choice of the line profile will relate to the severity of the perturbation. The Customer will always be proactively informed by Belgacom of the monitoring of the line and of the resulting action taken by Belgacom.

82-95. If the VDSL2 services offered by the Customer appear to be the cause of an abnormal¹ perturbation, Belgacom will demonstrate that this was caused by the services of the Customer and will, eventually and after information of the Customer, interrupt the service to be able to make this demonstration.

10.2. Points of Entry for Complaint

83-96. In case of repair, two modes of contact between the Customer and Belgacom are possible according to the type of problem:

- E-tool for repair tickets
- By call (080093122): the National Call Center (also referred to as NCC) for the reporting of faults at shared VLAN level or at OLO Access Line level.
- By e-mail: the address "080093122@belgacom.be" for the reporting of faults at End User level only.

10.3. Fault Reporting

84-97. It is always the Customer that

- 1) Reports faults in the Wholesale Broadband Access VDSL2;
- 2) Receives own End Users' fault reports before reporting faults to Belgacom. Belgacom will not take calls directly coming from End Users of the Customer Wholesale Broadband Access VDSL2;
- 3) Handles own End Users' fault reports before reporting faults to Belgacom.

85-98. It is the Customer's responsibility to check that there is sufficient ground to assume that the fault is with Belgacom.

10.4. Customer's liabilities in connection with fault reporting

¹ Abnormal : when disturbances on other lines in the same cable are not in line with the technical rules and authorization conditions as defined within the context of the technical specifications

86-99. For fault reporting, the Customer will contact Belgacom by e-mail or via the e-tool. The e-mail address to be used by the Customer is 080093122@belgacom.be.

87-100. Before contacting Belgacom, the Customer will test the concerned faulty equipment to ensure that the fault is attributable to Belgacom. The Customer is responsible for transmitting all necessary information requested by Belgacom. In the following cases the trouble ticket creation will be rejected:

- Information is incomplete
- More than one ticket is sent in the e-mail

88-101. The Customer will possibly communicate to Belgacom:

- Measurements from equipment on the Customer's side that can help in solving the fault (if available).
- Contact point and phone number of the End User during office hours² (in case an intervention is required at the End User side).
- Hours of availability of End User during office hours² (in case an intervention is required at the End User side).

89-102. It is always the Customer that receives own End Users' fault reports regarding the Wholesale Broadband Access VDSL2 services before reporting faults to Belgacom. In case Belgacom receives fault reports regarding the Wholesale Broadband Access VDSL2 service, Belgacom will refer the End User to the Company with whom he has signed an agreement.

90-103. When the Customer receives a fault from one of his End Users for Wholesale Broadband Access VDSL2, the Customer performs a first diagnostic.

- In case the issue does not require a Belgacom intervention, the Customer manages the issue and contacts the End User once the issue is solved and closed.
- On the opposite, if the issue requires a Belgacom intervention (typically for network issues), the Customer continues the issue resolution process with Belgacom.

91-104. Important note: The Customer must clearly specify to the End User that the modem must be left "on" in order to let the possibility to Belgacom to perform all the actions required to identify and fix the issue.

10.5. Belgacom's liability in connection with fault reporting

92-105. Belgacom starts the fault localization and performs repair activities during working hours².

93-106. The Customer recognizes that:

- if necessary, the Customer is required to disconnect the terminal equipment at the End User site upon Belgacom's request to carry out its proper measurements;
- Belgacom can request to the Customer a timeframe for disconnecting the Wholesale Broadband Access VDSL2 service at the MDF so as to be able to carry out the necessary measurements. Refusal from The Customer to do so will imply that Belgacom is not in a position to verify the line and can be considered as wrongful repair request;

² Also possible outside office hours in case of Improved SLA.

- The Customer's repair request must relate to the type of service for which the Wholesale Broadband Access VDSL2 service has been ordered;
- During the repair process the Customer may submit additional information in respect of a specific repair request, cancel a repair request or change a repair request on the same end-user Wholesale Broadband Access VDSL2.

~~94-107.~~ Belgacom reports the result of the repair activities to the Customer immediately upon repair;

~~95-108.~~ Any follow-up feedback requested by the Customer, either during the repair period, after additional tests and rejection or acceptance of the repair action, or once the fault is fixed, will be taken care of through the repair team for Wholesale Broadband Access VDSL2;

~~96-109.~~ In any case of planned maintenance and repair that can affect the Wholesale Broadband Access VDSL2 service, Belgacom shall inform the Customer.

~~97-110.~~ In case the Customer contacts Belgacom by phone about an ongoing repair action, Belgacom will inform the Customer of the current repair status.

10.6. Special conditions in connection with Repair

~~98-111.~~ When the End User connects an other equipment (on its side) that the one defined in the Annex 2 "Technical specifications", section 9 "Modem", Belgacom is entitled to disconnect the Wholesale Broadband Access VDSL2 Service after prior notification of the Customer.

~~99-112.~~ In fault situations where the responsibility for the fault cannot immediately be placed, and where Belgacom makes coordinated efforts with one or more Customers, settlement is made or arranged after conclusion of the Repair.

~~100-113.~~ If Belgacom repair services conclude that a complaint is related to a low performance of a line with unstable synchro, the Belgacom repair team starts the "fallback profile" process. This process can be further explained to the Customers during dedicated Technical meetings.

10.7. Repair Request and Feedback

Shared VLAN and OLO Access Line level

~~101-114.~~ The Customer's requests for Repair at shared VLAN level and OLO Access Line level will be answered by the NCC. Communication in repair will be through phone. The NCC representatives will however not accept direct calls from the End User.

~~102-115.~~ Any follow-up feedback given to the Customer, either during the repair period, after additional tests and rejection or acceptance of the repair action, or once the trouble is fixed, will be through CSD, again insuring continuity and consistency.

End User level

- | ~~103.116.~~ The Customer's requests for Repair at End User level will be answered by "080093122@belgacom.be". Communication in repair will be through e-mail. No direct calls from the End User will be accepted.
- | ~~104.117.~~ The Customer has to provide the circuit ID that was provided in the End User line provisioning process. The Customer repair request must relate to the type of service for which this line has been ordered. If the reported problem does not match the service ordered by the Customer as documented, the repair request will be rejected. During the repair process the Customer may also submit additional information for a specific complaint, cancel a complaint or change a complaint.
- | ~~105.118.~~ It may during repair appear necessary for the Belgacom representative to contact the End User. The Customer will therefore transmit to Belgacom the contact point of the End User and his phone number together with the repair request. In case contact with the End User is necessary for repair and the Customer failed to give this information, the repair request may be rejected.
- | ~~106.119.~~ Any follow-up feedback given to the Customer, either during the repair period, after additional tests and rejection or acceptance of the repair action, or once the trouble is fixed, will be through "080093122@belgacom.be", again insuring continuity and consistency.
- | ~~107.120.~~ The escalation procedure document for the repair can be found on the Wholesale Broadband Access VDSL2 web site.

10.8. Wrongful repair request

- | ~~108.121.~~ In case of a repair request where the fault was not caused by Belgacom and Belgacom has performed work for that repair request, useless costs are made by Belgacom. To encourage the Customer to perform a check first on the loop and on the connected equipment, Belgacom will bill an incentive fee to the Customer. There will be an indication of the trouble ticket reference and the cause of the wrongful repair.

11. Phases in the provisioning of the Wholesale Broadband Access VDSL2 Service

~~109.122.~~ The way of provisioning the Wholesale Broadband Access VDSL2 Service to the Customer will evolve according to the following 2 successive Phases: Friendly User Testing Phase and Full Commercial Phase

11.1. Friendly User Testing Phase

~~110.123.~~ During the Friendly User Testing phase, later referred to as FUT, Belgacom will introduce and support the Customer to get acquainted with the processes and systems in scope of the Wholesale Broadband Access VDSL2 Service.

~~111.124.~~ Each of the Parties will have to agree on the date of successful completion of the Friendly User Testing Phase. The FUT phase should cover a period of 10 working days.

~~112.125.~~ The FUT Phase is executed at one Service PoP, linked to at maximum two LEX's enabled for VDSL2. The number of 'friendly user' End Users (to be provided by the Customer) is set at maximum 24 per Customer.

~~113.126.~~ In case the Customer would intend to start separately with WBA VDSL2 shared and dedicated VLANs, two separate FUT must be organized, one for shared and one for dedicated VLANs.

11.2. Full Commercial Phase

~~114.127.~~ The Full Commercial Phase will entirely be based on Customer's firm orders transmitted by the Customer. The number of orders must be reasonable and progressive to avoid that the order intake services of Belgacom are overloaded by large amounts of initial orders.

Appendix A: Statement of requirements, template for the Customer

1. General

~~15.128~~ This appendix includes a non-exhaustive list of items that should be included in the Statements of Requirements (SOR). This template is only a guideline. It is the freedom of both parties to discuss the content of the SOR.

2. Basic information

2.1. Registered name and address of Customer

Customer name :
 Address :
 Postal code and city :
 Country :
 Telephone number :
 Fax number :
 VAT registration number :
 Trade register (*) :

2.2. Confidentiality agreement

~~16.129~~ The Parties can choose to sign a confidentiality agreement as part of the SOR. The statements included in this agreement are to be determined by the parties

2.3. Key Contacts list

3. Key project dates

	Date required by Customer	Indicative dates from Belgacom
Requested date to start Friendly User Test		
Requested bringing into service date of Wholesale Broadband Access VDSL2 ordering		

4. Wholesale Broadband Access VDSL2 Products and Services Customer wishes to obtain from Belgacom

117.130. Please indicate what services you wish to obtain from Belgacom in scope of Wholesale Broadband Access VDSL2.

(SD = Service Description)

Name	Interest
Wholesale Broadband Access VDSL2 with Voice on PSTN without End User visit, with shared VLANs	Yes/no
Wholesale Broadband Access VDSL2 with Voice on ISDN without End User visit, with shared VLANs	Yes/no
Wholesale Broadband Access VDSL2 with Voice on PSTN with End User visit, with shared VLANs	Yes/no
Wholesale Broadband Access VDSL2 with Voice on ISDN with End User visit, with shared VLANs	Yes/no
Wholesale Broadband Access VDSL2 without Voice without End User visit, with shared VLANs	Yes/no
Wholesale Broadband Access VDSL2 without Voice with End User visit, with shared VLANs	Yes/no
Wholesale Broadband Access VDSL2 with Voice on PSTN, with dedicated VLANs	Yes/no
Wholesale Broadband Access VDSL2 with Voice on ISDN, with dedicated VLANs	Yes/no
Wholesale Broadband Access VDSL2 without Voice, with dedicated VLANs	Yes/no

Appendix B: Description of the Forecasting Process

1. General Principles

~~118-131.~~ This chapter describes the forecast process. The forecasts are prerequisites for the respect of SLA on Slot Availability by Belgacom, mandatory to guarantee to respond to orders placed during the provisioning period and to respect the repair timers. This is Forecasts are needed to help Belgacom to plan a reasonable capacity to fulfil customer's demand.

~~119-132.~~ Beneficiaries are guaranteed that Belgacom will set-up the necessary resources for the period concerned to meet its market needs, independent of the needs of other Beneficiaries. In addition, the forecast entitles the Beneficiary to the conditions for delays determined in the Service Level Agreement.

~~119.~~ For the orders exceeding the forecasts (orders in 'overrun') no guarantee on Slot Availability will be offered and they will be carried out, as soon as possible, according to the remaining capacity available. If the forecasted volumes cannot be installed, Beneficiary will be informed within 30 working days and parties will cooperate to find the most acceptable solution.

2. Submission Confirmation of forecasts by the Beneficiary

~~121-133.~~ The Beneficiary shall submit on a monthly basis to Belgacom a rolling forecast for the service concerned, at the requested level of detail. Forecasted volumes will be provided by month. Belgacom will propose an individual forecast to each Beneficiary exceeding order volumes of 50 orders per month, based on actual ordered volumes of the last 6 months. This forecast will be elaborated per month, per customer visit / no customer visit (all products BRUO, BROBA and WBA combined) and per subarea. The Beneficiary is requested to confirm or modify this forecast, at the latest one month prior to the first forecasted period in time. If no confirmation or modification is received by that time, Belgacom will consider the proposed forecasted volumes as confirmed. The Beneficiary is responsible for the accuracy of the forecast. Orders for which the installation will be executed by a Certified Technician are not taken into account.

~~122-134.~~ Forecast modifications or confirmations must be sent to the SPOC of Belgacom as indicated in this offer. The submission of the forecasts will be done not later than one month prior the start of first forecasted period in time. Forecasting shall be done through the use of the templates provided by Belgacom. These templates will only be considered as valid when they are properly completed. In case data is missing or is not correct, the forecast will be rejected (within 5 working days following its reception). In the latter case, the reasons of rejection will be indicated on the template by Belgacom.

~~123-135.~~ For the three first series of forecasts submitted by the Beneficiary, both Parties will enter into good faith discussions about the submitted forecasts and the feasibility to implement the forecasts concerned.

3. Processing of Forecasts

~~124-136.~~ The forecasting system in scope of this offer is split to cover the specific needs of the division "Customer Operations" of Belgacom for the provisioning of the WBA VDSL2 Services, consists on rolling forecasts of validated orders (new lines, change owner & convert included), with monthly submissions.

The volumes (new lines, change owner and convert included) are ~~It must be~~ established by sub-area/area and ventilated by per installation type (WBA VDSL2 with or end-user visit, WBA VDSL2 without end-user/customer visit), all products BRUO, BROBA and WBA combined). The months 1 to 6 are binding. The months 7 to 12 are indicative. Orders for which the installation will be executed by a Certified Technician are not taken into account in the forecast.

The forecasted volumes are the number of orders defined by the following actions: PROVIDE NEW and PROVIDE CHANGE OWNER, and for which a VALIDATE message will be sent by Belgacom in the forecasted month. The orders defined by the action PROVIDE CONVERT are indicated in a dedicated table.

	Geographic name
Sub-area 1.1	"West" Vlaanderen
Sub-area 1.2	"Oost" Vlaanderen
Sub-area 2.1	"Antwerpen"
Sub-area 2.2	"Vlaams-Brabant" & Limburg
Area 3	Brussels
Area 4	Hainaut & Brabant wallon
Area 5	Liège, Namur & Luxembourg

137. Once modified or confirmed (possibly by default) by all concerned Beneficiaries at the first working day of each month, the forecasted volumes are globalized by Belgacom into one basket. Capacity reservation, and calendar dimensioning, is done accordingly to fit the needs of the entire market.

4. Deviations between successive forecasts

~~125-138.~~ The volumes forecasted at month M will be compared with the volumes forecasted at month M-1. For each forecasted month common to the 2 successive forecasts, the maximum deviation between the successive forecasts of this month at month M and at month M-1 will be - 30 % to + 30 % (or 10 lines for "Planning & Field Operations" and 50 lines for "Customer Operations").

~~124.~~ The table below shows the allowed deviations between 5 months of 2 successive forecasts (the 6 last months must be filled in only for the "Customer Operations" forecast and are indicative).). The same deviation of 30 % is applicable for month 2 till month 5.

125. Month	1	2	3	4	5	6	Indicative						
Month-0	A ₀	B ₀	C ₀	D ₀	E ₀	F ₀	G ₀	H ₀	I ₀	...	...	...	...
Month-1	B ₁	C ₁	D ₁	E ₁	F ₁	G ₁	H ₁	I ₁	...	...	...	...	...
Month-2	C ₂	D ₂	E ₂	F ₂	G ₂	H ₂	I ₂	...	...	...	...	...	...

- B₁ between B₀ - 30 % and B₀ + 30 %
- C₁ between C₀ - 30 % and C₀ + 30 %
- D₁ between D₀ - 30 % and D₀ + 30 %
- E₁ between E₀ - 30 % and E₀ + 30 %
- F₁ between F₀ - 30 % and F₀ + 30 %
- G₁ new entry value (reference for subsequent deviation)

126. If the Beneficiary submits forecasts which are higher than the effective number of orders placed, the difference between forecasted volumes and effective orders will be used as reference to lower the volume for which the SLA will be applicable in the subsequent month. Moreover, in case of repeated over forecasting, Belgacom reserves the right to invoice the Beneficiary in proportion to the estimated unused operational resources.

5. Deviations between forecasted volumes and actual volumes

5.1. Underrun

139. Underrun occurs when actual ordered volumes are below forecasted volumes. Any underrun mechanism applies to the entire globalized volume of orders of the entire market.
140. A reasonable underrun of the forecasted volumes can be absorbed by Belgacom and has no direct consequences for the Beneficiary. A reasonable underrun is considered to be no more than a 20% deviation of the forecasted volume, considered on a monthly basis. In case of severe underrun (i.e. more than 20%) and in case this underrun was caused by a single Beneficiary who excessively increased the volume proposed by Belgacom, Belgacom reserves the right to limit the allowed modification for the forecast of the following 3 months for that Beneficiary to a level deemed necessary by Belgacom.

5.2. Overrun

141. Overrun occurs when actual ordered volumes are above forecasted volumes. Any overrun mechanism applies to the entire globalized volume of orders of the entire market.
142. As from the first order exceeding the globalized forecasted volume, independently of which Beneficiary might be the cause of this overrun, all orders of all Beneficiaries for the remainder of the month will be considered 'in overrun', and will receive timeslots from the general Belgacom calendar.

Appendix C: Setting up of the electronic messaging system

- ~~127. For any changes which may have a significant impact on the system (new types of messages or new exchange process), Customers shall be notified at least 6 months in advance with a high level description of the impact and with a structure of the documentation. Belgacom will provide detailed impact and documentation 3 months prior start of the modifications.~~
- ~~128. For smaller changes, Customers shall be notified at least 3 months in advance with a high level description of the impact and with a structure of the documentation. Belgacom will provide detailed impact and documentation 1 month prior start of the modifications.~~
- ~~129. The BIPT will be informed in any case.~~
- ~~130. Concerning the periods of notice, the BIPT can allow exceptions~~

4. Provisioning of order templates

- ~~131. The order form XML templates are provided in advance to the Customer.~~

5. Provisioning of encryption keys

- ~~132. Only Customers who have signed this offer will obtain the encryption keys in order to sign and encrypt the message. As soon as the Customer and Belgacom reach an agreement on the start date for Wholesale Broadband Access VDSL2 ordering, the Belgacom encryption keys will be provided to the Customer but it is the responsibility of the Customer to get its own certificate from a Certification Authority and to provide it to Belgacom. All messages that are sent to the WBS e-mail address before the start date for Wholesale Broadband Access VDSL2 ordering for that Customer will be ignored.~~
- ~~133. Belgacom advises the Customer to use one of the following Certification Authorities, recognized in Belgium:-~~
 - ~~- PersonalSign 3 Pro™ Certificate~~
~~(http://www.globalsign.net/digital_certificate/personalsign/index.cfm)~~
 - ~~- Certipost E-Trust Primary CA for Normalised certificates~~
~~(http://www.certipost.be/en/article.php?id_article=26)~~

6. General Concept of the electronic messaging system

- ~~134. The communication process for the Wholesale Broadband Access VDSL2 Service between The Customer and Belgacom is based on SMTP Mail for the transfer, a simple Ack-Nack protocol and attachment files with a predefined XML format.~~

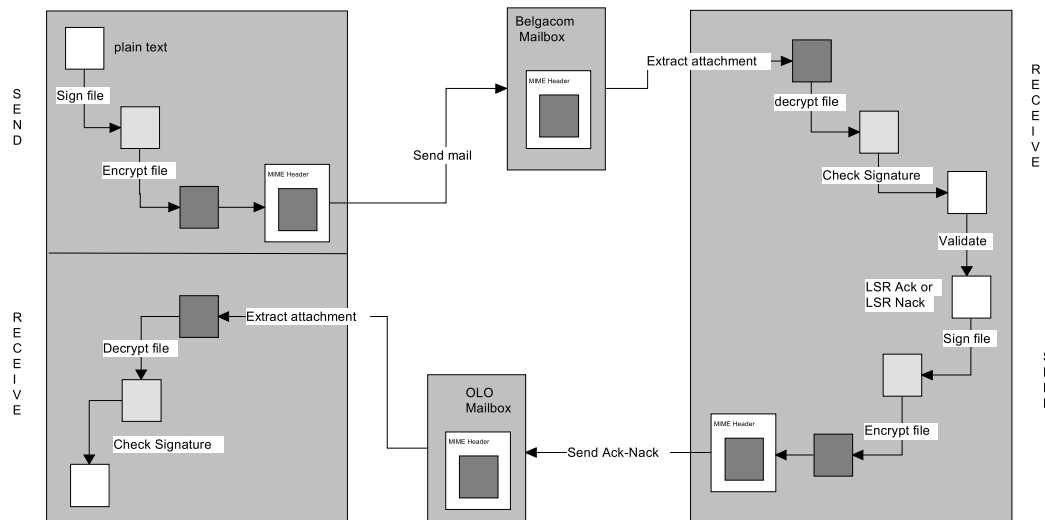


Fig-1

135. The sender prepares the attachment file in the predefined XML format, signs it, encrypts it, attaches it to an e-mail and sends it to the other Customer's mailbox (agreed e-mail address).
136. At the other side the attachment is extracted, decrypted and the signature is verified. After successful reception of the attachment file, an LSR Ack message is sent back to the originator of the e-mail. In case of non-conformity of the attachment, a LSR Nack message is sent back to the originator of the e-mail.
137. All information exchanged must be encrypted and signed. The reason for the encryption is that since the information travels over the Internet it must be made sure that others than the addressee will not be allowed to read or modify the attachment file. The information in the attachment file is considered to be confidential. The reason for the electronic signature is that we must be sure that the sender can be authenticated and can act in the name of The Customer. All these steps will be discussed in further detail in the next chapters.

7. Mail Format

7.1. General

138. All e-mails sent must be compliant with the MIME 1.0 standards and use following character set: us-ascii.
139. The content of the subject field is "LSR", "LSR Ack" or "LSR Nack".
140. Each e-mail must contain one and only one attachment (the actual data file in XML format and the triple DES key are incorporated into one file).

~~141. Only two e-mail layouts are accepted:~~

~~1) Multipart mixed:~~

~~Content-Type: multipart/mixed;~~

~~—Followed by the body part:~~

~~Content-Type: text/plain; charset=us-ascii~~

~~Content-Transfer-Encoding: **base64**~~

~~And the attachment:~~

~~Content-Type: application/octet-stream; name=WBS_ID999999999_yyyymmdd_nnnnnn.xml~~

~~Content-Transfer-Encoding: **base64**~~

~~Content-Disposition: attachment; name=WBS_ID999999999_yyyymmdd_nnnnnn.xml~~

~~The body part of the e-mail is not used, but the format is accepted, since some e-mail tools always generate a body part, even though no body text is supplied.~~

~~2) Only the attachment:~~

~~Content-Type: application/octet-stream; name=WBS_ID999999999_yyyymmdd_nnnn.xml Content-Transfer-Encoding: **base64**~~

~~Content-Disposition: attachment; name=WBS_ID999999999_yyyymmdd_nnnn.xml~~

~~Important Note: As shown in the example above, the value for Content-Transfer-Encoding must be base64.~~

7.2. Belgacom e-mail addresses

~~142. The e-mail address to be used by The Customer for the sending of the Wholesale Broadband Access VDSL2 Service related e-mails is WBS@belgacom.be~~

~~143. Identification of the sender will be based on the certificate and not on the 'from:' field. It is however advised to fill in the 'from' address with a proper value.~~

~~144. Only ONE e-mail address and ONE certificate per Customer is allowed. In a similar way the e-mails to The Customer will be sent to ONE and only ONE e-mail address. This e-mail address must be communicated to Belgacom together with the certificates.~~

7.3. Mail attachment naming

~~145. The name of the attachment file is constructed as follows:~~

WBS_ID999999999_yyyymmdd_nnnnnn.xml

Where:

WBS _____ : Start identifier for all Wholesale Broadband Access VDSL2 messages

ID999999999 _____ : Belgacom Customer ID of The Customer.

Yyyymmdd _____ : Date of the request

Nnnnnn _____ : Unique sequence number of the request

Incorrect named attachment file will be rejected.

Example:

WBS_ID000573521_20001207_000015.xml

8. Electronic encryption and signature

8.1. Technical implementation

Sign attachment

146. The first step is to sign the attachment file with the sender's private key (PKCS #12 format). The result is the signed data. It is stored in a PKCS #7 file, which includes:

- the attachment file
- the signature of the sender
- the sender's certificate
- the CA's primary certificate
- the CA's root certificate

147. The CA (Certifying Authority) is responsible for delivering the certificate and the accompanying keys.

148. The PKCS #12 file contains both the private keys of the customer and the customers certificate.

Encrypt attachment

149. According to the PKCS #7 standard, the file is encrypted with a secret session key. It results in an encrypted signed data file. The secret session key is encrypted with the public key of the receiving server. Both the encrypted signed data PKCS #7 file and the encrypted secret key are incorporated into one file and are sent to the receiver.

Decrypt attachment

150. Each Encrypted file includes:

- the encrypted secret key
- the encrypted signed data object

151. The receiver decrypts the secret key file with its private key. The result is a file containing the secret key generated by the sender. With this decrypted secret key, the receiver can decrypt the encrypted (Triple-DES) signed data (PKCS #7) object. It results in a decrypted signed data (PKCS #7) object.

Check Signature

152. The decrypted signed data (PKCS #7) object contains:

- the attachment file
- the signature of the sender
- the sender's certificate
- the CA's primary certificate
- the CA's root certificate

153. Once the decryption phase is ended, the check of the signature and of all the certificates of the signature of the sender can start. The receiver checks the signature contained in the PKCS #7 file thanks to the public key of the sender. The receiver also checks the certification chain of the signature.

154. The receiver directly fetches the CA's root certificate of the sender from the CA.

155. This certificate is introduced in the certification chain contained into the PKCS #7 file. The client's certificate of the sender must match with the CA's primary certificate of the sender, which one in its turn must match, with the CA's root certificate of the sender fetched by the receiver.

156. If the certification chain is kept, the signature is removed from the PKCS #7 file. The result is a plain text file.

8.2. Software

157. Belgacom will deliver to The Customer a certificate and software for the encryption and signature. Also Belgacom delivers the documentation on the usage and installation of the provided software. Belgacom does NOT deliver packages like JAVAMail or the Java Activation Framework. They should be retrieved from the SUN Microsystems website, because The Customer must agree with the linked copyrights. The software will be delivered in such a form that Customer can install it and use it. Further integration in the own IT system is the responsibility of the Customer.

8.3. Certificate

158. Each involved party must ask a Certificate. The Certificate binds the identity (for example Name and E-mail address) to a Public Key. The proof of binding is contained within the Certificate so that anyone in possession of a Certificate can satisfy himself or herself that the identity within the Certificate is indeed bound to the accompanying Public Key.
159. Customers are free to choose a certificate from another vendor but it must fulfill the same conditions as above.
160. Every Customer must transmit its certificate to Belgacom. The Customer must also inform Belgacom regarding the Certification Authority used.

9. Message overview

9.1. Summary of messages

Message name	From	To
Attachment handling messages		
LSR Ack	Customer	BGC
LSR Nack	Customer	BGC
LSR Ack	BGC	Customer
LSR Nack	BGC	Customer

9.2. Attachment handling messages

LSR Ack

161. The LSR Ack message sent by the receiver is the proof for the sender that the attachment file was received and validated according to the encryption and digital signature definition, without any errors. It does NOT give any information on the contents nor the format of the attachment file (individual requests).
It is the responsibility of the sender to make sure a LSR Ack is received for each sent e-mail.

LSR Nack

162. The LSR Nack message is sent if the received attachment file can not be validated according to the encryption and digital signature definition. If the sender receives this LSR Nack message he knows the receiver did NOT handle the attachment file. It is up to the sender to find out the problem, correct it and if necessary resend it. In case of a LSR Nack, a manual intervention is needed to solve the problem. In case of reception of non-signed attachment files no LSR Nack message is sent since the identity of the sender can not be guaranteed. These e-mails and attached files are removed from the system.

10. Communication Standards

10.1. SMTP Standard

163. The objective of Simple Mail Transfer Protocol (SMTP) is to transfer e-mail reliably and efficiently.
164. SMTP is independent of the particular transmission subsystem and requires only a reliable ordered data stream channel.
165. An important feature of SMTP is its capability to relay e-mail across transport service environments. A transport service provides an inter-process communication environment (IPCE). An IPCE may cover one network, several networks, or a subset of a network. It is important to realise that transport systems (or IPCEs) are not one-to-one with networks. A process can communicate directly with another process through any mutually known IPCE. Mail is an application or use of inter-process communication. Mail can be communicated between processes in different IPCEs by relaying through a process connected to two (or more) IPCEs. More specifically, mail can be relayed between hosts on different transport systems by a host on both transport systems.
166. See RFC 821, SIMPLE MAIL TRANSFER PROTOCOL, Jonathan B. Postel, August 1982 for a detailed description of SMTP.

10.2. MIME standard

167. Multipurpose Internet Mail Extensions defines a message representation protocol specifying considerable detail about US ASCII message headers, and leaves the message content, or message body, as flat US-ASCII text. This set of documents, collectively called the Multipurpose Internet Mail Extensions, or MIME, redefines the format of messages to allow for:
- textual message bodies in character sets other than US-ASCII;
 - an extensible set of different formats for non-textual message bodies;
 - multi-part message bodies;
 - textual header information in character sets other than US-ASCII.

168. Related Documents:

RFC 2045: Multipurpose Internet Mail Extensions Part One: Format Of Internet Message Bodies
Freed & Borenstein, November 1996

This document specifies the various headers used to describe the structure of MIME messages.

RFC 2046: Multipurpose Internet Mail Extensions Part Two: Media Types, Freed & Borenstein,
November 1996

This document defines the general structure of the MIME media typing system and defines an initial set of media types.

RFC 2047: Multipurpose Internet Mail Extensions Part Three:

This document describes extensions to RFC 822 to allow non-US ASCII text data in Internet mail header fields.

RFC 2048: This document specifies various IANA registration procedures for MIME-related facilities.

RFC 2049: The fifth and final document, RFC 2049, describes MIME conformance criteria as well as providing some illustrative examples of MIME message formats, acknowledgements, and the bibliography.

See <http://www.rfc-editor.org/>

~~10.3.DES (Data Encryption Standard)~~

~~169.~~The Data Encryption Standard specifies a cryptographic algorithm that converts plaintext to ciphertext using a key, a process called encryption. The same algorithm is used with the same key to convert ciphertext back to plaintext, a process called decryption. The DES consists of 16 "rounds" of operations that mix the data and key together in a prescribed manner using the fundamental operations of permutation and substitution. The goal is to completely scramble the data and key so that every bit of the ciphertext depends on every bit of the data and every bit of the key (a 56-bit quantity for the DES). After sufficient "rounds" with a good algorithm, there should be no correlation between the ciphertext and either the original data or key.

~~170.~~The DES uses 16 rounds for several reasons. First, a minimum of 12 rounds was needed to sufficiently scramble the key and data together; the others provided a margin of safety. Second, the operation of 16 rounds would return the key back to its original position in an electronic device for the next use when used in accordance with the published algorithm. Third, numerous "rounds" were needed to keep an analyst or adversary from working simultaneously forward and backward and "meeting in the middle" with a solution.

~~10.4.PKCS #7: Cryptographic Message Syntax Standard~~

~~171.~~This standard describes a general syntax for data that may have cryptography applied to it, such as digital signatures and digital envelopes.

11. Certificate procedure

11.1. General procedure

- 4) Apply for a certificate to certification authority.
- 5) Provide the public key in a DER format to Belgacom.
- 6) Provide your WBS e-mail address to Belgacom (via Account Manager)
- 7) Install the **Belgacom Certificate** on your system. This you will need to verify signatures and to encrypt files.
- 8) Install the in point 3 described software.
- 9) Integrate the process in your own ICT systems.
- 10) Perform tests (see below)

11.2. Software requirements

172. Following software will be delivered by Belgacom:

MMT API containing: jerypto classes and Cipher classes (This API contains methods for the encryption, decryption, signing and verifying of signature).

173. A set of classes implementing the API and to be tailored to the specific needs:

DECRYPTFILE.JAVA	: DECRYPT SPECIFIED FILE
ENCRYPTFILE.JAVA	: ENCRYPT SPECIFIED FILE
SIGNFILE.JAVA	: SIGN SPECIFIED FILE
VERIFYFILE.JAVA	: VERIFY AND EXTRACT SIGNATURE ON SPECIFIED FILE
SENDFILE.JAVA	: SEND SPECIFIED FILE AS ATTACHMENT USING JAVAMAIL.
READMAIL.JAVA	: EXTRACT THE ATTACHMENT FROM A MAIL AND SAVE IT TO A FILE (USES JAVAMAIL)

174. Some of the above described classes use JAVAMail functionality. The JAVAMail software and related classes must be retrieved from the WebPages of SUN Microsystems (license agreement)

- Java Virtual Machine software version SUN JAVA **1.3**

javamail.jar	: JavaMail API Version 1.1.3
activation.jar	: Java Activation Framework Version 1.0.1

These 2 should **only be installed if the SendFile and ReadMail classes are used**. If the files are included as attach in an ordinary mail system, they're not needed.

175. In case the ldap class from the MMT API is used, following software is also mandatory:

ldap.jar	: Java Naming and Directory Interface Version 1.2
providerutil.jar	: Java Naming and Directory Interface Version 1.2
jndi.jar	: Java Naming and Directory Interface Version 1.2

12.E-Mail software

176. This document serves as a guideline to implement the electronic communication solution, using the software delivered by Belgacom. It explains installation and implementation concepts without going into detail on the technical level for the different IT platforms. It is not the purpose of this document to give you a plug-and-play solution, but it helps you in creating the minimal environment needed for the Secure Mail communication.

12.1. JDK Software

177. Download the correct JDK 1.3 software kit depending on the platform you will be working on (Solaris and PC can be found on the site of SUN (<http://www.java.sun.com/j2se/1.3/>), for other platforms see the web site of your vendor).

178. Install the JDK software according to the accompanied installation notes.

Please remember to set your PATH (and CLASSPATH, but ~~classpath~~ option is preferred in Java 1.3) variables after the installation.

12.2. Javamail and Java Activation Framework (optional)

179. Download the JavaMail and Java Activation Framework software kit that can be Solaris and PC can be found on the site of SUN.

JavaMail V1.1.3:

http://www.java.sun.com/products/javamail/javamail_1_1_3.html

Activation Framework V1.0.1:

<http://java.sun.com/products> => *select JavaBeans Activation Framework*

and install the software according to the accompanied installation notes.

12.3. MTM API

180. Here 2 possibilities exist:

1. Using jar files:

- create a directory to store the jar files (preferably, but not necessary, a subdirectory of the JDK directory).
- unzip the MTM API zip file into this directory.
 - CypherDecrypt.jar
 - CypherEncrypt.jar
 - Jcrypto.jar
 - Ldap.jar (**only needed in certificate validation is performed**)
 - SignatureSign.jar

- SignatureVerify.jar

-add each jar (with the directory path) to the CLASSPATH.

2. Using classes files:

- create a directory (classes subdirectory) to store the classes (preferably, but not necessary, a subdirectory of the JDK directory).
- unzip the MTM-API zip file into this directory.
- unzip each individual jar file (using the jar utility, Winzip or any other unzip utility following the PKWARE definition) into class files in the classes directory. The extract will automatically created all needed subdirectories
- delete the jar files.
- add the classes subdirectory to the CLASSPATH

181. Now you should have three subdirectories in your classes directory namely:

- be
- jerypto
- Meta-inf.

182. During the unzipping the file 'manifest.mf' in the directory Meta-inf can be overwritten, since this includes only information on the jar files and therefore will not be needed when storing the individual classes.

12.4. API Documentation

183. Create a subdirectory in the JDK/docs subdirectory and unzip the API doc zip file. The starting point is tree.html.

12.5. Set of classes implementing the API

184. Unzip the zip file with the extra classes file into the classes subdirectory (if option 1 in the previous step was chosen, the subdirectory must first be created and the directory must be added into the CLASSPATH variable).

12.6. Implementation

185. Depending on the level of automation in your IT systems one of following options can be implemented.

- The classes can be integrated into a shell or batch script implementing an error handling mechanism.
- A user interface can be developed which calls the appropriate classes in the right order and can present file selection via File selection boxes.
- Each individual step can be executed manually. See next chapter for n section.
- ...

186. ~~Modify the classes if needed and compile them (javac <name of class>). The class files must be put on the classes directory.~~

187. ~~The order of calling is following:~~

- ~~The sending process:~~

- ~~-SignFile (see parameter list in the source file)~~
- ~~-EncryptFile (see parameter list in the source file)~~
- ~~-SendFile or include the resulting file as an attachment in your mailtool.~~

- ~~The receiving process:~~

- ~~-ReadMail or save the attachment using a mailtool~~
- ~~-DecryptFile (see parameter list in the source file)~~
- ~~-VerifyFile (see parameter list in the source file)~~

188. ~~Important note: The Readmail class expects a single mail file as input. The class is unable to extract individual mail from the mailbox. The easiest solution to this is auto forwarding your mails to individual files with unique names.~~

12.7. ~~Execution~~

189. ~~If the CLASSPATH variable is set correctly, execution of the different classes is performed with the following command : java classname (without .class extension) [input parameters list]~~

190. ~~e.g. java SignFile <name and location of the plain text file to be signed> < name and location of private key> <name and location signed file> <name and location of password file>~~

191. ~~in the other case provide the -classpath option followed by the needed jars.~~

Appendix C: Forecasting templates for BRUO, BROBA and WBA End User Line orders

1. Remarks:

- M_i refers to the month in which the forecasting templates are submitted.
- All quantities (M_1 to M_{12}) are incremental values.

“Customer Operations” Forecast

Forecasting Template for BRXX Orders

Customer reference:

Edition:

Split: With or Without customer visit

Reception date:

Telephone Zone	<u>M_1</u>	<u>M_2</u>	<u>M_3</u>	<u>M_4</u>	<u>M_5</u>	<u>M_6</u>	<u>M_7</u>	<u>M_8</u>	...	<u>M_{12}</u>
<u>Sub-area 1.1</u>										
<u>Sub-area 1.2</u>										
<u>Sub-area 2.1</u>										
<u>Sub-area 2.2</u>										
<u>Area 3</u>										
<u>Area 4</u>										
<u>Area 5</u>										

Appendix D: Order Templates

~~12.8.5.3.~~ End User line

~~194.143.~~ Ordering the activation of WBA VDSL2 on an End-User line is done through XML. See for details and examples on the Belgacom CWS secured website.

~~12.9.5.4.~~ Bandwidth

~~195.144.~~ Only for WBA VDSL2 with shared VLAN: Ordering Bandwidth capacity by LEX, as well as changing or cancelling bandwidth is done through XML. See for details and examples on the Belgacom CWS secured website the document "WBA VDSL2 XML Content Description".

~~196.145.~~ Only for WBA VDSL2 with dedicated VLAN: adapting the VLAN profile of a WBA VDSL2 with dedicated VLAN line is done through XML. See for details and examples on the Belgacom CWS secured website the document "WBA VDSL2 XML Content Description"

~~12.10.5.5.~~ OLO Access Line

1. General

~~197.146.~~ This document concerns the ordering of an OLO Access Line in the framework of the Belgacom Wholesale Broadband Access VDSL2 offer.

~~198.147.~~ This offer is valid for a period of four weeks from the sending date of the fax or from the signature of this OLO Access Line order form.

Ethernet OLO ACCESS LINE (OAL):

Order Form

1. Please complete each section of this form as accurately as possible. Grey areas are mandatory.
2. The instructions given at the bottom of each block will help you complete this form
3. Please complete one form per requested line.

1. YOUR ADDRESS

Company name:
Address:
Postal code and city:
Country:
Telephone number:
Fax number:
VAT registration number:
Trade register:

>> Please complete all items in this block accurately.

2. YOUR BILLING INFORMATION

2.1. Your billing address (if different from 1.)

Company name:
Address:
Postal code and city:
Country:
Telephone number:
Fax number:
VAT registration number:
Trade register:

2.2. References

Your customer number (this number is mentioned on your invoice)

Your own reference (up to 20 digits or letters)

>Your customer number: this is your reference number in our billing system which is stated on your invoice.

3. TYPE OF REQUEST**NEW LINE**

3.1. ☐ I wish to order a **new** OAL line

I would like to have my line installed by following date (CRD):

ABOLITION

3.2. ☐ **I would like to cancel my OAL line on following date:**

The line code number is:

>> *You are kindly requested to always enclose a plan.*

4. ADDRESS OF THE OAL END POINTS

4.1. Belgacom Service PoP:

4.2. COLOCATION or Customer external site

Colocation room (only for colocation):

Belgacom Node (only for colocation):

Customer Name:

Address:

Building:

Floor and room no.:

Postal code and city:

Contact person (Administrative):

Phone number (or GSM):

Contact person (Technical) :

Phone number (GSM) :

Fax number:

Manned site ☐ YES ☐ NO

>> *Contact: Please specify an administrative and technical person in the building who is informed about the installation.*

5. TECHNICAL SPECIFICATIONS OF THE LINE

5.1. OAL type:

- ☐ 1GE / BGC sited
- ☐ 1GE / Customer sited
- ☐ 1+1 GE / BGC + Customer sited

6. TECHNICAL SPECIFICATIONS OF END POINTS

6.1. Finishing

- New 19" rack to be provided by Belgacom (against payment)
- New ETSI rack to be provided by Belgacom
- A rack already exists, Belgacom only has to supply the following components

Colocation or
Customer
external site

- ☐
- ☐
- ☐

6.2. Patchpanel situation

Place of the patchpanels or racks of the customer on the ground, in the colocation areas :

6.3 Interface

1. Belgacom sited

Optical : GigE type LX ; wavelength 1310nm – SC/APC 8°

☐

2. Customer sited

Optical: GigE type LX ; wavelength 1310nm -

SC/PC

☐

LC/PC

☐

7. CONTRACT DURATION

7.1. Standard contract (minimum 1 year)

- ☐ 1 year ☐ 2 years ☐ 3 years ☐ 4 years ☐ 5 years

8. ADDITIONAL INFORMATION

Terms and Conditions

Belgacom shall provide the Service to the Customer under the conditions and prices set up in the Offer "WBA VDSL2".

Drawn up at....., on

Name and title of
applicant.....

Signature,



together
with



Wholesale Broadband Access VDSL2

Annex 5

BASIC SERVICE LEVEL AGREEMENT



together
with



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1. Object

1. The present document defines the Terms and Conditions upon which Belgacom will deliver installation and maintenance of basic services for the WBA VDSL2. For all operational aspects, reference is made to the Annex 4 - Planning and Operations.
2. The terms and conditions of ~~this the~~ SLA on Slot Availability are applicable within the limits of the forecasted volumes submitted by Belgacom to provided by the Beneficiary and confirmed/corrected by the latter in line with the forecasting mechanism and deviations described in the Annex 4 (Planning and Operations).
3. All conditions of the “BROTSoLL” in its last version are applicable to the OLO Access Lines as mentioned in this document.

2. Scope

4. The scope of this document is to set a framework for operational collaboration between Belgacom and Beneficiary that ensures the respect of the fixed deadlines and an acceptable quality of the provided services.
5. The intention is to minimize the risk of shortcomings and so motivate all parties to respect the thresholds set in this SLA and to provide an incentive to enhance the performance of both parties.
6. Both parties agree that the objective of this document is to optimize operational collaboration and all efforts should be taken to avoid compensations or penalty fees.
7. Given the introduction of new SLA measurements and values for provisioning, combined with the introduction of a new ordering system called “Open Calendar”, the working of this Service Level Agreement is subject to a learning curve, i.e. the current values included for provisioning are target values that are will to be evaluated and possibly reviewed after a transition period. This transition period is to be determined in function of the order inflow via the new Open Calendar system. The SLA and its associated compensations (when relevant) will only enter into force after the mentioned transition period has passed. on a regular basis and excessive peaks in ordering, i.e. very concentrated ordering in a very short period of time, must be analyzed when happening.
8. A detailed explanation on the exact calculation of all SLA measurements mentioned in this document is available on the Belgacom Wholesale website – Regulatory offers.
9. This document is an evolving document that may be adapted and revised regularly.

3. Prerequisites

- 8.10. Both parties agree to respect the content of this document and to offer services as described in this document.
11. When specific follow up or support needs to be performed, both parties are obliged to provide a SPOC with its respective name, telephone number or e-mail. An escalation procedure is foreseen and details are described in the escalation procedure document published on the Belgacom Wholesale website – Regulatory information. The version on the web site is to be considered as the most up-to-date version of the procedure and any modification in the escalation procedure will be

notified to the BROBA Beneficiaries and the BIPT and will be subject to the approval of the BIPT. Escalation is only relevant after the defined timer has been passed.

~~10.12.~~ Timers in this document expressed in days are always working days unless specified otherwise. For a timer of x days, the action must be completed before end of working day x after reception of the order or other Beneficiary message, unless specified otherwise. Timers expressed in months consist of 21 working days. They are applicable as Belgacom receives order requests on a normal distributed basis, meaning that in specific circumstances that cannot be qualified as reasonably normal the timers are not applicable. Under the present document, a working day for order purposes is considered as being from 8h00 to 16h30 excluding Saturday, Sunday, Belgian and Belgacom holidays. Belgacom holidays are 2 January and 26 December.

~~11.13.~~ In case of massive orders, provisioning will be done on project-basis. In that case, planning can be negotiated between Beneficiary and Belgacom. Beneficiary must immediately inform Belgacom when communicated volume is exceeded. In that case, although SLA will not apply, Belgacom will manage, as far as possible, this increase of orders according to its best suitability.

~~12.14.~~ In order to ensure reasonable operational work load, the Beneficiary should see to a reasonable spread of his orders during the month. For the execution of the present Contract, the maximum daily volume intake for the concerned month is defined as 10% of the volumes projected in the forecast for this month (such maximum daily volume does not allow the Beneficiary to exceed the total forecasted volume for the concerned month). The orders exceeding on a daily basis the maximum daily volume intake are exempted from the SLA conditions. Belgacom will execute these orders on a best effort basis.

~~13.15.~~ Timer violations outside the working hours are not logged as such and shall not be used to claim service shortage.

~~14.16.~~ The Service Level Agreement is not valid in situations of "Force Majeure" as defined in the "General Terms of Conditions".

~~15.17.~~ Timers that are delayed due to Beneficiary are not valid within this Basic Service Level Agreement.

4. Timers

16:18. This paragraph includes the most relevant timers in the operational processes framework. The purpose is that these timers will be reviewed periodically based on experience.

17:19. The timers included below are binding and a revision of these last is possible after BIPT approval.

4.1. Provisioning

4.1.1. Provisioning of End User Line

18:20. The provisioning of End User Line is the activation of the VDSL2 on the line of an individual End-User. Note that for the voice telephony of Belgacom, it is the End-User that receives a Basic Service for the provision of a normal connection to the public telephone network as well as maintenance work.

21. In scope of provisioning, 5 indicators to measure the Belgacom performance are identified:

- Validation xml Timer
- Done xml Timer
- Slot Availability
- Appointment Kept
- Due Date Respected

22. Vocabulary

- a. Order : assembly of all workorders needed to deliver an ordered product.
- b. Work order : one of the different actions assigned to a technician to perform the delivery of an ordered product.
- c. Ordered product : the line ordered by the Beneficiary

4.1.1.1. Validation xml Timer

19:23. As soon as an order to activate WBA VDSL2 for an individual End-User is submitted to Belgacom through the secured electronic e-mail system (XML), via the Open Calendar ordering interface or as back up procedure via non-secured electronic system and fax as described in the Annex 4 - Planning & Operations, the order will be processed for validation. The validation confirmation-xml timer will start on the receipt of the order. This receipt is the automated acknowledge message that is sent to the Beneficiary. Messages that are incorrect, due to the reasons as described in the Annex 4 - Planning and Operations will be returned with a Not Acknowledged message. In this case, Beneficiary needs to resend the order with the corrections.

20:24. The validation or rejection process consists of an administrative and technical validation. The validation will be sent as soon as all validations have passed successfully. In case of not acceptance of the order, the reasons will be communicated with the respective message.

21:25. Based on the current experience on similar data products, the validation timer is set at 5 working days for 99% of the orders.

26. Monthly computation is as follows:



together
with



Number of orders for which the Validate (or reject) XML is sent within timer

% XML Validate = -----

Total Number of orders

4.1.1.2. ~~Implementation~~ Done xml Timer

~~22:27.~~ As soon as the implementation is done, Belgacom will notify the Beneficiary of the completion of the order. This confirmation is done by sending a message through the electronic e-mail system or by fax as a back-up procedure. This timer includes the number of days the requested Ready for Service Date was passed. The Implementation done timer is set at:

	Timer
Implementation done timer (to be respected by Belgacom)	1 working day

~~22.~~If a technical problem impedes the RFS, the Beneficiary and Belgacom need to agree on a possible approach: either continue the trouble shooting or work out an intermediate solution. In case of an intermediate solution, this needs to be evaluated on a case by case basis and is not automatically possible.

~~28.~~ The Done xml timer is set at 1 working day for 98% of the orders.

~~29.~~ Monthly computation is as follows:

Number of orders for which the Done (reject) XML is sent within timer

% XML Done = -----

Total Number orders

4.1.1.3. ~~Total Provisioning Timer~~ Slot Availability

~~30.~~ Slot availability is a globalized measure, applicable to the entire market as a whole, aligned with the globalized system of Forecasting (see Annex 4 – Planning & Operations)

~~23.~~The total provisioning timer is the time frame to be respected for booking in working days taken as from the order date of the Beneficiary to the date of the Done Message. The Total provisioning Timer includes the validation of an order, the implementation and the Done notification. The total provisioning timer consists of a timer range wherein the Beneficiary can determine its Ready for Service date. Beneficiary provides the implementation day (also referred to as CRD Customer Requested Date, Due Date or Ready for Service Date) taken into account the minimum and maximum total provisioning timer. The minimum provisioning timer is indicated below. The maximum provisioning timer is set at 42 calendar days (corresponding to the maximum CRD Customer Requested Date).

~~25:31.~~ The timers are valid in case all needed infrastructure is in place (OLO Access Line and shared VLANs). If it is not the case, timers of shared VLAN provisioning as defined in section 28 have to be added to this timer. If a SNA is required, then it will be planned between Belgacom and Beneficiary within 20 working days as from its detection. These cases fall out of the application of SLAs.

4.1.1.3.1. For ordered products introduced via the Open
Calendar interface



together
with



32. This indicator will not apply for all lines installed by a certified technician.

33. Slot availability will be measured for ordered products not exceeding and ordered products exceeding the volume forecast. Only the ordered products within the forecasted volumes are subject to SLA.

34. For each work order of an ordered product, the first timeslot proposed must be within the following timer.

<u>Ordered Product</u>	<u>timer(working days)</u>
<u>With customer visit</u>	<u>15</u>
<u>Without customer visit</u>	<u>10</u>

If a due date outside the above-mentioned timer is requested, the first proposed timeslot must be at the latest on the requested SRD date.

35. Monthly computation is as follows:

Number of confirmed ordered products for which the first timeslot proposed is within timer (or at latest on SRD if SRD>timer) for all work orders

% Slot availability = -----

Total Number of confirmed ordered products

The monthly target percentage is set at 95%.

4.1.1.3.2. For ordered products introduced directly with an xml

36. Slot availability will be measured for ordered products not exceeding and ordered products exceeding the volume forecast. Only the ordered products within the forecasted volumes are subject to SLA.

37. For each ordered product, the appointment date proposed must be within the following timer.

<u>Ordered Product</u>	<u>timer(working days)</u>
<u>With customer visit</u>	<u>15</u>
<u>Without customer visit</u>	<u>10</u>

If a due date outside the above-mentioned timer is requested, the proposed appointment date must be at the latest on the requested SRD date.

38. Monthly computation is as follows:

Number of confirmed orders which received an appointment date within timer (or at latest on SRD if SRD>timer)

% Slot availability = -----

Total Number of confirmed ordered products

The monthly target percentage is set at 95%.



together
with

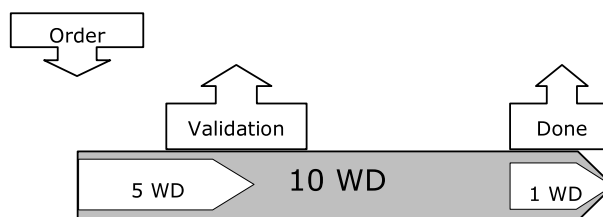


Total provisioning timers to be respected by Belgacom:

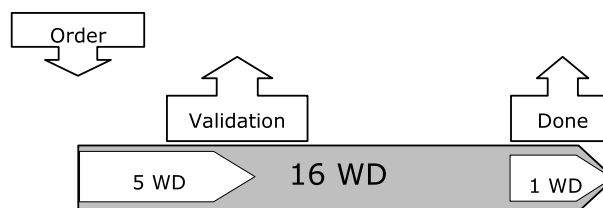
Service	Timer
WBA VDSL2 without customer visit	10wd incl "done"
WBA VDSL2 with customer visit	16wd incl "done"

25. The total provisioning timer will be the basis for the calculation of compensations. Compensations are only due within the limits of the forecasted volumes that have been submitted according to the rules described in Annex 4 Planning & Operations of the present offer and for which the deviation rules are respected.

E.g.: timers for WBA VDSL2 with or without voice, without SNA



E.g.: timers for WBA VDSL2 with or without voice, with customer visit, without SNA



4.1.1.4. Appointment Kept

39. This indicator will not apply for all lines installed by a certified technician.

40. Appointment Kept is measured per Beneficiary. It measures the number of orders with Customer Visit that have respected all their Customer Visit appointments. If one Customer Visit appointment has not been respected, the full order is considered out of SLA.

41. Monthly computation is as follows:

$$\% \text{ Appointment kept} = \frac{\text{Number of orders for which all Customer Visit appointments are kept}}{\text{Number of orders having at least one Customer Visit}}$$

42. The monthly target percentage is set at 90 %.

43. Belgacom reserves the right to adapt this target value at the level of the performance reached by its own retail broadband services

4.1.1.5. Due Date Respected

44. This indicator will not apply for all lines installed by a certified technician.

45. Due Date Respected is measured per Beneficiary. It measures the number of orders for which the last Due Date was respected by Belgacom.

46. An order has respected the Due Date if the closure date (xml actual completion date) is on the same day as the last Due Date communicated to the Beneficiary for this order.

47. Monthly computation is as follows:

$$\% \text{ Due date respected} = \frac{\text{Number of orders for which the last due date was respected}}{\text{Total Number of orders}}$$

48. The monthly target percentage is set at 90 %.

49. Belgacom reserves the right to adapt this target value at the level of the performance reached by its own retail broadband services

4.1.2. Provisioning of Shared VLAN or Service Qualities

27:50. The provisioning of shared VLANs/Service Qualities covers the set-up and configuration of shared VLANs/ Service Qualities and the modification of the existing shared VLANs/ Service Qualities parameters.

4.1.2.1. Set-up and configuration of shared VLAN/ Service Quality Timer

28:51. The set-up and configuration of shared VLAN/ Service Quality timer is related to the creation of a new shared VLAN/Service Quality between an IP-DSLAM and the Beneficiary. The set-up and configuration of shared VLAN/Service Quality timer will start on the receipt of the order, submitted to Belgacom through the secured electronic e-mail system that is automatically sent by Belgacom to the Beneficiary if this automatic receipt sending is activated, if this is not so, the date of sending by Beneficiary prevails (XML) or as backup procedure via non-secured electronic system and fax as described in the Annex 4. This receipt is the automated acknowledge message that is sent to the Beneficiary. Messages that are incorrect, due to the reasons as described in the Annex 4 - Planning and Operations will be returned with a Not Acknowledged message. In this case, Beneficiary needs to resend the order with the corrections. The set-up and configuration of shared VLAN/Service Quality timer is set at:

	Timer
Set-up & configuration timer (to be respected by Belgacom)	10 working days



together
with



4.1.2.2. Modification of shared VLAN/Service Quality parameters Timer

~~29:52.~~ The modification of a shared VLAN/Service Quality parameters timer is related to the modification of the parameters of an existing shared VLAN/Service Quality between a IP-DSLAM and the Beneficiary. The process consists of an administrative treatment and a technical treatment of the order and requires a synchronization with the Beneficiary.

~~30:53.~~ The modification of a shared VLAN/Service Quality parameters timer will start on the receipt of the order. This receipt is the confirmation by e-mail system that is sent automatically by Belgacom to the Beneficiary if this automatic receipt sending is activated, if this is not so, the date of sending by Beneficiary prevails or the fax transmission date (if fax was used as back-up procedure). The modification of a shared VLAN/Service Quality parameters timer is set at:

	Timer
Modification of Shared VLAN/service qualities parameters timer (to be respected by Belgacom)	3 working days

4.1.3. Provisioning of OLO Access Line

~~31:54.~~ The provisioning of OLO Access Line timers follows the timers described into the section 11.2 "Provisioning Services" in the document "BROTSOLL Main Body".

4.2. Repair

4.2.1. Repair Time on the End User line timer

~~32:55.~~ The repair time on the End User line timer starts when Belgacom receives a Trouble mention based on the issue description communicated by the Beneficiary and ends at the closure of this Trouble Ticket after the feedback has been given by Belgacom to the Beneficiary. If an appointment is needed at the End-User address and the problem resides at the high bandwidth part, it is the Beneficiary that arranges an appointment at the End-User premises.

~~33:56.~~ This timer is not subject to this Service Level Agreement in the following cases:

- An appointment (if absolutely needed) is not accepted at the proposed date¹, in case of absence of the End-User at appointment date, in any case of incomplete² or incorrect information to be provided by the Beneficiary with relevance for the repair process.
- Limitation/degradation of service due to spectrum management if Belgacom applied the correct rules.

~~All cases covered by §34 hereafter.~~

¹ The intervention on the End User line timer is not applicable in case appointment is scheduled with client on day later than d+1 or d+2. In this case, the timers will be applicable as from that date.

² Belgacom refers to Annex 5A "Improved SLA", section 6 , for the complete set of information.



together
with



	Timer
Repair timer End User line (to be respected by Belgacom)	Day of trouble ticket opening + 1 (before end of the following second working day)

~~34-57.~~ If an appointment is needed at the end-user address, the repair timers will only apply if the Beneficiary specifies in the Trouble Ticket its end-user availability.

58. Note that the “Trouble Ticket Resolution Timer” is not applicable in case appointment is scheduled with client on day later than d+1 or d+2. In this case, the timers will be applicable as from that date.

4.2.2. Repair Time on the Ethernet Transport Timer

~~35-59.~~ The repair time window for Ethernet transport is done by trouble ticket handling during working days.

~~36-60.~~ The repair time on the Ethernet Transport timer starts when Belgacom receives a Trouble mention based on the issue description communicated by the Beneficiary and ends at the closure of this Trouble Ticket after the feedback has been given by Belgacom to the Beneficiary.

	Timer
Repair time Timer Ethernet Transport (at LEX level) (to be respected by Belgacom)	Day of trouble ticket opening + 1 (before end of the following second working day)

	Timer
Repair time Timer Ethernet Transport (at Service PoP level) (to be respected by Belgacom)	4 working hours after trouble ticket opening

4.2.3. Repair Time on the OLO Access Line Timer

~~37-61.~~ The repair of OLO Access Line timers follows the timers described into the section 11.3 “Repair Services” in the document “BROTSOLL Main Body”.

5. Wrongful Repair Requests

38.62. Belgacom will charge the Beneficiary with the fee related to Wrongful Repair Requests (see Annex 6 – Pricing and Billing) if the fault is not attributable to Belgacom or if the fault results from the abnormal use of the line or any other Beneficiary - or end user of the Beneficiary - fault.

39.63. In case during the repair process, Belgacom performed useless actions further to Beneficiary's request, i.e. in case of absence of end-user at the appointment, incorrect information provided, Belgacom will charge the Beneficiary with the costs of those actions.

6. Terms and Conditions for Compensations

6.1. General

~~40:64.~~ Compensations are applicable in the cases that Belgacom has not respected its commitment within the delay or on the date agreed with the Beneficiary, excluding the cases in which the Beneficiary is responsible for the delay or in the case of force majeure.

~~41:65.~~ This SLA guarantees 100 % of timers. However all troubles can not be solved within these timeframes. Compensation request will never be applicable in :

- 5 % of worst cases for the provisioning;
- 10 % of worst cases for the repair.

These percentages of cases are identified on basis of the cases over one calendar month.

66. Compensations will be settled through a Beneficiary's invoice without VAT.

~~41.~~ The provisioning orders as well as the repair ticket having received an "HOLD" notification for reasons which are independent of Belgacom, compensations are not applicable – for example when an End User is absent.

~~43:67.~~ Compensations are only applicable if the volumes per month are below the defined limits in the forecasting process as describe in the Annex 4 – Planning and Operations.

~~43.~~ In case of timer escalations, the consequences as described further in this paragraph shall be applicable to Belgacom taking into account the concerned item (end-user line, Ethernet Transport and OLO Access Line). Compensations are calculated per timer without cascade effect, meaning that if a timer has been exceeded, compensations will only be due for this single timer (e.g. If a problem occurs on the access line, compensation will be paid only for the OLO Access Line and not for the Ethernet Transport and for not for the End Users).

68. The Beneficiary needs to provide Belgacom with the necessary information in case of a delayed repair or any shortage of Belgacom that give cause for the compensations described in this Service Level Agreement. Belgacom will upon receipt verify this information. When this verification appears that the information of the Beneficiary shows a shortcoming of Belgacom that gives cause for paying compensation, this payment will be done immediately and automatically.

69. The Beneficiary will submit a detailed request for compensation to Belgacom including for every repair requested at least date and hour notified/resolved, circuit id, problem on line and product type. The validity of each request for compensation will be examined by Belgacom and motivated in case of rejection for one or more repair records of this compensation request.

~~45:70.~~ Quarterly quality meetings will be organized between Belgacom and the Beneficiary in order to compare the amounts of compensation that have been assessed by both parties.



together
with



6.2. Provisioning ~~Timer~~ Escalations

6.2.1. Compensations Appointment Kept

6.2.1. Provisioning End User line Timer Escalations

~~45. Provisioning was not completed on the agreed Due Date. Except in the event of other deadlines being agreed with the Beneficiary, Belgacom undertakes to take all steps to establish a new connection. If this deadline cannot be respected, Belgacom undertakes to inform the Beneficiary of the reasons for the delay and also to communicate the new deadline for meeting his request.~~

~~46. In cases that Belgacom has not respected its the committedment percentage as indicated in the definition of the SLA, within the delay or on the date agreed with the Beneficiary, the Beneficiary will be entitled to a compensation per end-user line and per calendar day, Appointment not kept in the relating month, according to the rules presented in the following table.~~

Compensation due by Belgacom per Appointment not kept = 20€

	Compensation
Provisioning Timer Escalation	~~40 € per working day with a maximum of 120 €~~



together
with



6.2.2. Compensations Due Date Respected

71. In cases that Belgacom has not respected the committed percentage as indicated in the definition of the SLA, the Beneficiary will be entitled to a compensation per Due Date not respected in the relating month.

Compensation due by Belgacom per Due Date not Respected = 5€

6.2.2.6.2.3. Provisioning Shared VLAN/Service Quality Timer Escalations

48:72. The provisioning of shared VLAN/Service Qualities timer escalation includes the provisioning of new shared VLANs/Service Qualities and the modification of existing shared VLANs/Service Qualities when the provisioning of a new shared VLAN/Service Quality or the modification of an existing shared VLAN/Service Quality was not completed on the agreed date. Except in the event of other deadlines being agreed with the Beneficiary, Belgacom undertakes to take all steps to set-up or to modify the shared VLAN/Service Quality. If this deadline cannot be respected, Belgacom undertakes to inform the Beneficiary of the reasons for the delay and also to communicate the new deadline for meeting his request.

49:73. The Beneficiary will be entitled to a compensation that corresponds to the values per shared VLAN/Service Quality presented in the following table.

	Compensation
Provisioning of shared VLAN/ Service Qualities Timer Escalation (to be respected by Belgacom)	€ 10 per shared VLAN/ Service Quality per working day delayed with a maximum of 120€

6.2.3.6.2.4. Provisioning Access Line Timer Escalations

50:74. The Beneficiary will be entitled to the same compensation as described into the section 11.5.1 "Compensation - Provisioning" in the document "BROTSoLL Main Body".

6.3. Repair Timer Escalations

6.3.1. Repair End User line Timer Escalations

51:75. Interruptions of service which last more than the timers defined in Section 4.2.1 "Repair Timer on the End-User line", §33, and are the fault of Belgacom shall entitle the Beneficiary to a reimbursement of the rental fee corresponding to the duration of the interruption, provided he cannot claim compensation due to a case of "force majeure" where Belgacom is unable to establish the connection or repair the breakdown within the agreed timeframe. In these cases, Belgacom shall notify the Beneficiary of the timeframe in which his request will probably be carried out. The timeframe taken into consideration for calculating the reimbursement amount goes from the day that the interruption is reported up to and including the day that service is restored.

52:76. The Beneficiary will be entitled to a compensation that corresponds to a percentage of the daily recurring fee per end-user line.

	Compensation



together
with



Repair Timer Escalations (to be respected by Belgacom)	150 % of daily rental fee per working day

6.3.2. Repair Ethernet Transport Timer Escalations

~~53:77.~~ Interruptions of service where Belgacom did not intervene within the timeframes as defined in section ~~4.2.24.2.2~~ and are not the fault of the Beneficiary shall entitle the Beneficiary to a reimbursement that corresponds to the value presented in the following table, provided he cannot claim compensation due to a case of force majeure where Belgacom is unable to act within the agreed timeframe. In these cases, Belgacom shall notify the Beneficiary of the timeframe in which his request will probably be carried out.

	Compensation
Repair Timer Escalations Ethernet Transport (to be respected by Belgacom)	€100 per working day delayed

6.3.3. Repair OLO Access Line Timer Escalations

~~54:78.~~ The Beneficiary will be entitled to the same compensation as described into the section 11.5.2 "Compensation - Repair" in the document "BROTSOLL Main Body".

7. ESCALATION PROCEDURE

79. By default Internal Escalations are performed automatically. The target of departments is to limit the number of external escalations by launching pro-actively internal escalations as soon as timers are exceeded.

80. Escalation is possible when a trouble ticket has been created.

81. External Escalation is done to level 1 after the defined timer has been passed. Further escalation can be requested to level 2 at day of first external escalation submitted +1 day. Escalation to level 3 can be requested at day of first external escalation submitted + 2 days.

82. Immediately External Escalation to Level 2 and Level 3 is accepted from persons at the same level in the Beneficiaries Organization in case the Level 1 escalation is done before and the level 1 escalation shows structural problems or unavailability. Level 2 and 3 will first check whether lower escalation steps have been taken, before proceeding.

83. The escalation matrix is available on the Belgacom Wholesale website.

Wholesale Broadband Access VDSL2

Annex 5 B

Improved service level agreement for Provisioning

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1. Object

- 1 The present document defines the specific Terms and Conditions upon which Belgacom will provision WBA VDSL2 lines in case ISLA on provisioning for those lines was requested. The elements included in this document replace those in the basic service level agreement, unless stated otherwise.

2. Prerequisites

- 2 This Service Level agreement is signed between two parties being Belgacom and Beneficiary concerned.
- 3 Belgacom will provide a SPOC with telephone number and e-mail (CAR_LLUI), for the purpose of follow up or support.
- 4 The document reflects only the service indicated. Any future interference due to synchronization with any other product is out of scope.
- 5 The Service Level Agreement is not valid in situations of force majeure. The term "Force Majeure" as used in this ISLA shall include, without limitation, earthquake, fire, flood, epidemic, act of war, strikes, whether declared or undeclared, blockade, insurrection, riot or other cause(s) beyond the reasonable control of either of the parties, these other causes being duly agreed as such by the other party.
- 6 The ISLA on provisioning applies only for lines installed by Belgacom, and does not apply to any line installed by a certified technician.

3. Conditions

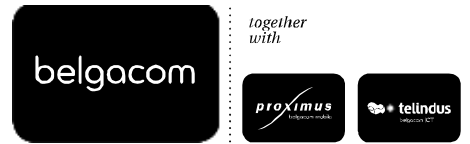
- 7 The services offered in virtue of this Improved SLA on Provisioning are to be described as follows:
 - Improved percentages compared to basic SLA on Appointment Kept
 - Higher compensations in case of default (compared to basic SLA on Appointment Kept)

3.1. Terminology

- Order : assembly of all workorders needed to deliver an ordered product .
- Work order : one of the different actions assigned to a Belgacom technician to perform the delivery of an ordered product.
- Ordered product : the line ordered by the Beneficiary
- Appointment: Date for the customer visit which was communicated by Belgacom to the Beneficiary by means of XML.

3.2. Description

- 8 For an order for which ISLA for Provisioning has been requested by the Beneficiary via the electronic ordering system, Belgacom will take all necessary actions to follow-up this order in



the provisioning chain and ensure the appointment on which Belgacom has committed via xml is kept.

- 9 The ISLA for Provisioning target is defined as follows:

$$\% \text{ Appointment kept} = \frac{\text{Number of ISLA orders for which all Customer Visit appointments are kept}}{\text{Number of ISLA orders having at least one Customer Visit}}$$

- 10 An appointment is considered as “kept” if the technician is “on site” on the day of the appointment as it was communicated to the Beneficiary.
- 11 If multiple customer visits are scheduled on the same date for installation of a line, the appointment is considered as kept if at least 1 intervention has started on the scheduled date. E.g. Splicer intervention followed by a standard installation
- 12 Notwithstanding the provisions of points 9 and 10 above, if the Belgacom technician was present on the appointment date but the enduser was not present (“customer absent”), refused or asks to postpone the installation, the appointment is considered as kept and the applicable fee will be charged. For the necessary second intervention the applicable fee will also be charged.

3.3. Set-up of service

- 13 Activation of the improved SLA per line can be done at ordering via the electronic ordering system.

4. Values

	Monthly target value
% ISLA appointment kept	99%

5. Beneficiary's obligations

5.1. Contact persons

- 14 A contact person who will be present on site at the date of the appointment and whose contact number needs to be communicated in the xml.

5.2. Required Information

- 15 Beneficiary will provide in the order correct contact information with relevance for the provisioning process: Contact person who will be present on site at the day of the appointment, contact number, address.
- 16 In case of incomplete or incorrect information given in the order by Beneficiary, the ISLA on provisioning target can not be guaranteed.

6. Prices

- 17 Reference is made to Annex 6 Pricing and Billing.

7. Compensations

- 18 Compensations are applicable in the cases that Belgacom has not respected its commitment on the date agreed with Beneficiary, excluding the cases in which Beneficiary or its Enduser is responsible (e.g. customer absent) or in the case of force majeure.
- 19 Payment will be made via a creditnote on next provisioning and rental bill(s) for the respective service.
- 20 The Beneficiary needs to provide Belgacom with the necessary information in case of any shortage of Belgacom that might give cause for the compensations described in this Improved Service Level Agreement. Belgacom will upon receipt verify this information. When at this verification appears that the information of the Beneficiary shows a shortcoming of Belgacom that gives cause for paying a compensation, this payment will be done immediately and automatically on the next invoice relevant to the service concerned.
- 21 The Beneficiary will submit a detailed request for compensation to Belgacom. The validity of each request for compensation will be examined by Belgacom and motivated in case of rejection within a delay of maximum 20 working days, if the request is related to orders submitted during the 3 months preceding the request. If Belgacom has not rejected the request within the delay of 20 working days, the request will automatically be considered as approved by Belgacom. If the request is related to orders submitted before the 3 months preceding the request, the delay of 20 working days does not apply.

	Compensation
Per appointment missed	€40

Amendment to the WBA VDSL2 Agreement between .../... and Belgacom

Between

.../... a limited liability company incorporated under the laws of .../... , having its registered office at .../...

(hereafter referred to as “.../...”)

and

Belgacom N.V./S.A., a Belgian autonomous public enterprise organized under the Law of March 21, 1991 and the Royal Decree of August 19, 1992, with registered office and place of business at 1030 Brussels, 27 Boulevard du Roi Albert II, registered with the Brussels Register of Legal Entities under number VAT BE 0202 239 951 (hereafter referred to as "Belgacom")

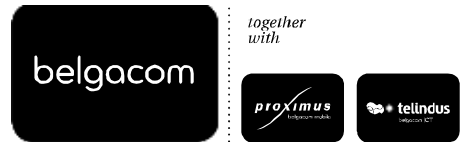
Whereas .../... and Belgacom (jointly referred to as the “Parties”) have entered into Agreement for the Provisioning of ...WBA VDSL2... in the Local Loops of Belgacom on ...Date... (hereafter referred to as the “WBA VDSL2 Agreement”);

Whereas the Parties have agreed to define improved service levels guarantees in the frame of the Service;

Now, therefore, it is hereby agreed as follows:

Article 1 - Adjunction of the Improved Service Level Agreement

By the present Amendment, the Parties agree to add the Improved Service Level Agreement foer Provisioning as enclosed to the present Amendment.



Article 2 - General provisions

The provisions of a general nature of the WBA VDSL2 Agreement including, in particular but without limitation, those on liability, confidentiality, choice of law and dispute resolution are incorporated by reference into and are fully applicable to the present Amendment to the WBA VDSL2 Agreement.

The present amendment constitutes, at the time of signature of this amendment, the only changes to the existing WBA VDSL2 Agreement.

In witness whereof, .../... and Belgacom have caused this Amendment to the WBA VDSL2 Agreement to be executed in two original copies, each Party acknowledging having received one original copy, by the hands of their duly authorized officers, on the date and year written below.

Brussels, _____ .

For Belgacom:

For .../...

By :
Title :
Date :

By :
Title:
Date :



together
with



Wholesale Broadband Access VDSL2 WBA VDSL2

Annex 6

Pricing and Billing



together
with



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together
with



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together
with



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Preliminary notes

All prices included in this Price List are expressed in Euro, VAT excluded.
 Structure and prices of the below Price List are subject to further adaptations.
 Unless specified otherwise, the word “WBA VDSL2” equally refers to the two types of service:
 with shared or with dedicated VLANs.

1. Pricing

1.1. Startup fee

- 1 The start-up fee is charged to Customer, operator, consultant or other that requires explanations by Belgacom WBA VDSL2 specialists (Product Management and/or Customer Care service) on the offer content (e.g. this fee is not charged for negotiation meetings). This fee is due until the first installation of the Customer of a VLAN on a LEX (in case of WBA VDSL2 with shared VLAN) or until ordering of the first WBA VDSL2 end-user line (in case of WBA VDSL2 with dedicated VLAN).

Information on WBA VDSL2	Price
Rate per hour per Belgacom person	€102,49

1.2. Tariffs applicable for the End User line for WBA VDSL2 line with shared VLANs

- 2 In section 1.2, the word “WBA VDSL2” refers systematically to the service with shared VLANs.

1.2.1. One time fees

1.2.1.1. LLU Inquiry Tool

- 3 The Customer will be invoiced the following amount per inquiry done.

	Euro
Per inquiry done	€0,00

1.2.1.2. Activation Fee of WBA VDSL2 Service on an End User Line

- 4 The following activation fees are inclusive the price of the activation of the first Service Quality on the End User Line.

Activation Fee per line without End-User Visit	Price
Activation fee for WBA VDSL2 with voice	€ ~~82,71~~ 74,24
Activation fee for WBA VDSL2 without voice, installed by Belgacom	€ ~~79,47~~ 72,59
Activation fee for WBA VDSL2 without voice, installed by certified technician	€10,88

- 5 In case of request by the Customer of a “with End-User visit” together with the Activation of an End User Line, the additional fee for “with End-User visit” is added to the Activation Fee without End-User Visit.

Additional fee per line for with End-User Visit	Price
WBA VDSL2 with voice	€ ~~45,94~~ 44,59
WBA VDSL2 without voice, installed by Belgacom	€ ~~45,75~~ 44,31
WBA VDSL2 without voice, installed by certified technician	€00,00

- 6 If an activation for WBA VDSL2 without voice [is ordered with installation by Belgacom and without visit](#) ~~is ordered~~ but that during the activation process of the line, Belgacom finds that a End-User visit is required, the additional fee for “with End-User visit” will be added to the Activation Fee without End-User Visit, independently of the initial request of the Customer.



together
with



- 7 If during a repair action performed by Belgacom on a newly installed WBA VDSL2 without voice line [installed by Belgacom](#), when the provisioning process allowed to determine that the installation of a NTP by a Belgacom technician was not necessary, in case the trouble covered by the Trouble Ticket was due to the absence of the Network Termination Point, an additional fee for with End-User Visit detected during a repair action will be due. This fee will be invoiced on top of the Activation Fee without End-User Visit.

Additional fee for End-User visit detected during repair	Price
WBA VDSL2 without voice	€78,21

- 8 Both the 2 additional fees for the “with End-User visit” installation on WBA VDSL2 without voice end-user line [installed by Belgacom](#) and the additional fee for the “with End-User visit” installation on WBA VDSL2 with voice end-user line [installed by Belgacom](#) include the Network Termination Point installation, travel to the end-user and hardware costs.

- 9 [If during a repair action performed by Belgacom on a newly installed WBA VDSL2 without voice line installed by a certified technician, in case the trouble covered by the Trouble Ticket was due to an incorrect installation performed by the certified technician, an additional fee for repair will be due. This fee will be invoiced on top of the Activation Fee for WBA VDSL2 without voice, installed by a certified technician.](#)

Additional fee for repair due to the incorrect installation by certified technician	Price
WBA VDSL2 without voice	€140,36

[1.2.1.3. Rush Order](#)

- [10 When Rush order has been requested the standard activation fee will be doubled.](#)

[1.2.1.3.1.2.1.4. Service Quality Configuration Fee on an End User Line](#)

	Euro
Activation/Modification/ De-activation fee per Service Quality	€14,32

- [911](#) For the first Service Quality activated together with the activation of the End-User Line, the above-mentioned fee for the Service Quality Activation must not be added to the Activation Fee per line.

- [1012](#) For the last Service Quality de-activated together with the de-activation of the End-User Line, the above-mentioned fee for the Service Quality de-activation must not be added to the De-activation Fee per line.

[1.2.1.4.1.2.1.5. Coordinated Move](#)



together
with



Coordinated Move Fee	Price
Move of the WBA VDSL2 with voice service from location A to location B in coordination with move of the Voice service	€ ~~87,18~~ 78,71

~~11~~13 This fee remunerates the coordination of the move of the Customer's data service together with the Belgacom Voice service, in the framework of a WBA VDSL2 with voice. The coordinated move fee includes both the activation and the de-activation part of the move.

~~121.5~~1.2.1.6. Conversion PSTN/ISDN

~~12~~14 Conversion is the change from WBA VDSL2 with voice over PSTN toward WBA VDSL2 with voice over ISDN and vice versa.

Conversion Fee	Price
WBA VDSL2 with voice	€36,82

~~121.6~~1.2.1.7. De-activation fee of an End User line

~~13~~15 This is the fee that the customer has to pay in case the customer wants to stop an already activated service.

	Euro
De-activation fee for WBA VDSL2 line with voice	€4,47
De-activation Fee for WBA VDSL2 line without voice	€4,64

~~14~~16 The above-mentioned fees are inclusive the price of the de-activation of the last Service Quality on the End User Line.

~~121.7~~1.2.1.8. Change Date Fee

~~15~~17 When a Customer requests to change the date of implementation, Belgacom will invoice this Customer the following Change Date fee:

Change Date Fee	Euro
Change before DD-1 (12 pm)	€6,78

~~121.8~~1.2.1.9. Cancellation Fee

~~16~~18 The Customer requesting the cancellation of an order shall pay to Belgacom the administrative fee mentioned in the table below:



together
with



Cancellation Fee	Euro
Cancellation before DD-1 (12 pm)	€7,2

~~1719~~ In case cancellation is requested after DD-1 (12 pm), the related activation fee and the de-activation fee (instead of the cancellation fee) will have to be paid by the Customer (refer to point 1.2.1.2 and ~~1.2.1.7+2.1.6~~ of this section).

~~1.2.1.9+1.2.1.10.~~ Pending order due to useless end-user visit

Pending order due to useless end-user visit	Euro
Per intervention	€20,59

~~1820~~ This fee is due when an end-user of the Customer is not present at his premises on the appointment date, and if the installation is performed by Belgacom.

1.2.1.11. Improved SLA on repair

21 One-time fee for configuration of systems and resources. The setup fee is to be paid one time only, for the first Improved SLA WBA VDSL2 ("Improved SLA WBA VDSL2 shared VLAN" or "Improved SLA WBA VDSL2 dedicated VLAN").

	<u>One-time fee</u>
<u>Setup fee</u>	<u>€2.000,47</u>

22 One-time fee per line for setup of ISLA in case of a new line.

	<u>One-time fee</u>
<u>Activation fee</u>	<u>€8,23</u>

23 One-time fee per line for change of the SLA from Basic to Improved (or reverse) in case of an existing line.

	<u>Per local loop</u>
<u>Change SLA type fee</u>	<u>€8,23</u>

24 Rental fee per local loop with the ISLA type in addition to the monthly fee.

	<u>Monthly Rental</u>
<u>Extra Rental Fee</u>	<u>€8,74</u>

1.2.1.12. Improved SLA on provisioning

1 For application of the ISLA, a one-time fee for follow-up and coordination will be applicable per customer visit.

	<u>One-time fee</u>
<u>Per customer visit</u>	<u>€10,00</u>



together
with



~~1.2.1.10~~ 1.2.1.13. Small Network Adaptations

~~1925~~ In case Belgacom needs to perform additional work, also called Small Network Adaptations, both the Small network Adaptations and the installation of the line will always be performed by Belgacom, according to the terms and definitions as defined in this Offer. ~~T~~, the following fee will apply in surplus of the ~~installation-Activation~~ fee relevant to an installation by Belgacom.

	Euro
Small Network Adaptations	€447,63

~~1.2.1.11~~ 1.2.1.14. Wrongful repair request

~~2026~~ In case of wrongful repair request by a Customer, as defined in section 8. 8 (“Wrongful Repair Requests”) of Annex 4 (Planning and Operations), Belgacom will invoice this Customer a fee of 107,62 Euro.

~~2127~~ Belgacom will provide the following information to the Customer: the ticket number, the date and hour of opening and closing of the ticket, the identification number (e.g. directory numbers) and the cause of the wrongfull repair.

1.2.2. Monthly Recurring fee per End User line

Monthly Recurring Fee	Euro
WBA VDSL2 with voice	€18,27

Monthly Recurring Fee	Euro
WBA VDSL2 without voice	€22,91



together
with



1.3. Tariffs applicable for the End User line for WBA VDSL2 lines with dedicated VLANs

2228 In section 1.3, the word “WBA VDSL2” refers systematically to the service with dedicated VLAN.

1.3.1. One time fees

1.3.1.1. LLU Inquiry Tool

2329 The Customer will be invoiced the following amount per inquiry done.

	Euro
Per inquiry done	€0,00

1.3.1.2. Activation Fee of WBA VDSL2 Service on an End User Line

2430 The following activation fee is inclusive the price of the configuration of the dedicated VLAN.

2531 This fee includes the Network Termination Point installation, travel to the end-user and hardware costs.

Activation Fee per line	Price
Activation fee for WBA VDSL2 with voice	€ ~~170,95~~ <u>159,63</u>
Activation fee for WBA VDSL2 without voice, <u>installed by Belgacom</u>	€ ~~167,5~~ <u>157,99</u>
<u>Activation fee for WBA VDSL2 without voice, installed by certified technician</u>	€45,13

32 If during a repair action performed by Belgacom on a newly installed WBA VDSL2 without voice installed by a certified technician, in case the trouble covered by the Trouble Ticket was due to an incorrect installation performed by the certified technician, an additional fee for repair will be due. This fee will be invoiced on top of the Activation Fee for WBA VDSL2 without voice, installed by a certified technician.

<u>Additional fee for repair due to the incorrect installation by certified technician</u>	Price
<u>WBA VDSL2 without voice</u>	€145,76



together
with



1.3.1.3. Rush Order

33 When Rush order has been requested the standard activation fee will be doubled.

~~1.3.1.3~~1.3.1.4. Modification of a dedicated VLAN profile

	Price
Modification of a dedicated VLAN profile	€33,47

~~1.3.1.4~~1.3.1.5. Coordinated Move

Coordinated Move Fee	Price
Move of the WBA VDSL2 with voice service from location A to location B in coordination with Voice move	€ ~~184,35~~ 168,76

2634 This fee remunerates the coordination of the move of the Customer's data service together with the Belgacom Voice service, in the framework of a WBA VDSL2 with voice. The coordinated move fee includes both the activation and the de-activation part of the move.

~~1.3.1.5~~1.3.1.6. Conversion PSTN/ISDN

2735 Conversion is the change from WBA VDSL2 with voice over PSTN toward WBA VDSL2 with voice over ISDN and vice versa.

Conversion Fee	Price
WBA VDSL2 with voice	€36,82

~~1.3.1.6~~1.3.1.7. De-activation fee of an End User line

2836 This is the fee that the customer has to pay in case the customer wants to stop an already activated service.

	Euro
De-activation fee for WBA VDSL2 line with voice	€ ~~9,13~~ 9,40
De-activation Fee for WBA VDSL2 line without voice	€ ~~9,30~~ 9,58

2937 The above-mentioned fees are inclusive the price of the de-activation of the dedicated VLAN.

~~1.3.1.7~~1.3.1.8. Change Date Fee

3038 When a Customer requests to change the date of implementation, Belgacom will invoice this Customer the following Change Date fee:



together
with



Change Date Fee	Euro
Change before DD-1 (12 pm)	€ ~~6,78~~ ~~11,66~~

~~1.3.1.8~~~~1.3.1.9.~~ Cancellation Fee

~~3.1.39~~ The Customer requesting the cancellation of an order shall pay to Belgacom the administrative fee mentioned in the table below:

Cancellation Fee	Euro
Cancellation before DD-1 (12 pm)	€ ~~7,20~~ ~~11,47~~

~~3.1.40~~ In case cancellation is requested after DD-1 (12 pm), the related activation fee and the de-activation fee (instead of the cancellation fee) will have to be paid by the Customer (refer to point 1.3.1.2 and ~~1.3.1.7~~~~1.3.1.6~~ of this section).

~~1.3.1.9~~~~1.3.1.10.~~ Pending order due to useless end-user visit

Pending order due to useless end-user visit	Euro
Per intervention	€20,59

~~3.1.41~~ This fee is due when an end-user of the Customer is not present at his premises on the appointment date, and if the installation is performed by Belgacom.

~~1.3.1.10~~~~1.3.1.11.~~ Small Network Adaptations

~~3.1.42~~ In case Belgacom needs to perform additional work, also called Small Network Adaptations, both the Small network Adaptations and the installation of the line will always be performed by Belgacom, according to the terms and definitions as defined in this Offer. T, the following fee will apply in surplus of the ~~installation-Activation~~ fee, relevant to an installation by Belgacom.

	Euro
Small Network Adaptations	€447,63

~~1.3.1.11~~~~1.3.1.12.~~ Wrongful repair request

~~3.1.43~~ In case of wrongful repair request by a Customer, as defined in section 9. 8 (“Wrongful Repair Requests”) of Annex 4 (Planning and Operations), Belgacom will invoice this Customer a fee of 107,62 Euro.

~~3.1.44~~ Belgacom will provide the following information to the Customer: the ticket number, the date and hour of opening and closing of the ticket, the identification number (e.g. directory numbers) and the cause of the wrongful repair.

1.3.2. Monthly Recurring fee per End User line

Monthly Recurring Fee	Euro
WBA VDSL2 with voice	€18,27

Monthly Recurring Fee	Euro
WBA VDSL2 without voice	€22,91

1.4. Tariffs applicable for the Ethernet Transport (with shared VLANs)

~~3745~~ In section 1.4, the word “WBA VDSL2” refers systematically to the service with shared VLANs.

1.4.1. Preamble

~~3846~~ The Customer must be connected to at least one Service PoP in each Service area in which he wants to deliver the WBA VDSL2 service.

~~3947~~ Per service quality and per LEX where the Customer wants to deliver the WBA VDSL2 service, the Customer must order at Belgacom one shared VLAN between the IP-DSLAMS of this LEX and a Service PoP to which the Customer is connected, sited in the same Service Area as the LEX himself.

1.4.2. One-time fees

1.4.2.1. Fee for activation of shared VLAN

	Euro
Activation fee per shared VLAN	€49,40

1.4.2.2. Fee for change of shared VLAN Bandwidth

	Euro
Modification fee per shared VLAN	€30,28

1.4.2.3. Fee for de-activation of shared VLAN

	Euro
De-Activation fee per shared VLAN	€2,68

1.4.3. Monthly recurring fees

~~4048~~ The prices are applicable per shared VLAN.

~~4149~~ The price of the Ethernet Transport is differentiated based upon the requested Service Quality.

Service Quality	Price per Mbps (in €)
Best Effort (P=0)	15
Low Priority (P=1)	20
Medium Priority (P=3)	25
Highest Priority (P=5)	30

~~4250~~ If the Bandwidth of a shared VLAN is expressed in Gbps, the following conversion rule applies: 1 Gbps = 1.000 Mbps.

1.5. Tariffs applicable for the Ethernet Transport (with dedicated VLANs)

4351 In section 1.5, the word “WBA VDSL2” refers systematically to the service with dedicated VLAN.

1.5.1. Preamble

4452 The Customer must be connected to at least one Service PoP in each Service area in which he wants to deliver the WBA VDSL2 service.

4553 Each dedicated VLAN is configured by Belgacom at the moment of the implementation of the end-user line, following specifications of the dedicated VLAN profile given by the Customer in the VDSL2 line ordering. The Customer is responsible for the choice and definition of each dedicated VLAN profile.

4654 Each dedicated VLAN profile has following attributes: Dwn Bwdth p0, Dwn Bwdth p1, Dwn Bwdth p3, Dwn Bwdth p5, Up Bwdth p0, Up Bwdth p1, Up Bwdth p3 and Up Bwdth p5, where each bandwidths are expressed in Mbps

- Dwn Bwdth p0 = Maximum Downstream bandwidth for P=0
- Dwn Bwdth p1 = Maximum Downstream bandwidth for P=1
- Dwn Bwdth p3 = Maximum Downstream bandwidth for P=3
- Dwn Bwdth p5 = Maximum Downstream bandwidth for P=5
- Up Bwdth p0 = Maximum Upstream bandwidth for P=0
- Up Bwdth p1 = Maximum Upstream bandwidth for P=1
- Up Bwdth p3 = Maximum Upstream bandwidth for P=3
- Up Bwdth p5 = Maximum Upstream bandwidth for P=5

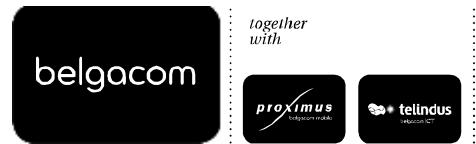
1.5.2. Monthly recurring fees

4755 The following formula allows to compute the monthly recurring fee per dedicated VLAN:

$$\text{Max}(\text{Dwn Bwdth p0}, \text{Up Bwdth p0}) * \text{Pp0} + \text{Max}(\text{Dwn Bwdth p1}, \text{Up Bwdth p1}) * \text{Pp1} + \text{Max}(\text{Dwn Bwdth p3}, \text{Up Bwdth p3}) * \text{Pp3} + \text{Max}(\text{Dwn Bwdth p5}, \text{Up Bwdth p5}) * \text{Pp5}$$

Where Pp0, Pp1, Pp3, Pp5 are the prices per Mbps of the Ethernet Transport, according to the requested Service Quality.

Service Quality	Price per Mbps (in €)
Best Effort (P=0)	Pp0 = 16€
Low Priority (P=1)	Pp1 = 21€
Medium Priority (P=3)	Pp3 = 27€
Highest Priority (P=5)	Pp5 = 32€



1.6. Tariffs applicable for the OLO Access Line

1.6.1. Tariffs applicable for the 1GE Customer-Sited OLO Access Line

4856 For the tariffs applicable to the 1GE Customer-Sited OLO Access Line 1GE, reference is made to the BROTSOLL Ethernet pricing, namely to the Belgacom-Sited Gigabit Ethernet.

1.6.2. Tariffs applicable for the 1GE Belgacom-Sited OLO Access Line

Enquiry Fee : 112 €

Cable&Cable tray:

Installation fee : 6,74 € per meter
(with a minimum invoice equivalent to 20 meters)

Monthly rental : 0,17 € per meter + 38,47 €
(with a minimum invoice equivalent to 5 meters)

Small Building Works : case by case if necessary.

1.6.3. Tariffs applicable for the 1+1 GE / Belgacom + Customer-Sited OLO Access Line

4957 The tariffs applicable to the 1+1 GE / Belgacom + Customer-Sited OLO Access Line is the sum of the tariffs applicable to the 1GE Customer-Sited OLO Access Line and of the tariffs applicable to the 1GE Belgacom-Sited OLO Access Line.

1.7. Migration fees for WBA VDSL2 line with shared VLANs

5958 In section 1.7, the word “WBA VDSL2” refers systematically to the service with shared VLAN.

5159 Those fees only refer to migrations towards a WBA VDSL2 service.

1.7.1. Conversion from WBA VDSL2 with voice towards WBA VDSL2 without voice (or conversely), for the same OLO

5260 The following tariffs are applicable for the conversion from WBA VDSL2 with voice towards WBA VDSL2 without voice (or conversely), for the same OLO.

	Euro
WBA VDSL2 with voice to WBA VDSL2 without voice and reverse	€5,42

5361 These fees include both the activation and the deactivation parts of the migration, and will be entirely invoiced to the Customer.

1.7.2. Other Migration fees

5462 For WBA VDSL2, the following Migration fees are applicable in the following cases:

- Change ownership: transfer of a line from Customer 1 to Customer 2.
- Convert: Product modification from any product to WBA VDSL2 (except cases listed in section 1.7.11-41-1)
- A combination of a. and b.

Migration without End-User Visit	Price
Change owner/Convert to WBA VDSL2 with voice	€ <u>88,8196,08</u>
Change owner/Convert to WBA VDSL2 without voice, <u>installed by Belgacom</u>	€ <u>90,4897,75</u>
<u>Change owner/Convert to WBA VDSL2 without voice, installed by certified technician</u>	€ <u>13,14</u>

5563 The fees listed in §6254 includes both the activation and the deactivation parts of the migration, and will be entirely invoiced to the destination Customer.

5664 In case of request by the Customer of a “with End-User visit” together with the Migration of an End User Line, the additional fee for “with End-User visit” is added to the Migration Fee without End-User Visit.

Additional fee per line for Migration with End-User Visit	Price



together
with



WBA VDSL2 with voice	€ ~~45,2744,50~~
WBA VDSL2 without voice, installed by Belgacom	€ ~~45,2144,31~~
WBA VDSL2 without voice, installed by certified technician	€00.00

[5765](#) If during a repair action performed by Belgacom on a line migrated to a WBA VDSL2 without voice line, and ordered without End-User visit, in case the trouble covered by the Trouble Ticket was due to the absence of the Network Termination Point, an additional fee for with End-User Visit detected during a repair action will be due. This fee will be invoiced on top of the Migration Fee without End-User Visit.

Additional fee for End-User visit detected during repair	Price
WBA VDSL2 without voice	€78,21

[66](#) [If during a repair action performed by Belgacom on line migrated to a WBA VDSL2 without voice line installed by a certified technician, in case the trouble covered by the Trouble Ticket was due to an incorrect intervention performed by the certified technician, an additional fee for repair will be due. This fee will be invoiced on top of the Migration Fee for WBA VDSL2 without voice, installed by a certified technician.](#)

Additional fee for repair due to the incorrect intervention by certified technician	Price
WBA VDSL2 without voice	€155.45

[5867](#) For other cases than specified in [§6052](#) and [6254](#) the provisioning will be realized in two steps, the first will be the deactivation of the previous situation and the second one the activation of the new situation. Therefore a deactivation fee will be invoiced to the Customer of the previous situation and an activation fee will be billed to the Customer of the new service. In case of product modification within the installed base of the same Customer, this Customer will be billed the deactivation fee and the activation fee.



together
with



1.8. Migration fee for WBA VDSL2 line with dedicated VLANs

5968 In section 1.8, the word “WBA VDSL2” refers systematically to the service with dedicated VLAN.

6069 ~~This~~ Those fees only refers to migrations towards a WBA VDSL2 service.

1.8.1. Conversion from WBA VDSL2 with voice towards WBA VDSL2 without voice (or conversely), for the same OLO

70 The following tariffs are applicable for the conversion from WBA VDSL2 with voice towards WBA VDSL2 without voice (or conversely), for the same OLO.

	<u>Euro</u>
<u>WBA VDSL2 with voice to WBA VDSL2 without voice and reverse</u>	<u>€5,42</u>

71 These fees include both the activation and the deactivation parts of the migration, and will be entirely invoiced to the Customer.

1.8.2. Other Migration fees

6172 For WBA VDSL2, the following Migration fee are applicable in the following cases:

- Change ownership: transfer of a line from Customer 1 to Customer 2.
- Convert: Product modification from any product to WBA VDSL2 (except cases listed in section 1.8.1+4.1+1)
- A combination of a. and b.

Migration fee	Price
Change owner/Convert to WBA VDSL2 with voice	<u>€172,72+83,09</u>
Change owner/Convert to WBA VDSL2 without voice, <u>installed by Belgacom</u>	<u>€174,33+84,70</u>
<u>Change owner/Convert to WBA VDSL2 without voice, installed by certified technician</u>	<u>€44,96</u>

6273 The fee listed in §7261 includes both the activation and the deactivation parts of the migration, and will be entirely invoiced to the destination Customer.

74 If during a repair action performed by Belgacom on line migrated to a WBA VDSL2 without voice line installed by a certified technician, in case the trouble covered by the Trouble Ticket was due to an incorrect intervention performed by the certified technician, an additional fee for repair will be due. This fee will be invoiced on top of the Migration Fee for WBA VDSL2 without voice, installed by a certified technician.



together
with



<u>Additional fee for repair due to the incorrect intervention by certified technician</u>	<u>Price</u>
<u>WBA VDSL2 without voice</u>	<u>€162,27</u>

[6375](#) For other cases than specified in §[70](#) and [726](#) the provisioning will be realized in two steps, the first will be the deactivation of the previous situation and the second one the activation of the new situation. Therefore a deactivation fee will be invoiced to the Customer of the previous situation and an activation fee will be billed to the Customer of the new service. In case of product modification within the installed base of the same Customer, this Customer will be billed the deactivation fee and the activation fee.

1.9. Use of databases

1.9.1. Repair e-Tools

[6476](#) The e-tool for repair WBA VDSL2 and the repair line measurement

Repair e-Tools	Price
Repair and Line Measurement	Free of Charge

1.9.2. Street Information

[6577](#) The Customer will be invoiced for the KVD inquiry performed.

Received in one inquiry:	Price
First KVD Inquiry (1 KVD + 1 half hour for looking up the info)	€17,75
For every extra KVD	€0,59
For every extra 20' started A maximum of €17.25 * {# of requested KVD's} will be billed	€17,16

[6678](#) The Network Street Relation Database can be obtained in MS Access format.

Network Street Relation Database	Price
Initial License Fee	€16.660
1 update/year annual fee	€2.000
6 updates/year annual fee	€5.000



together
with



1.10. Training and certification costs of certified technicians

- 79 The program of the training to follow by each candidate certified technician is determined by Belgacom individually, based on the Belgacom trainings already received by each candidate and on its professional experience. For each candidate to the certification it will result in a personal training program, based on a series of theoretical and practical training modules, followed by an individual test. The duration of each training module is a multiple of half days. The duration of the test is less than a half day.
- 80 After its certification, each certified technician will have to follow mandatory updating sessions organized periodically by Belgacom to refresh its technical skills on the services covered by the project Certified Technician and communicate him the evolution of the processes and of the documentation systems. The duration of each updating session is a multiple of half days.
- 81 The cost of a theoretical training module, or of an updating session, of an half day is: € 79,00 per certified technician.
- 82 The cost of a practical training module of an half day is: € 68,00 per certified technician.
- 83 The cost of the test is: € 53,00 per certified technician.
- 84 If the certified technician is an employee of a Customer, the cost of the training modules and of the test will be invoiced by Belgacom to this Customer.
- 85 If the certified technician is a subcontractor or an employee of a subcontractor of one or several Customers, the cost of the training modules and of the test will be invoiced by Belgacom to the subcontractor.

2. Billing

2.1. Preliminary

- | 6786 Parties are defined in the present document as Belgacom a telecommunication operator in Belgium and Customer, an undertaking authorized to practice the activities covered by this agreement under the Belgian regulatory framework.
- | 6887 The Belgacom billing process is based on a number of steps in which the two Parties have specific responsibilities. In order to implement this process, both Parties need to put in place (a) system(s) that will be used for the purposes of accounting and billing.
- | 6988 For each WBA VDSL2 product, Belgacom will invoice Customer accordingly
- | 7089 Belgacom shall record, store and process the Billing Data in accordance with Section 2 of this Document.
- | 7190 The “Billing Data” is the data that is necessary to ascertain the charges payable by Customer under the Agreement. The Billing Data is recorded via the Billing System as described in Section 2.2 of this Document.
- | 7291 All information related to the Billing procedures between Belgacom and Customer is covered by the obligation of confidentiality set out in the Agreement. Specifically, such information will be kept strictly confidential by the Parties and will only be used for the purposes of accounting, and invoicing between the Parties and will only be disclosed between the Parties, or as legally required or in the framework of formal dispute procedures. Belgacom will be under no obligation to provide to Customer direct access to its Billing system nor to any other system or facility generating the Billing Data.
- | 7392 Belgacom reserves the right to modify the layout and the presentation of the invoice to the Customer.

2.2. Recording and storage of billing data

7493 For each service chargeable under the Agreement, Belgacom shall record via its Billing System at least the following Billing Data:

- Product/service ID;
- Type of request;
- Subscription date;
- End of month of Subscription date;
- Customer ID;
- Account ID;

7594 The general list of billing data indicated above is not exhaustive. Pricing is set in the Section 1 of this Annex.

7695 Billing Data shall be stored for 60 days after the due date of the related invoice. In case of a dispute on the Billing Data, Belgacom will use all reasonable effort to keep the storage of the concerned Billing Data. The storage of these detailed Billing Data shall be limited to the disputed amount of Billing Data.

2.3. Confirmation of charging principles

7796 All charges payable under this Agreement shall be calculated in accordance with the rules set out in the relevant provisions of this Agreement and its Annexes.

7897 For internal purpose, Belgacom will use 6 decimals in Euro. The use of decimals is set as follows:

- Per line items up to 4 decimals can be used in Euro.
- The revenues, VAT and the totals use decimals in Euro.

7998 All the non-recurring charges will be mentioned in the Invoice of the Billing Period covering the Bringing Into Service Date.

8099 The recurring charges for the product fees will be mentioned in the Invoice of the Billing Period which the Bringing In Service Date encompasses. The Charges will be calculated on the proportion of the Billing Period in which the product and service fee were operational

8100 Customer amount of charges will be divided in the groups of one-time fees and recurring fees for the services described in the pricelist of this offer (Section 1 of this Annex)

2.4. Invoices

82101 Subject to the specific rules applying to specific types of Services as set out in Appendix A, Belgacom shall submit to the Customer, invoice(s) for the charges under the Agreement during the applicable Billing Period.

83102 For each Billing Period, Belgacom shall provide to Customer the Invoice described hereafter. The Invoice will be established in accordance with the following rules:

- Invoice Details: the Invoice will list all the services by product that are provided by Belgacom to the Customer.
- The above-mentioned Invoice will be transmitted via ordinary mail to the representatives or departments of Customer as listed in Appendix B Contact persons.

84103 Any invoice or credit note transmitted by Belgacom will contain the following information, in addition to any legally required mentions and information:

- relevant Billing Period;
- total net amount in Euro;
- due VAT amount;
- total amount due in Euro (including VAT);
- Due Date.

85104 Belgacom shall use its best endeavours to issue invoices as of the start of the applicable Billing Period. Though, in respect of the development of billing systems by both Parties and the sending of invoices, Belgacom cannot ensure that the invoicing for the products and services provided will be performed within specific delays. Delays in the production of invoices can occur under these circumstances following notification by the Billing Party. Neither party may construe any late billing by the other party as a renunciation to its right to payment of the said bills.

86105 Notwithstanding the foregoing, if an adjustment is required following a change in the referred Price List, a pending Dispute (for which the appropriate Dispute resolution mechanisms have been timely activated in accordance with this Agreement) or the outcome of commercial negotiations having a retroactive effect, the amount of such adjustment shall be established and Belgacom shall issue an invoice or a credit note as the case may be, within 30 days from the date of the relevant adjustment.

87106 All changes to amounts invoiced in accordance with this Section 4 will be effected through credit notes or additional invoices.

2.5. Payment

- | 88107 All charges due by Customer to Belgacom under the Agreement shall be paid within 30 Calendar Days after issuance of the invoice (the “Due Date”).
- | 89108 If Customer has sent to Belgacom a Notice of Dispute related to an amount invoiced by Belgacom and if such Dispute has not been resolved by the Due Date the disputed amount may be withheld until the dispute is resolved provided that the remaining balance is payable on the Due Date.
- | 90109 Credit notes will be set off against any payments due of the next invoice and are refundable when there are no outstanding invoices.
- | 91110 If payment is not received by Belgacom on or before the Due Date, Belgacom will be entitled to an interest calculated on the basis of the legal interest rate + 2 percent points on the unpaid balance for late payment interests, administrative and recovery costs, but is only due if the dispute has been resolved in favour of Belgacom. This interest shall accrue from the Due Date until the date of payment in full of the amount to be paid. Such interest shall accrue day by day and shall not be compounded. In the event that a Dispute resolution procedure has been initiated by Belgacom as provided by the Agreement (including Section 6 of this Document), this interest shall be limited to the legal interest rate.
- | 92111 Value Added Tax as well as any other applicable taxes, if any, shall be added to all or any part of the charges due under this Agreement and shall be paid by the Customer responsible for making such payment.
- | 93112 Any payments under this Agreement will be made in Euro and will be made by bank transfer on the bank accounts mentioned in the Invoice. Payment costs are borne by the Customer. Costs of credit notes are borne by Belgacom.

2.6. Disputes

- | 94113 The Parties shall use their reasonable endeavours to resolve, pursuant to this Section 6 disputes related to the calculation and settlement of the charges invoiced or to be invoiced pursuant to this Document. Notwithstanding the foregoing, either Party will be allowed to trigger at any time the dispute resolution procedure provided under the main body of the Agreement provided that such Party reasonably believes that the Dispute at stake involves aspects of the Parties’ rights and obligations broader than the mere calculation and settlement of charges pursuant to this Document. The fact that a Dispute involves aspects broader than the mere calculation and settlement of charges pursuant to this Document will not release the Disputing Party from its obligation to pay any undisputed amount pursuant to Section 2.5.2.
- | 95114 Any Dispute under this Section 2.6 will be triggered by a Notice of Dispute sent by registered letter by the Customer to Belgacom before the Due Date. Such Notice of Dispute will indicate the disputed amounts, as well as a summary of the grounds for the Dispute and the position of the Disputing Party. Any amount invoiced under the Agreement will be deemed accepted unless a Notice of Dispute has been sent in accordance with above.
- | 96115 Upon receipt of the Notice of Dispute, the Parties shall exchange by ordinary mail any information necessary or useful for solving the Dispute.

- 97116 Within 15 Working Days from the date of the Notice of Dispute, Belgacom will provide, by registered mail, an answer (“Notice of Reply”) to the Customer. If Belgacom does not accept some or all the arguments of the Customer, the Notice of Reply will contain a justified reply to the arguments of the Customer. If Belgacom accepts all or some arguments of the Customer, Belgacom will, together with the Notice of Reply, issue a credit note for the relevant amount.
- 98117 If, within 15 Working Days from the receipt of the Notice of Reply, the Customer confirms its position in writing by registered letter, the Parties will escalate the Dispute within their respective organization as provided under Section 2.6.6. If the Customer fails to confirm its position within 15 Working Days, from the date of the Notice of Reply, any outstanding amounts will be paid promptly and without delay and the Dispute will be deemed settled.
- 99118 If the Parties have been unable to settle the Dispute as provided under the foregoing provisions, they will refer the matter to Implementation Committee, which, if deemed necessary by either Party, will be organized for this specific purpose. If after such meeting, the Dispute remains, the Parties will follow such additional steps in the escalation procedure as provided in the main body of the Agreement, or, if requested by either Party, the Dispute will be submitted to a certified accountant to be either jointly appointed by the Parties, or, failing agreement between the Parties in this respect, to be appointed by “Belgisch Instituut voor Bedrijfsrevisoren”/”Institut Belge des Réviseurs d’Enterprise”. This certified accountant will investigate and determine a solution for the Dispute, acting as an expert and not as an arbitrator. Unless there is evidence of a manifest error, decision of the certified accountant will be final in respect of those elements covered by the Dispute referred to him/her and will be binding on the Parties. The Parties will co-operate with this investigation. The costs of the certified accountant will be borne as determined by him/her in proportion to the outcome of the Dispute. Prior to undertaking his/her mission, the certified accountant will provide the Parties with an estimate of the relevant fees and costs. Upon final settlement of the Dispute, any necessary credit note will be issued and any outstanding amount will be paid promptly and without delay.



together
with



Appendix A: Billing parameters

100119 Product covered under this billing and accounting document:

101120 WBA VDSL2

102121 The general list of billing services below is not exhaustive, and may be adapted.
Pricing is set in Section 1 of this Annex.

103122 Tariffs applicable for the End User line

- One time fees
 - LLU Inquiry Tool.
 - Activation fee of WBA VDSL2 Service on an End User line.
 - Only for WBA VDSL2 with shared VLANs: Service Quality Configuration Fee for WBA VDSL2 Service on an End-User Line (activation/deactivation of a Service Quality).
 - Only for WBA VDSL2 with dedicated VLANs: modification of VLAN profile
 - Only for WBA VDSL2 with shared VLANs: Additional fee for End-User Visit.
 - Only for WBA VDSL2 with shared VLANs: Additional fee for End-User Visit detected during repair.
 - De-activation fee of WBA VDSL2 Service on an End User line .
 - Change Date fee.
 - Cancellation fee.
 - Pending order due to useless end-user visit.
 - Small Network Adaptations fee.
 - Migration fees (conversion with to without or conversely, and other migration fees).
 - Conversion PSTN/ISDN.
 - Coordinated move
 - Wrongful repair request.
- Monthly recurring fee per End User line

104123 Tariffs applicable for the Ethernet Transport

- Monthly recurring fee for Ethernet Transport between the IP-DSLAMs located in the Lex's where the Customer wants to connect End Users and the Belgacom Service PoPs to which the Customer is connected. The monthly recurring fee is invoiced per VLAN.
- One-time Fees (only for WBA VDSL2 with shared VLANs):
 - Fees for activation/deactivation of VLANs.
 - Fees for change of VLANs Bandwidth.

105124 Tariffs applicable for the Access Line

- Tariffs applicable for Customer-Sited OLO Access Line
- Tariffs applicable for Belgacom-Sited OLO Access Line

106125 Belgacom reserves its right to modify the lay out and the presentation of its invoice to the Customer.



together
with



Appendix B: Contact Persons

The Invoices will be sent to the under mentioned contact persons:

Contact person in Belgacom

Name	
Division	Carrier and Wholesale
Address	Koning AlbertII-laan 27, 1030 Brussels
Tel	+32 2
Fax	+32 2
Bank Account	

Contact persons Customer

Name	
Division	
Room	
Address	
Tel	
Fax	
Bank Account	

Billing address Customer

Name	
Division	
Room	
Address	
Tel	
Fax	

[Wholesale Broadband Access VDSL2](#)

Annex 8

Prepayment Terms & Conditions

Prepayment Terms and Conditions

1. Belgacom will send on a monthly basis a pre-invoice at least on the 2nd working day after the starting of the month preceding the considered billing month. For Beneficiaries that are in service, the first pre-invoice shall be based on the average of the invoices for Services issued by Belgacom during the last three months. For Beneficiaries not yet in service and concluding a new Contract, the first pre-invoice shall be based on the valuation of the average of the invoices for Services to be issued by Belgacom within the first three months of services.
2. The amount of the pre-invoice shall be adapted on a quarterly basis, i.e. increased or lowered as the case may be, based on the amounts due by the Beneficiary for the Services provided under the Contract during the previous quarter.
3. The Beneficiary agrees to pay the amount of the pre-invoice at the latest the 10th calendar day from the date of the pre-invoice.
4. The amount of the pre-invoice shall be paid on a specific account number to be communicated. The interests generated by the amount of the pre-invoice paid on this account during the period starting from the date the pre-invoice is paid until the date the final invoice is paid shall be accrued to the Beneficiary.
5. Within 15 calendar days after sending the final invoice, Belgacom will send a credit note regarding the pre-invoice.
6. If for the same month the amount of the pre-invoice is higher than the amount of the final invoices, Belgacom shall reimburse the balance.
7. If for the same month the amount of the pre-invoice is lower than the amount of the final invoices, the Beneficiary will pay the surplus.
8. Within 15 days following the final invoice, the Beneficiary will make the payment by wire transfer. If payment is not received by Belgacom on or before this due date, Belgacom ~~is will~~ be entitled to ~~the an~~ interest calculated on the basis of the legal interest rate + 2 percent points on the unpaid balance for late payment interest, and administrative and recovery costs. For disputed amounts, this interest is only due if the dispute has been resolved in favour of Belgacom as defined in the Contract.
9. If the Beneficiary disagrees with an invoice received from Belgacom, it must notify in writing Belgacom thereof before the due date of such invoice in accordance with the relevant provisions of the Contract.
10. Without prejudice to other legal or contractual remedies and notwithstanding anything to the contrary in the Agreement, in the event the Beneficiary fails to pay on due time any undisputed amount due under the present Prepayment terms and conditions, Belgacom shall be entitled to:
 - Suspension of any SLA obligations that are not foreseen in the Basic SLA;
 - Refusal in writing of any new Services, including Migration Services.
 - Suspension of the existing Services in accordance with article 84 of the Annex 1 – General Terms and Conditions.

This specification describes the situation of the Belgacom network and services. It will be subject to modifications for corrections or when the network or the services will be modified. Please take into account that modifications can appear at any moment. Therefore, the reader is requested to check regularly with the most recent list of available specifications that the document in one's possession is the latest version.

Belgacom can't be held responsible for any damages due to the use of a version of this specification which is not included in the most recent list of available specifications (list always available with a request to the e-mail address mentioned in the underneath paragraph).

Whilst every care has been taken in the preparation and publication of **this document**, errors in content, typographical or otherwise, may occur. If you have remarks concerning its accuracy, please send a mail to the following address belgacom.uni.spec@belgacom.be and your remark will be transmitted to the right Belgacom department.

The User Network Interface Specifications published via Internet are available for your information but have no official value. The only documents with an official value are printed on a specific paper.

If you want **to get an official version of this User Network Interface Specification**, please order it by sending your request by mail to belgacom.uni.spec@belgacom.be

Transmission and interface characteristics of VDSL2 service

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0. Document history

Every update of this document results in a complete new version with new version number and release date.

Version	Date	Main or important changes since previous version
1.0	27 July 2007	Initial version

1. Scope

The goal of this document is to provide the technical specifications of the User To Network Interface (UNI) for VDSL2 equipment to be connected to the Belgacom network.

As VDSL2 may provide a variety of bearer channels in conjunction with other services, this document deals with the VDSL2 service on the same pair with PSTN or ISDN services.

The UNI technical specifications for the VDSL2 service, mentioned in this document, are based on the currently relevant international specifications and recommendations for VDSL2 equipment:

- ITU-T G.993.2 Recommendation [1]
- ITU-T G.994.1 Recommendation [2]
- ITU-T G.997.1 Recommendation [3]

Other specifications and recommendations referenced in this document are:

- ETSI TS 101 270-1 v1.3.1 [4]
- ITU-T G.992.3 Recommendation [5]

2. References

- [1] ITU-T G.993.2 Recommendation "*Very high speed digital subscriber line transceivers 2 (VDSL2)*"
- [2] ITU-T G.994.1 Recommendation "*Handshake procedures for digital subscriber line (DSL) transceivers*"
- [3] ITU-T G.997.1 Recommendation "*Physical layer management for digital subscriber line (DSL) transceivers*"
- [4] ETSI TS 101 270-1 V1.3.1 "*Very High Speed Digital Subscriber Line (VDSL); Part 1: Functional requirements*"
- [5] ITU-T G.992.3 Recommendation "*Asymmetric digital subscriber line transceivers 2 (ADSL2)*"

3. Definitions and abbreviations

3.1. Definitions

For the purposes of the present document, the following terms and definitions apply:

downstream: transmission in the direction of LT towards NT (network to customer premise)

upstream: transmission in the direction of NT towards LT (customer premise to network)

3.2. Abbreviations

For the purposes of the present document, the following abbreviations apply:

AN	Access Node
CPE	Customer Premises Equipment
DSL	Digital Subscriber Line (or Loop)
FTTCab	Fibre To The Cabinet
FTTN	Fibre To The Node
HPF	High Pass Filter
ISDN	Integrated Services Digital Network
LPF	Low Pass Filter
LT	Line Termination
NT	Network Termination (at the customer premise end of the line)
ONU	Optical Network Unit
PSTN	Public Switched Telephone Network
PSD	Power Spectral Density (usually quoted in dBm/Hz, and in the present document is restricted to single sided PSDs).
UNI	User Network Interface
UPBO	Upstream Power Back-Off
VDSL	Very high speed Digital Subscriber Line
VDSL2	Very high speed Digital Subscriber Line 2
VTU	VDSL2 transceiver unit
VTU-O	VTU at the ONU (or central office, exchange, cabinet, etc., i.e., operator end of the loop)
VTU-R	VTU at the remote site (i.e., subscriber end of the loop)

4. System reference model

Figure 1 (equivalent to Figure 5-4/G.993.2 in [1]) shows the reference model used for VDSL2. At the network side the VDSL2 transceiver unit (VTU-O) resides at the VDSL2 Line Termination (LT) cards contained by the access node and can be located as well in the central office as in a remote location in a FTTCab or FTTNode deployment scenario. From the LT existing unscreened twisted metallic access wire-pairs are used to convey the broadband (VDSL2) and narrowband (PSTN or ISDN) signals to and from the customer's premises. The characteristics of the local loop are described in annex A.

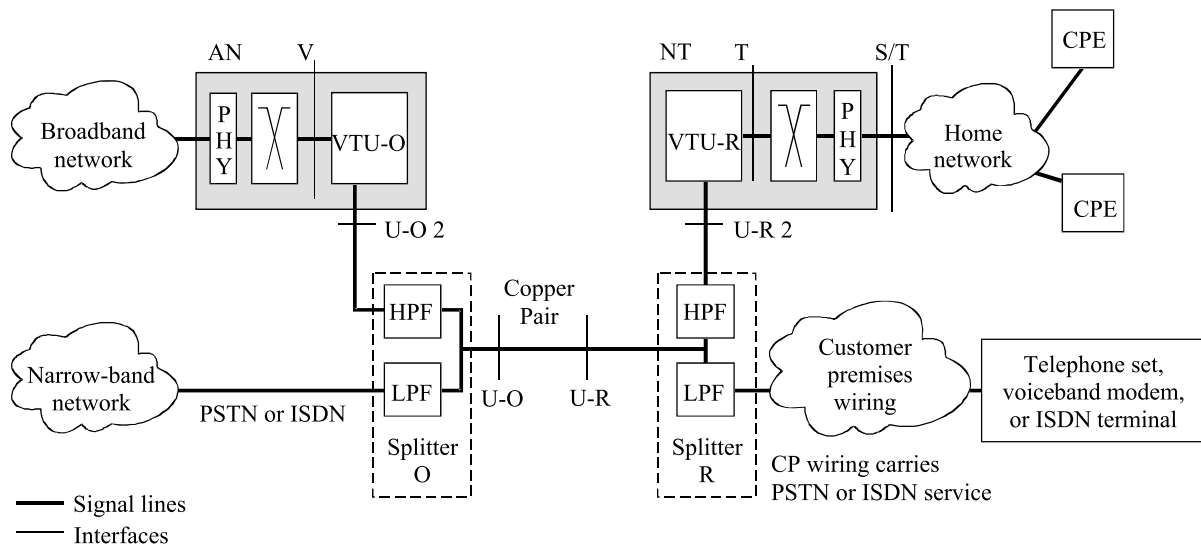


Figure 1: Generic reference model

At the CPE side the the VDSL2 NT (Network Termination) contains the VDSL2 transmission functionality (VTU-R) as well as the high pass filter functionality (HPF). In terms of VDSL2 signals the U-R and U-R2 interfaces are thus equivalent (see also note 3 to Figure 5-4/G.993.2 in [1]). A master (centralised) low pass filter splitter (LPF) is used to isolate narrowband (PSTN or ISDN) and broadband VDSL2 transmission signals on the customer premises wiring.

5. UNI specification

5.1. User to Network Interface U_R

The User to Network Interface (UNI) U_R is the Digital Subscriber Line Termination point into the customer's premises where the splitter and the NT can be connected.

The U_R interface carries the narrowband service (PSTN or ISDN) as well as the VDSL2 upstream and downstream signal. The narrowband service signal and VDSL2 signal are isolated inside the customer's premises by the LPF.

5.2. VDSL2 transmission characteristics

The VTU-R shall comply to ITU-T G.993.2 main body and Annex B [1]
Referring to table B-1/G.993.2-Band Plans in [1] the VTU-R shall support the band plan as defined in Table 1 below.

Band plan	Band-edge frequencies (As defined in the generic band plan Figure 7-1 in [1])						
	f_{0L}	f_{0H}	f_1	f_2	f_3	f_4	f_5
	kHz	kHz	kHz	kHz	kHz	kHz	kHz
998	120	276	276	3750	5200	8500	1200

Table 1: VDSL2 band plan

The VTU-R shall support the limit PSD masks 998-M2x-B [1], 998-M1x-B [1], 998-M1x-NUS0 [1] as well as the VDSL1 PSD FTTCab M1 Variant A [4]. Furthermore the VTU-R shall support all PSDs obtained by PSD shaping as defined in G.993.2 [1] and G.997.1 [3].

The VTU-R shall support upstream power back-off (UPBO) as defined in G.993.2 [1]. The a en b UPBO parameters shall be such that when operating with the VDSL1 PSD FTTCab M1 Variant A [4] the resulting PSD is equivalent to the PSD obtained by applying UPBO according to the upstream reference PSD for alien crosstalk profile Noise D as defined in VDSL1 ETSI TS 101 270-1 [4]

The VTU-R shall support the VDSL2 profiles 8d, 12b and 12a. The VDSL2 profiles 8a, 8b and 17a may be supported.

The VTU-R shall support Ethernet transport. More specifically the VTU-R shall support G.993.2 Annex K.3 [1] and G.992.3 Annex N [5].

5.3. Handshaking

The VTU-R shall support the VDSL2 handshaking procedure as defined in G.994.1 [2]

5.4. Management

The VTU-R shall support the physical layer management functionalities defined in G.997.1 [3]

5.5. Splitters and filters

At the access node side universal splitters (PSTN and ISDN overlay) shall be used. At the CPE side both universal (PSTN and ISDN) as well as PSTN only splitters are envisaged.

ANNEX A : Local loop characteristics

A telecom cable consists of a number of *cores* surrounded by a layer of insulating material. The cores of such a cable are always grouped in *pairs* of *conductors*.

Cables in the local network are designed so as to ensure optimum transmission and guarantee minimum mechanical resistance. For this reason, the description of cables below consists of a section dealing with electrical characteristics and one dealing with mechanical characteristics.

Mechanical characteristics

- The conductors of a local cable are round, full wires consisting of 98%–99% pure electrolytic copper.
- A conductor is isolated by a layer of synthetic material (usually polyethylene).
- Most conductors have a 0.5 mm or 0.6 mm diameter with a maximum negative variance of 0.01 mm and a positive variance of 0.03 mm.
- The set of conductors is covered by a waterproof extruded cable sheath (usually polyethylene). Under normal circumstances, the cable is also longitudinally waterproof.
- The cable cores are arranged in a specific manner. The two conductors (e.g. of a telephone circuit) must be arranged symmetrically in relation to all other conductors. For this reason, conductors are twisted and placed in coaxial cylindrical layers (*a basic unit consists, for example, of four conductors twisted around one another and from which two telephone circuits can be created; a cross section shows that these four conductors form the corners of a square. The conductors located on two opposite angular points form a pair*).

Electrical characteristics

- Since the signals to be transmitted are changeable electrical voltages, the cable conductor must be a good transmission medium for electrical signals. The important elements are defined for a unit length of one kilometer and are called primary electrical parameters of a conductor. These parameters are kilometer resistance R, kilometer inductance L, kilometer capacity C and kilometer leakance G.

♦ kilometer resistance R

- * Kilometer resistance is the initial resistance of a one kilometer conductor pair that is looped at the remote end; the value of this parameter is therefore the resistance of a conductor with a length of two kilometers.
 - ⇒ R is 180 Ohm for a conductor diameter of 0.5 mm (at 20°C);
 - ⇒ R is 123 Ohm for a conductor diameter of 0.6 mm (at 20°C).
- * It should be noted that due to the skin effect, the alternating current resistance is higher than the direct current resistance indicated above.

♦ kilometer inductance L

- * In a symmetrical pair cable, conductors forming a pair lie very close to one another; kilometer inductance L is therefore very low (approx. 0.5 mH per kilometer).

Transmission and interface characteristics of VDSL2 service

♦ kilometer capacity C

- * The capacity between two conductors of the same pair can be measured when the rest of the cable conductors are connected to each other and to an equipotential point of a measuring device. The nominal value of kilometer capacity C is situated between 38.5 nF/km and 50 nF/km at 800 Hz.

♦ kilometer leakance G

- * Kilometer leakance G depends on the frequency concerned and kilometer capacity C. Theoretically, kilometer leakance may be considered as negligible.
- * G can roughly be calculated with the help of the following formula, in which k has a value between 0.005 and 0.02 (ω = pulsation in rad/s):

$$G = k \cdot \omega \cdot C$$

- The insulation resistance of each conductor in relation to the rest of the conductors (and any shielding) is at least 5,000 M Ω /km.

BROTSoLL

Annex 1

General Terms and Conditions

General information

This document constitutes an integral part of the Belgacom Offer for Terminating Segment of Leased Line. It includes the General Terms and Conditions applicable to the provision of Terminating Segment of Leased Line that encompass "Partial Circuit" link service and "Backhaul" link service. These Terminating Segments of Leased Line are provided in conformity with the relevant laws and decrees in effect. The present Terms and Conditions shall remain applicable until they are replaced by other terms and conditions.

A distinction should be made between the following:

The General Terms and Conditions

The General Terms and Conditions comprehensively list the rights and obligations of Belgacom and the Beneficiary with regard to the provision of the Terminating Segment of Leased Line.

The Order Form

The order form lists the information requested by Belgacom to enable it to provide the Terminating Segment of Leased Line. It is signed by the Beneficiary or by his authorized agent

The Service Descriptions

The Service Descriptions define the specificities of the Services

The Technical Conditions

The technical conditions define the technical specifications and the quality standards.

The Planning & Operations Manual

The Planning & Operations Manual describes the conditions of delivery of the Terminating Segment of Leased Line.

The Operational Software Systems (OSS)

Description of the Tools to be used for operational purposes

The Belgacom price list

The price lists indicate the rates for the Terminating Segment of Leased Line.

* * *

The Contract, Order Form, General Terms and Conditions, Main body, relevant Service Descriptions, the relevant sections of the Planning and Operations Manual, Pricing and Billing document, Prepayment terms and conditions and, if any, the specific terms and conditions agreed upon by the Parties constitute the complete Contract concluded by the Beneficiary and Belgacom relating to each Terminating Segment of Leased Line.

* * *

Anyone may examine the General Terms and Conditions relating to the Belgacom Reference Offer for Terminating Segment of Leased Line, and the up-dated price lists as they are applicable at the time of consultation. These may be obtained either from Belgacom's Internet site or from Belgacom's Customer service department. The other Annexes are available on the Secured website of Belgacom and may be consulted further to the signature of a non-disclosure Agreement.

BIPT's decisions regarding this offer can be referred by Belgacom to the Court of Appeal of Brussels that can declare it void, in part or totally. In such a case, except otherwise agreed by the parties, the Contract shall be adapted in accordance with Belgacom's initial offer before its modification by the BIPT.

With a view to the signature of the Contract, the BROTSOLL can be negotiated by the parties and does not substitute for the parties' will.

Except otherwise agreed by the parties, the Contract shall be adapted if the BROTSOLL is modified. This adaptation

shall be in accordance with this BROTSoLL's modification.

Request: The Beneficiary's demand concerning the delivery of a Terminating Segment of Leased Line as described in this Reference Offer.

Glossary

The capitalized terms in the present General Terms and Conditions for Belgacom Reference Offer for Terminating Segment of Leased Line have the meaning as defined below:

BROTSoLL	The Belgacom Reference Offer for Terminating Segment of Leased Line as it is submitted to the BIPT
Terminating Segment of Leased Line	All the Services described in the Belgacom Reference Offer for Terminating Segment of Leased Line that are ordered by the Beneficiary
Contract	An agreement concluded between Belgacom and a Beneficiary in accordance with the present General Terms and Conditions, technical, operational, billing, planning and financial conditions for the provision of Terminating Segment of Leased Line as described in the Reference Offer for Terminating Segment of Leased Line and relevant Service Descriptions of Belgacom. The Contract is concluded as mentioned in the first chapter of the present General Terms and Conditions and the Planning and Operations.
Party/Parties:	Collectively, Belgacom and Beneficiary

Contract procedure

Request by the Beneficiary

1. The Beneficiary must submit his request for a Service to the Customer Service department of Belgacom by completing and signing the appropriate order form. The specific terms and conditions for delivering the Services are described here-after.
2. The Beneficiary shall consult the General Terms and Conditions and the relevant Services Descriptions as well as the list of technical requirements. These can be obtained from Belgacom's Internet site or by requesting them from Belgacom's Customer Service department.
3. Belgacom may not refuse to realize the Beneficiary's request, conform the BROTSoLL, without prejudice to the negotiations between Belgacom and the Beneficiary except on one of the following grounds:
 - a) the Beneficiary or his authorized agent refuses to provide Belgacom with official documents to identify himself;
 - b) in an emergency situation (i.e., exceptional cases of *force majeure*), for the purpose of ensuring the safe operation of the network, after all necessary measures taken by Belgacom to ensure access to the service are without effect;
 - c) following the Beneficiary's failure to observe obligations arising from the present General Terms and Conditions for the use of the

service, subject to the prior consent of the BIPT.

d) for the purpose of maintaining network integrity or the interoperability of the services or for any other technical reasons that must be specified that make the delivery of a Terminating Segment of Leased Line impossible.

e) the Beneficiary has refused to provide proof of the existence of the unconditional financial guarantee as specified in the provision [Financial Guarantees](#) ~~Financial Guarantees~~ here-under.

4. In the event of a refusal, Belgacom shall notify within 3 working days the Beneficiary of its decision and the grounds for the decision by ordinary mail. A copy will be sent to the BIPT in the same delay.

5. The Beneficiary may lodge an appeal against this decision by following the procedure provided under the Dispute Resolution Procedure and in accordance with these General Terms and Conditions.

Conclusion, entry into force and duration of the Contract

6. The provision of the Terminating Segment of Leased Line is subject to the conclusion of a Contract between Beneficiary and Belgacom according to the present General Terms and Conditions and the negotiations between the Parties.

7. Unless otherwise stipulated, the Contract takes effect on the day after the date on which a Terminating Segment of Leased Line is made available to the Beneficiary. Belgacom shall confirm this date to the Beneficiary in writing.

8. The Terminating Segment of Leased Line is made available to the Beneficiary for an indefinite term unless a defined term was chosen by the Beneficiary for the concerned line. In both cases, the line must remain in force for a minimum one year duration.

Services covered by these General Terms and Conditions

Terminating Segment of Leased Line

8. The services covered by the present General terms and Conditions are the Terminating Segment of Leased Line provided by Belgacom as described in the Service Descriptions and in the Technical Conditions describe in the present offer.

Obligations of the Parties

Obligations of Beneficiary

9. Beneficiary shall, independently of Belgacom, manage all aspects of the relationship with its own Users unless otherwise explicitly agreed upon between the Parties. Beneficiary shall therefore be fully responsible for all User inquiries, including but not limited to inquiries concerning product information, service, fault reports, technical issues and settlement.

10. Beneficiary shall take all necessary measures to ensure that the use of the Terminating Segment of Leased Line by the User of a Beneficiary will not cause any disturbance, interruptions or the like to the traffic in the public telecommunications network.

11. Beneficiary shall be liable to Belgacom for ensuring that the equipment connected to Belgacom's

Terminating Segment of Leased Line by Beneficiary's Users comply with the requirement of the R&TTE Directive.

12. Beneficiary shall be liable to Belgacom for ensuring that Beneficiary's Users do not in any way dispose of, sell, rent out, pledge, Belgacom's equipment and installations and Beneficiary shall ensure that Beneficiary's Users do not in any way interfere with the installations. Beneficiary further guarantees that his Users will at all times maintain the marking of equipment or installations indicating that they belong to Belgacom.
13. Beneficiary shall furthermore, independently of Belgacom, undertake all other customer services towards its own Users.
14. Beneficiary shall comply with reasonable instructions issued from time to time by Belgacom to ensure secure and proper use of the Terminating Segment of Leased Line, of Belgacom network and of any other infrastructure used to provide the Terminating Segment of Leased Line. In case of unsolved dispute BIPT will be called for a decision.
15. Beneficiary shall also comply with the Belgacom Customer Site installation requirements, in particular with regard to the following aspects:
 - a) Space and dimensions: Beneficiary shall ensure that there is sufficient space for Belgacom to be able to install the equipment required to be able to provide the Terminating Segment of Leased Line;
 - b) Power supply: Beneficiary shall, at its own expense and on its own initiative, be responsible for providing the power supply necessary to launch and operate the Terminating Segment of Leased Line. To this end, Beneficiary shall provide an easily visible and easily accessible power switch;

- c) Ambient conditions (temperature, humidity, dust, etc.): the ambient conditions shall not be such as to prevent proper performance of the Belgacom equipment.

The Customer Site Installation Requirements are available from the Belgacom Internet Site or from the Customer's Belgacom contact person, and shall form an integral part of the Contract.

Belgacom shall not be liable for any disruption of the Service that is attributable to a failure by the Customer to comply with the terms and conditions set out in the Customer Site Installation Requirements.

Obligations of Belgacom

16. Belgacom shall provide to Beneficiary a Terminating Segment of Leased Line according to Beneficiary's order to be transmitted from time to time to Belgacom under the terms and conditions set forth in the present General Terms and Conditions and/or its Annexes.
17. Belgacom shall use all reasonable endeavours to correct any trouble affecting the quality of the service of Belgacom. In this respect in case of urgency and acting in good faith, Belgacom shall be entitled to:
 - a) disconnect a Terminating Segment of Leased Line immediately and without prior consultation with Beneficiary, provided that Belgacom can identify that the use of the Terminating Segment of Leased Line has caused a breakdown of networks or services, or if there is imminent risk of such breakdown. Belgacom will inform the BIPT, and Beneficiary, about the disconnection, at the latest 24 hours after the disconnection.
 - b) contact the Users directly with a view to maintaining or ensuring Belgacom's ownership of

equipment and installations. Only Belgacom may carry out service works on equipment belonging to Belgacom. Belgacom shall act in accordance with the general standard of integrity that it has internally developed and enforced. In case of application of this provision, Belgacom will immediately inform Beneficiary about the operation before its execution.

18. Belgacom will not undertake customer handling of the Users of Beneficiary.
19. Belgacom shall respect all service levels, timers and other guarantees mentioned in the SLA-document or otherwise shall conform to the applicable penalties.

with the present General Terms and Conditions, issued by Belgacom during three (3) months. The amount of the pre-payment shall be reviewed every three (3) months. The terms and conditions of this pre-payment are described in Annex 3.

22. Without prejudice to any other legal or contractual remedies and notwithstanding anything to the contrary in the present General Terms and Conditions, in the event Beneficiary fails to pay in due time any undisputed amount due under the pre-payment conditions as defined in the present section and in Annex 3, Belgacom shall be entitled to execute the following alternatives until full payment is made:
 - suspension of any SLA obligations that are not foreseen in the Basic SLA;
 - refusal in writing of any new Services.

Financial Conditions

Billing and Payments

20. In consideration for the Terminating Segment of Leased Line provided by Belgacom under these General Terms and Conditions, Beneficiary shall pay the charges and fees provided in Annex 2 Pricing and Billing.

Financial Guarantees

General Principle - Pre-payment

21. Notwithstanding anything to the contrary in the present General Terms and Conditions, in order to guarantee the payment by Beneficiary of the prices due for the Terminating Segment of Leased Line provided by Belgacom that are invoiced on a monthly basis, Beneficiary will provide Belgacom with a monthly (1) pre-payment based on the average of the monthly amount due by Beneficiary. The amount of the pre-payment shall be based on the average of the invoices for the Terminating Segments of Leased Line, ordered in accordance

Sufficient Creditworthiness

23. This monthly pre-payment will not be required in the following circumstances:
24. Beneficiary has sufficient creditworthiness as evidenced by either of the following alternatives:
 - Beneficiary has obtained a "Ba2" rating or above for its debt (Moody's);
 - Beneficiary has obtained a rating similar to Moody's "Ba2" rating, provided that (i) such rating is generally accepted by the market as giving similar reliability as Moody's, (ii) such rating is generally reviewed and updated on a regular basis.

Other Financial Guarantees

25. In the event that, in the course of the Contract, Beneficiary would lose the above described credit worthiness (either through the loss of "Ba2" credit rating or similar or upon the occurrence of any default or delay of payment), Beneficiary will have to provide Belgacom with a pre-payment or with another financial guarantee as defined in the present

chapter within ten (10) working days from Belgacom's request thereto.

26. The Beneficiary obtains an irrevocable and unconditional parent corporation guarantee for the debts incurred by Beneficiary in the application of the Contract, provided that such parent company is issued by a company that has sufficient creditworthiness as defined above. In the event that, in the course of the Contract, the Parent Company would lose the above described creditworthiness (either through the loss of "Ba2" credit rating or similar or upon the occurrence of any default or delay of payment), the Beneficiary will provide Belgacom with a pre-payment or with another financial guarantee as described in the present chapter within ten (10) working days of the request of Belgacom;

27. The Beneficiary has constituted a Deposit on an escrow account with a reputable bank or financial institution established in the EU. The amount of that deposit will be equal to an estimate of three (3) months of net amount due by Beneficiary for the Services ordered in accordance with the present Terms and Conditions, provided. The amount of the deposit will be equal to an estimate of three (3) months of Belgacom's invoices for the Services. Based on the actual evolution of the amounts due for the Services; the Beneficiary and Belgacom will have the right to require an adaptation of the amount of the deposit every three (3) months. Upon the request for adaptation of the amount or deposit, necessary steps will be taken to ensure adaptation within three (3) ten (10) working days. In case of default by Beneficiary to pay sums due under the contract, the sums deposited on the escrow account will accrue to Belgacom. The interests accrued on the escrow account will be payable to Beneficiary. In the event the sums deposited are accrued to Belgacom, or if the amount of the deposit is not adapted despite Belgacom's request thereto,

Beneficiary will provide Belgacom with a pre-payment or with another financial guarantee as defined in the present chapter within ten (10) working days of the request of Belgacom.

28. Beneficiary has provided Belgacom with an irrevocable and unconditional bank guarantee on first demand issued by a reputable bank or financial institution established in the EU. That bank guarantee will be issued for a minimum period of three (3) years and for an amount equal to an estimate of three (3) months of net amount due by Beneficiary for the Services ordered in accordance with the present General Terms & Conditions. The amount of the bank guarantee will be equal to an estimate of three (3) months of ULL invoices. Based on the actual evolution of the amounts due for the Services, Beneficiary and Belgacom will have the right to require an adaptation of the amount of the bank guarantee every three (3) months. Upon the request for adaptation of the amount of bank guarantee, necessary steps will be taken to ensure adaptation within three (3) ten (10) working days. Upon the expiration of the bank guarantee or after Beneficiary has called upon the bank guarantee or if the amount of the bank guarantee is not adapted despite Belgacom's request thereto, Beneficiary shall provide Belgacom with a pre-payment or with another financial guarantee as defined in the present chapter, within ten (10) working days of the request thereto from Belgacom.

Principles

Retail Pricing & Billing

29. Beneficiary shall be responsible for the setting of the tariffs that Beneficiary will apply to the Users to whom Beneficiary will sell telecom service using the Terminating Segment of Leased Line and for the billing and invoicing of such Users.

30. Except as provided otherwise in the present General Terms and Conditions or its Annexes, no deductions or reductions shall be made from the payment of any charges or fees due for the Terminating Segment of Leased Line for any bad or unpaid debts or any unrecoverable claims (including, in particular, claims arising from fraud cases) that Beneficiary may have against Users or any other third parties in relation with these Services.

Branding

31. The Parties agree not to offer any service under any brand, including any trademark, trade name or company name, of the other Party unless the use of the brand(s) of the other Party is explicitly provided under the present General Terms and Conditions. Such use of the brand will then be strictly limited to the service at stake.
32. Beneficiary shall offer telecom services to Users under its own brand without any use of, or reference to Belgacom's brands.
33. Notwithstanding the foregoing, Parties acknowledge that, as provided in the Offer, the installation of equipment on the site of the relevant Users who have subscribed to an offering of Beneficiary will be realized by Belgacom personnel. Both Parties agree that Belgacom shall have no obligation to unbrand or rebrand its service technicians or trucks. Belgacom will act in accordance with its general standard of integrity that it has internally developed and enforced.
34. In any case, Belgacom will not make any publicity or remarks to the detriment of the Beneficiary or its image. Belgacom must in all circumstances stay neutral, in accordance with the technical nature of its intervention. Where Belgacom makes use of standard documents vis-à-vis users, it will submit these for prior approval by BIPT.

User Terms and Conditions

35. Beneficiary shall cause the terms and conditions governing Beneficiary's contractual relationships with Users to be compliant with the rules and principles set out in the Contract and its appendices. Notwithstanding the above, nothing in the present Reference Offer can be construed as creating or evidencing a contractual relationship of any kind between Belgacom and Beneficiary's Users, nor a right for Belgacom to supervise the contractual terms of the relation between Beneficiary and its Users.
36. Beneficiary shall bear all the consequences of the breach of the above obligation.

Coordination between the Parties

Single Points of Contact

37. Beneficiary and Belgacom will both appoint an individual as their respective single point of contact ("SPOC") who will act, within its organization, as the other Party's contact person.
38. The SPOC of either Party will have full authority to act and decide on behalf of the respective Party on all technical and operational matters regarding the day-to-day management of the performance of their contracts. All the decisions taken by any working group constituted by the Parties during the performance of this agreement will need to be expressly and formally validated by the SPOC of either Party to be binding on such Party. This validation (or refusal of validation) has to be given at the latest within three working days. The absence of response in this delay will be escalated. Except as otherwise expressly provided by the relevant Party, each Party's SPOC will have no authority to modify the conditions

described in the present General Terms and Conditions, or to act outside the day-to-day management of the performance of the Terminating Segment of Leased Line.

39. Each Party will be authorized to replace its SPOC by notice sent to the other Party. Such notice will have immediate effect.

Liability

General rules

40. Taking into account the nature of the respective activities of the parties, the risks and potential profits associated with these activities and the consideration obtained by each Party from the present General Terms and Conditions, Parties expressly agree that their respective liability shall be limited as follows.
41. If either Party is held liable to the other Party (including such other Party's employee(s) and contractor(s)) under the present General Terms and Conditions, that liability shall be limited to the following:
- if such liability results from any personal injury or death incurred as a direct result of the non-performance of the relevant Party's obligations under these Terms and Conditions, then such liability shall be only subject to the limitation provided in article 42;
 - if such liability results from any conduct attributable to the relevant Party, which is, under Belgian law, characterized as being gross negligence (faute lourde - zware fout) or intentional negligence (dol - bedrog), then such liability shall be subject to no limitation, except as provided by law;
 - if such liability results from any material damage, other than those referred to above, arising out of or in any way connected with the performance by the

relevant Party of the Terminating Segment of Leased Line or the breach of such Party's obligations under the present General Terms and Conditions, then the total amount which can be recovered from such Party for all acts or omissions shall, in no event, exceed an aggregate amount equal to EUR 1,250,000 (one million two hundred fifty thousand euro), subject to the limitation provided in article 42.

42. Neither Party shall be liable for indirect damages (pure and consequential), including without limitation loss of profit, loss of revenue, loss of data, loss of use, loss of savings, loss of goodwill, interruption of business or claim by third parties.
43. In the event of a complaint by a Beneficiary's User, the liability of Belgacom may only be questioned by the Beneficiary if Belgacom, or a person Belgacom is responsible for, is at fault or has committed a gross negligence (faute lourde - zware fout).
44. In addition, and notwithstanding the above, each Party will indemnify the other Party against any claim or loss related to the illegal use, or the use for illegal purpose of Terminating Segment of Leased Line by the End User of one or the other Party.

Force Majeure

45. Neither Party will be liable for any delay or failure to fulfil its obligations under these General Terms and Conditions arising from any event beyond its reasonable control, such as for instances but without limitation natural disasters and strikes (all such events being hereafter referred to as "Force Majeure").
46. The Party claiming Force Majeure shall as soon as possible send to the other Party a Notice of the Force Majeure. Such Notice shall contain adequate evidence of the occurrence

and extent of the Force Majeure, as well as an estimate of the expected duration of the Force Majeure. As soon as practicable after receipt of such Notice, the Parties shall consult with each other in order to find an equitable solution to the problems and difficulties caused by the Force Majeure.

47. The Party claiming Force Majeure shall use all reasonable endeavours to minimise the consequences of such Force Majeure, and to ensure, in as far as reasonably possible, the continuity of the services provided under the present General Terms and Conditions, and shall perform those of its obligations not affected by a Force Majeure. To the extent that a Party is prevented as a result of Force Majeure from providing one or several of the services or facilities to be provided under the present General Terms and Conditions, the other Party shall be released to the equivalent extent from its obligations to make payment for such services or facilities or complying with its obligations in relation thereto.
48. Upon cessation of the effects of the Force Majeure, the Party initially affected by such Force Majeure shall promptly notify the other Party of such cessation.

Accidents at work and Safety Rules

49. Each Party hereby undertakes to provide insurance cover against accidents at work for its own employees in conformity with the applicable legal requirements. Each Party hereby renounces any possible claim against the other Party, and undertakes to procure that its insurer shall not pursue against the other Party, or against any third party for whose acts or omissions the other Party may be responsible, any claim relating to accidents at work.
50. Each Party shall comply with safety practices and procedures reasonably applicable when entering the

premises and installations of the other Party in order to carry out work. Each Party undertakes to ensure that its personnel, while upon the premises and installations of the other Party, will respect any internal rules and codes of conduct therein applicable, provided that such rules and/or codes shall have been made available to them in advance. Without prejudice to the provisions of the chapter relating to liability, each Party shall indemnify and hold harmless the other Party for any and all damage, costs or expenses incurred as a result of any act or omission of a Party's personnel while upon the premises and installations of the other Party.

Operational Matters

Operational Matters and Network Management

51. The Terminating Segment of Leased Line provided under these General Terms and Conditions shall be implemented and provided by the Parties in accordance with the technical specifications set forth in "The Main Body" and the operational rules and procedures contained in Annex "Planning and Operations".
52. Both Parties shall cooperate to install and maintain reliable services. Both Parties shall exchange appropriate information as provided in the Offer (including, in particular, maintenance contact numbers, network information, information required to comply with law enforcement and other security agencies of the government and such other information as the Parties shall mutually agree) to achieve this desired reliability.
53. Each Party shall apply sound network management principles by invoking network management controls to ease the operation of their respective systems and to alleviate or to prevent congestion. Each Party shall ensure that the network management controls are applied in such a way as to ensure

that there is no discrimination in favour of that Party's own traffic.

Essential Requirements

54. The Parties shall ensure that the Essential Requirements, as defined and applicable under the regulatory framework, are adequately and sufficiently protected, in as far as the establishment, maintenance and operation of the services offered under the present General Terms and Conditions are concerned.
55. It is acknowledged that the Main Body, the present General Terms and Conditions and its Annexes (in particular, the sections related to Service Descriptions and the Annex "Planning and Operations") contain a number of specific principles and rules that have been developed to ensure the protection of the Essential Requirements. Furthermore, the Parties shall consult with each other in order to ensure that the Essential Requirements are protected in an adequate and sufficient manner.
56. It is a condition for the provision by Belgacom of Terminating Segment of Leased Line under this Document that Beneficiary's request under the provisions of the Main Body is not detrimental to the operation of the telecommunications networks and telecommunications services in question or to their integrity or interoperability, and that the protection of service and internal data, network equipment, software and stored data, including personal data, confidential information and privacy can be sustained.
57. The conditions for and restrictions on use applying at any time appear from the Main Body to the Offer,
58. Belgacom shall further be entitled to cause interruptions, disturbances or modifications of Belgacom's public network and services to the detriment of the supply of the services under these Terms and Conditions in connection with measures that are deemed

necessary for technical, maintenance and operating reasons taking into account the balance of the interests of both Parties or that are ordered by the regulatory authorities. Belgacom shall give in good faith Beneficiary the longest possible notice of interruptions, disturbances and modifications and state the reason for them. In these cases, Belgacom shall, in writing, immediately inform the User of Belgacom's intentions.

Amendments and Revisions

General Principles

59. Except as otherwise provided in these General Terms and Conditions or its Annexes, any agreement departing from the present Terms and Conditions or its Annexes shall only be valid if duly agreed upon in writing by the respective representatives of the Parties by both parties in writing.

Termination and Suspension

Termination

60. Beneficiary has the right to terminate one or more Terminating Segment of Leased Line contract as provided in the Offer, i.e. in the relevant Annex 2 related to Pricing and Billing annexed to this Offer

Suspensions

61. In the event Beneficiary uses or allows the use of Services provided under these General Terms and Conditions in an illegal manner or for illegal purposes, or if Beneficiary by its action or omission causes, or could reasonably be expected to cause a damage to the working or the security of the telecommunication network of Belgacom, and Beneficiary fails to take appropriate measures in order to remedy to the situation within a period of thirty (30) days from the

receipt of a Notice sent by Belgacom, Belgacom will have the right to suspend the provision of some Terminating Segment of Leased Line contracts or of the whole Terminating Segment of Leased Line. Notwithstanding the foregoing, Belgacom will have the right to suspend Terminating Segment of Leased Line prior to sending the above mentioned Notice in urgent cases where such suspension will be reasonably required under the circumstances. In that case, Belgacom will inform the BIPT and the parties involved about the suspension of the Services at the latest 24 hours after the suspension.

62. Belgacom will have the right to suspend Terminating Segment of Leased Line in the event that it is requested to do so by an order of a court or a competent authority. Belgacom will inform Beneficiary as soon as possible of the cause of such suspension.

63. Without prejudice to article 22, in the event that Beneficiary fails to pay outstanding invoice for any amount due under the BROTSOLL offer for a period of 15 calendar days as from the Due Date of the relevant invoice (-invoice, preinvoice or final invoice), Belgacom shall, after having duly informed the BIPT, inform the Beneficiary, at least 7 calendar days before the end of the above mentioned delay of 15 days, that if the default of payment is not cured :

- All BROTSOLL Services will be suspended without further notice after the expiration of the above mentioned delay of 15 days as of the Due Date;
- All BROTSOLL Services will be terminated without further notice after the expiration of a delay of 30 days as of the Due Date.

~~63. In the event that Beneficiary fails to pay outstanding invoice for any amount due under these Terms and Conditions for a period of 15 calendar days as from the Due~~

~~Date of the relevant invoice, or fails to provide, renew, adapt or reconstitute the financial guarantee as provided in the chapter on Financial Guarantee here above, Belgacom shall be entitled, after having duly informed the BIPT, to suspend the Services with immediate effect subject to a prior Notice sent at least 7 calendar days before the end of the above mentioned delay of 15 days. This provision does not apply to disputed amounts.~~

Termination for Cause

64. Article 63 does not apply to amounts duly disputed by the Beneficiary in writing, before the Due Date, including a clear summary of the grounds for the Dispute and the position of the Beneficiary as to this dispute. In the event that either Party defaults in the payment of sums due for the Services offered under these Terms and Conditions or is in default to provide a financial guarantee as provided in the relevant chapter here above and such default is not substantially cured within thirty (30) days after written notice is given specifying the default, then the non defaulting Party may by giving notice to the other Party and after having duly informed the BIPT, terminate all the Terminating Segment of Leased Line with immediate effect. This provision does not apply to disputed amounts.

65. In the event that Beneficiary fails to provide, renew, adapt or reconstitute the financial guarantee as provided in the chapter on Financial Guarantee here above, Belgacom shall be entitled, after having duly informed the BIPT,

- to suspend all BROTSOLLBA Services without further notice if the default is not cured within a period of 15 days following written Notice;
- to terminate all BROTSOLLBA Services without further notice if the default is not cured within a period of 30 days following the same Notice.

66. The provisions of this chapter on Suspension of the Services are without prejudice to any other right or claim for compensation to which the non-defaulting Party may be entitled to in the event of suspension of the services.

65.67. In the event that either Party is declared bankrupt or enters into liquidation, then the other Party may terminate all the Terminating Segment of Leased Line, without any further legal or other procedures, by sending Notice of termination with immediate effect to the other Party.

Consequences of Termination

66.68. The provisions in this chapter on Termination of the Services are without prejudice to any other right or claim for compensation to which the non defaulting Party one of the Parties may be entitled to in the event of termination of the Services, as provided namely in the relevant Annex 2 of this Offer related to Pricing and Billing

67.69. In the case of termination of the Services for any reason, Belgacom shall be entitled to payment for all Services performed prior to such termination in accordance with the conditions that were applicable between the parties at the time of termination.

68.70. The provisions of the present General Terms and Conditions which by their nature are determined to survive the termination of the Services (including, in particular but without limitation, the provisions on ~~Confidentiality~~ConfidentialityConfidentiality and ~~Applicable Law and Jurisdiction~~Applicable Law and Jurisdiction), shall remain in full force and effect after the termination.

69.71. In the event of termination of the Services, Beneficiary will be responsible to inform the relevant User of the consequences of the termination of these Services.

Confidentiality

Confidential Information

70.72. For the purpose of this Chapter, the term "Confidential Information" shall mean:

- information communicated by one Party (or from any of its Associated Companies) (the "Disclosing Party") to the other Party (or to its employees and advisors) (the "Receiving Party"), or obtained by the Receiving Party in connection with the performance of the Services, provided that such information is, at the time of its disclosure, reasonably designated "confidential" or with an equivalent term. If such information was disclosed orally, it shall constitute Confidential Information provided that the Disclosing Party informs the other Party at the time of such disclosure, that such information is confidential and that (i) a written notice containing a summary of the information disclosed orally and mentioning that such information is confidential, is issued by the Disclosing Party to the other within five Working Days from the date of disclosure, or (ii) such disclosure is recorded in minutes of a meeting that are designated, labelled or marked "confidential" or designated, labelled or marked with an equivalent term;

71.73. For purposes of these General Terms and Conditions, "Confidential Information" does not include:

- a. information that is properly and lawfully in the public domain otherwise than by breach of these Terms and Conditions or any other obligation of confidence;
- b. information that was disclosed by a third party to the Receiving

Party without restriction on disclosure or use, unless the Receiving Party knew or should reasonably have known that this information was acquired unlawfully or by a breach of contract or fiduciary relationship.

72-74. Except as specified in writing, by the Disclosing Party at the time of disclosure, Confidential Information shall continue to be deemed as such until the end of a period of three years after its initial communication under the present General Terms and Conditions.

Non-Disclosure

73-75. The Receiving Party shall refrain from disclosing the Confidential Information to any third party and shall use the Confidential Information only for the performance of the Services offered in accordance with the present General Terms and Conditions. In addition, the Receiving Party shall take any reasonable measures to ensure the confidentiality of this information. In any event, the Receiving Party shall use efforts at least commensurate with those that such Party uses for protecting the confidentiality of its own Confidential Information.

74-76. Notwithstanding the foregoing and without prejudice to the provisions regarding the Disclosure to Personnel, Advisors or Suppliers ~~Disclosure to Personnel, Advisors or Suppliers~~ here-under, either Party shall be allowed to disclose the Confidential Information to third parties provided it has obtained the prior written consent of the other Party. Such written consent will be given case-by-case upon a discretionary basis. Such written consent shall only be valid and enforceable for the specific information listed therein. The written consent to disclose Confidential Information shall identify the third party or parties to which the information can be disclosed and shall set forth the

terms and conditions to which such disclosure is subject.

75-77. The Disclosing Party shall remain free to disclose to any third party Confidential Information disclosed to the Receiving Party.

Disclosure to Personnel, Advisors or Suppliers

76-78. A Receiving Party shall disclose the Confidential Information received from the other only to its directors, employees, suppliers, agents, advisors, resellers or contractors who have a need to know such information. Such Party shall ensure that such directors, employees, suppliers, agents, advisors or contractors are bound by the obligations of confidentiality in respect of the Confidential Information that are set forth in these General Terms and Conditions. For this purpose, the Beneficiary shall conclude a similar Non Disclosure Agreement with the above authorized parties not on his payroll that contains at least the same provisions as the NDA the beneficiary concluded with Belgacom.

77-79. Notwithstanding anything to the contrary in the foregoing provisions, the Receiving Party shall not disclose or use the Confidential Information, with the aim of providing commercial advantage to business divisions of the Receiving Party, or business divisions of the Receiving Party's Associated Companies, which are engaged in activities competing with the other Party.

78-80. Either Party may disclose Confidential Information that they received from the other Party, to their suppliers or contractors provided and to the extent that such suppliers or contractors effectively require to have access to such information in order to supply the relevant goods and services. The Parties shall do whatever is necessary in order to impose on the suppliers or contractors which have

obtained access to Confidential Information obligations to keep this information confidential, which are at least equivalent to the obligations imposed under the present General Terms and Conditions.

~~79-81.~~ Each Party shall be liable under the limitations provided in the Chapter relating to ~~LiabilityLiabilityLiability~~ here-above, for any unauthorized disclosure or use of the Confidential Information by its directors, employees, suppliers, agents, advisors or contractors. The Party responsible for an unauthorized disclosure or use of the Confidential Information shall, in any event, take any reasonable measures (including but not limited to court proceedings) to mitigate the damage resulting there-from.

Disclosure Required by Law

~~80-82.~~ If the disclosure of Confidential Information to third parties is required by reason of legal, accounting or regulatory requirements beyond the control of the Receiving Party, the Receiving Party may disclose such information to the extent necessary to comply with such requirements. Without prejudice to the application of the foregoing, the Parties shall endeavour to ensure the confidential treatment of the Confidential Information by the third parties receiving such information as a result of such requirement.

~~81-83.~~ Without limitation to the generality of the foregoing, either Party will have the right to disclose Confidential Information to the BIPT, whenever required by law, or deemed reasonably necessary in the context of any proceedings or discussions held in front or with the BIPT. If any such disclosure of Confidential Information is made, the Party communicating the information will ensure that the attention of the BIPT is properly drawn to the fact that the information is confidential and that the information needs to be kept confidential.

Dispute Resolution and Applicable Resolution

Dispute resolution procedure

~~82-84.~~ The SPOC shall, on an ongoing basis, attempt to solve any dispute, controversy or claim between the Parties concerning the interpretation, application and implementation of the present General Terms and Conditions and its Annexes (a "Dispute") through discussions held in good faith.

~~83-85.~~ In the event that the Parties have been unable to solve any Dispute, then upon Notice of either Party, each of the Parties will appoint a designated senior business executive (other than their respective SPOC) whose task it will be to meet for the purpose of endeavouring to resolve the Dispute. Each Party shall ensure that their respective designated executive has sufficient authority or decision-making power concerning the matter at stake. The designated executives will meet as often as the Parties reasonably deem necessary in order to gather and furnish to the other all information with respect to the matter in issue which the Parties believe to be appropriate in connection with its resolution. Such executives will discuss the Dispute and will negotiate in good faith in an effort to resolve the Dispute without the necessity of any formal proceeding relating thereto.

~~84-86.~~ In the event the Parties fail to reach such a solution and/or settlement within fifteen (15) Working Days as from the receipt of the above Notice, they shall escalate the matter to a higher level within their respective organizations. Discussions at that level will be conducted as described in article ~~8583~~. The Parties may, at any given escalation level, agree to extend the time limits described in this article and in article ~~8583~~ when they consider it necessary in order to facilitate that an agreement be

concluded on the subject-matter of the dispute.

~~85-87.~~ Except in the cases of urgency, as determined in good faith by the Party calling the Dispute, no formal proceedings for the resolution of a Dispute may be started until the earlier to occur of (a) a good faith conclusion by the designated executives that amicable resolution through continued negotiation of the matter in issue does not appear likely or (b) the Parties have failed to reach an agreement on the Dispute within 15 Working Days of the escalation of the Dispute as described in article ~~86-84~~

~~86-88.~~ Without prejudice to the above and without prejudice to the rights of each Party in case of Dispute, each Party shall be entitled to call on the BIPT for a decision for disputes regarding the interpretation of the present General Terms and Conditions and/or its Annexes. In consideration of the legal framework, the then relevant BROTSOLL and the then relevant decision of the BIPT on the BROTSOLL, BIPT will take decision within a reasonable term that shall not exceed one (1) month.

Applicable Law and Jurisdiction

~~87-89.~~ This Document shall be governed by Belgian law.

~~88-90.~~ Without prejudice to article ~~87-85~~, any dispute concerning the validity, the interpretation, or the performance of the Terminating Segment of Leased Line, or of subsequent contracts derived herefrom shall be finally submitted to the Courts of Brussels, Belgium. The above is without prejudice to the right of each of the Parties to submit the Dispute to the BIPT with a view to reach conciliation or to submit the Dispute to the Competition Council.

Miscellaneous

No Assignment

~~89-91.~~ Neither of the Parties is entitled to assign the contracts concluded under the present General Terms and Conditions, in part or in its entirety, to any third party or to any other entity unless with the prior written approval of the other Party.

~~90-92.~~ No approval will be required for an assignment of the Contracts in the event a Party assigns all the Terminating Segment of Leased Line concluded under the present General Terms and Conditions in their entirety to a successor, to which a transfer has taken place of, at least, the Assigning Party's activities covered by the present General Terms and Conditions. In such a case, the assigning Party shall immediately give Notice to the other Party of any such assignment permitted to be made under the present General Terms and Conditions without requesting the other Party's consent.

~~91-93.~~ Without prejudice to the foregoing, no assignment shall be valid under the present Terms and Conditions unless the assignee agrees in writing to be bound by the provisions of the present General Terms and Conditions and its Annexes.

Fraud

~~92-94.~~ The Parties accept to cooperate to the best of their respective abilities in order to prevent and eliminate any kind of fraud which involves Services provided under these General Terms and Conditions. If any of the Parties suspects such kind of fraud, the Parties shall co-operate in order to identify the origin of the fraud and to use any appropriate means in order to eliminate and prevent such fraud as soon as possible. For the purposes of the application of the present provision, fraud shall mean any manipulation of a

communications network, including by Beneficiary connected to the network of one of the Parties, in order to obtain one or more telecommunication services without paying the proper charge for it, or to support other criminal activities (including, in particular, wiretapping, eavesdropping and gathering secret numbers).

~~93-95.~~ It is explicitly acknowledged by the Parties that any cooperation in the context of the present provision will need to be in due compliance with the entire regulatory framework.

Independent Parties - Approvals

~~94-96.~~ Each Party shall be responsible for obtaining and keeping in effect all approvals from, and rights granted by, competent authorities, other operators, and any other persons that may be required in connection with the performance of its obligations under the present General Terms and Conditions. Each Party shall reasonably cooperate with the other Party in obtaining and maintaining any required approvals and rights for which other Party is responsible.

~~95-97.~~ Each of the Parties is and shall remain at all times an independent contractor. Neither Party is authorized and neither of the Parties nor their employees, agents or representatives shall at any time attempt to act or act on behalf of the other Party to bind the other Party in any manner whatsoever to any obligations. Neither Party nor its employees, agents or representatives shall engage in any acts which may lead any person to believe that such Party is an employee, agent or representative of the other Party. Nothing in the present General Terms and Conditions shall be deemed to constitute a partnership between the Parties.

~~96-98.~~ Should a conflict arise between the applicable BROTSOLL and the present General Terms & Conditions, the then applicable BROTSOLL shall prevail, unless otherwise specifically stated in these General Terms and Conditions. Should a conflict arise between these General Terms & Conditions and any or several Annexes, the General Terms & Conditions, shall prevail unless otherwise agreed by the Parties, in writing or otherwise specifically stated in these General Terms and Conditions or Annexes. Should a conflict arise between an Annex and an attachment or an appendix to this Annex, the Annex shall prevail unless otherwise agreed by the Parties, in writing or otherwise specifically stated.

~~97-99.~~ If any part of this Reference Offer shall be held to be illegal, invalid or unenforceable for any reason, each Party agrees that such provision shall be enforced to the maximum extent permissible so as to effect the intent of the Parties, and the validity, legality and enforceability of the remaining provisions of this Offer shall not in any way be affected or impaired thereby. If necessary to effect the intent of the Parties, the Parties shall forthwith negotiate in good faith to amend this Offer and the Parties' practices hereunder in such manner and with such language as will fully reflect as closely as possible the intent of the Parties and render further performance lawful.

BROTSoLL

Annex 2

PRICING AND BILLING

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1. Pricing

1.1 General remarks

1. The prices set below are those stated in the Decision of BIPT on quantitative aspects of BROTSOLL of September 3, 2008. Belgacom has introduced a claim before the Court of Appeal of Brussels requesting that said BIPT decisions of January 17, 2007, January 30, 2008 and September 3, 2008 are declared void.

In that respect, without prejudice to negotiations between the parties, Belgacom reserves the right to withhold the present specific offer and to apply retroactively to the concerned lines the formerly applicable standard rates and standard contractual terms and conditions (including to invoice the penalties and other compensation due in case of termination) in the event that the recourse before the Court of Appeal of Brussels related to the BIPT decision dd. January 17, 2007, would be successful or in the event the concerned decision is withdrawn.

Moreover, even if the recourse against the BIPT decision dd. January 17, 2007 would not be successful, the offer contained in this present addendum shall still be withdrawn and replaced respectively by the terms and conditions and/or rates formerly applicable to the concerned lines in the event that the recourse before the Court of Appeal of Brussels related to the BIPT decision dd. January 30, 2008 and/or September 3, 2008 would be successful or in the event the concerned decision(s) is (are) withdrawn. In that case, Belgacom also reserves the right either to claim damages or to apply retroactively to the lines terminated by the Customer to be replaced by BROTSOLL Lines the penalties and any other compensation due in case of termination, according to the former applicable terms and conditions.

2. Point-to-point connections that are said extra-area (end-points located in two different Access Area) are not covered by this Price List. The exact location of the access areas can be found at Belgacom's website (www.belgacom.be).

3. All prices included in this Price List are expressed in Euro, VAT excluded. Structure and prices of the below price list are subject to further adaptations.

1.2 Terminating Segments of Leased Lines (hereafter "BROTSOLL Lines")

1.2.1 **Installation fee**

1.2.1.1 One-time installation charges

The installation fees for BROTSOLL Lines indicated in the following table are due per end-point.

The mentioned installation fees for capacities superior to 2Mbps are only valid in case fibre cable infrastructure is available in the access network. If this is not the case, Belgacom will make a specific offer taking the local situation into account.

End-point location	Outside a Belgacom building
64kbit/s-128kbit/s	619,73
256kbit/s-1984kbit/s	1239,47
2.048 kbit/s	2.107,10 (1.239,47 per additional line)
34 Mbit/s	2.479,94 (1.239,47 per additional line)
155 Mbit/s	2.479,94 (1.239,47 per additional line)
622 Mbit/s	On demand
2,5 Gbit/s	On demand

The one-time installation charge covers:

- a) travel costs of Belgacom employees;
- b) the installation of a connection point at each end of the BROTSOLL line and if necessary, the installation of the equipment and electronic devices required for access to the service;
- c) the pulling of cable in an existing duct or in an open trench that meets the technical requirements set by Belgacom, between the edge of the nearest public paved surface (not including highways and roadways) and the building where the line must be laid;
- d) any work on a public paved surface (or with any other hard layer), not including highways and roadways, and on Belgacom's premises.

1.2.1.2 Other one-time charges

The following is billed to the Customer separately:

- a) all the costs including administrative costs, arising from the work and/or the laying of the cable in public or private property (including cabling inside a building) and that are not referred to in section 1.2.1.1 (including, but not limited to: any work on highways, roadways, trails, unpaved roads, harbors, parking lots, canals and other waterways, landing strips, forests, railroads, etc.);
- b) the costs of crossing a road to make a connection on a roadside or on the center divider strip inaccessible by cars and separating two or more paved roads;
- c) the costs of repair work following the Customer's failure to meet his obligations or following a service disruption not caused by equipment provided by Belgacom, or in the event that the Customer has improperly used the line or any other equipment provided by Belgacom;

-
- d) the cost of additional work carried out at the Customer's request and/or that is not generally part of the service. If this cost exceeds EUR 1000 per site, Belgacom will draw up a quote of the work to be carried out and submit it to the Customer for prior approval;
 - e) the costs of transferring, changing or decreasing the capacity of the lines referred to in section 1.5. If these costs exceed EUR 1000 per site, Belgacom will draw up a quote and submit it to the Customer for prior approval;
 - f) planning and survey costs

For the application of sections 1.2.1.1 and 1.2.1.2, the terms "paved surfaces", "highways" and "roadways" must be understood as applied in the royal decree regarding the general regulations for road traffic.

If the Customer wishes the BROTSOLL lines to be installed differently than Belgacom's usual method, Belgacom will carry out this work insofar as technically possible. If the cost of this work exceeds EUR 1000 per site, Belgacom will draw up a quote of the work to be carried out and submit it to the Customer for prior approval;

The installation charges of the lines in service are payable in cash as soon as the contract takes effect.

1.2.2 Rental fee

The rental prices of BROTSOLL Lines depend on the respective location of the two end-points of the Leased Line. Belgium has been divided in a number of Access Areas. The exact location of the access areas can be found at Belgacom's website (www.belgacom.be). The rental price will depend on location of the end-points of the BROTSOLL Line.

- If both end-points of the BROTSOLL Line are connected to the same distribution frame, the line will be '*local*'
- If the end-points of the BROTSOLL Line are connected to different distribution frames but are located in the same telephone zone, the line will be '*intra-zone*'
- If the end-points of the BROTSOLL Line are located to different telephone zones but in the same Access Area, the line will be '*intra-area*'

The monthly rental fee for a BROTSOLL Line is indicated in the following tables (*all values in EUR/month*). Rental fees for each bit rate depend on the site where the end-point is located : Belgacom site (Belgacom building) or external site (OLO POP or end-user)

1.2.2.1 Between two Belgacom sites (BROTSoLL BGC-BGC)

	local	intra-zone	intra-area
64k	41,92	61,31	79,84
128k	47,62	69,64	90,69
192k	53,32	77,98	101,55
256k	59,02	86,31	112,40
320k	64,72	94,65	123,26
384k	70,42	102,98	134,11
448k	76,12	111,32	144,97
512k	81,82	119,65	155,82
576k	87,52	127,99	166,68
640k	93,22	136,32	177,54
704k	98,92	144,66	188,39
768k	104,62	152,99	199,25
832k	110,32	161,33	210,10
896k	116,02	169,67	220,96
960k	121,72	178,00	231,81
1024k	127,42	186,34	242,67
1088k	133,12	194,67	253,52
1152k	138,82	203,01	264,38
1216k	144,52	211,34	275,23
1280k	150,22	219,68	286,09
1344k	155,92	228,01	296,94
1408k	161,62	236,35	307,80
1472k	167,32	244,68	318,65
1536k	173,02	253,02	329,51
1600k	178,72	261,36	340,36
1664k	184,42	269,69	351,22
1728k	190,12	278,03	362,08
1792k	195,82	286,36	372,93
1856k	201,52	294,70	383,79
1920k	207,22	303,03	394,64
1984k	74,81	147,35	246,60
E1	74,81	147,35	246,60
E3	294,15	985,43	3.230,68
STM-1	385,18	3.252,29	8.313,23
STM-4	811,14	9.462,06	14.914,81
STM-16	1.330,27	15.517,79	24.460,29

1.2.2.2 Between Belgacom site and external site (BROTSoLL BGC-External)

	local	intra-zonal	intra-area
64k	100,78	120,16	138,70
128k	106,48	128,50	149,55
192k	156,43	181,08	204,65
256k	162,13	189,42	215,51
320k	167,83	197,75	226,36
384k	173,53	206,09	237,22
448k	179,23	214,42	248,07
512k	184,93	222,76	258,93
576k	190,63	231,09	269,79
640k	196,33	239,43	280,64
704k	202,03	247,76	291,50
768k	207,73	256,10	302,35
832k	213,43	264,44	313,21
896k	219,13	272,77	324,06
960k	224,83	281,11	334,92
1024k	230,52	289,44	345,77
1088k	236,22	297,78	356,63
1152k	241,92	306,11	367,48
1216k	247,62	314,45	378,34
1280k	253,32	322,78	389,19
1344k	259,02	331,12	400,05
1408k	264,72	339,45	410,90
1472k	270,42	347,79	421,76
1536k	276,12	356,12	432,61
1600k	281,82	364,46	443,47
1664k	287,52	372,80	454,32
1728k	293,22	381,13	465,18
1792k	298,92	389,47	476,04
1856k	304,62	397,80	486,89
1920k	310,32	406,14	497,75
1984k	177,92	250,45	349,71
E1	177,92	250,45	349,71
E3	1.050,97	1.742,25	3.987,50
STM-1	1.326,11	4.193,22	9.254,15
STM-4	1.864,53	10.515,46	15.968,20
STM-16	2.841,18	17.028,69	25.971,20

1.2.2.3 Between two external sites (BROTSoLL External-external)

	local	intra-zonal	intra-area
64k	159,64	179,02	197,55
128k	165,34	187,36	208,41
192k	259,53	284,19	307,76
256k	265,23	292,52	318,61
320k	270,93	300,86	329,47
384k	276,63	309,19	340,32
448k	282,33	317,53	351,18
512k	288,03	325,86	362,03
576k	293,73	334,20	372,89
640k	299,43	342,53	383,75
704k	305,13	350,87	394,60
768k	310,83	359,20	405,46
832k	316,53	367,54	416,31
896k	322,23	375,88	427,17
960k	327,93	384,21	438,02
1024k	333,63	392,55	448,88
1088k	339,33	400,88	459,73
1152k	345,03	409,22	470,59
1216k	350,73	417,55	481,44
1280k	356,43	425,89	492,30
1344k	362,13	434,22	503,15
1408k	367,83	442,56	514,01
1472k	373,53	450,89	524,86
1536k	379,23	459,23	535,72
1600k	384,93	467,57	546,57
1664k	390,63	475,90	557,43
1728k	396,33	484,24	568,29
1792k	402,03	492,57	579,14
1856k	407,73	500,91	590,00
1920k	413,43	509,24	600,85
1984k	281,02	353,56	452,81
E1	281,02	353,56	452,81
E3	1.807,79	2.499,07	4.744,32
STM-1	2.267,04	5.134,15	10.195,08
STM-4	2.917,92	11.568,85	17.021,60
STM-16	4.352,08	18.539,60	27.482,11

The rental price covers :

- a) the lease and maintenance of the infrastructure and equipment provided by Belgacom to the Customer and that are necessary for the use of the service;
- b) the repair of service disruptions (up to and including the connection point) in accordance with the procedures and conditions specified in the BROTSOLL offer.

All fees are due as from the day on which the BROTSOLL Line has been made available to the Operator.

The rental and installation fees indicated in section 1.2.1 and 1.2.2 do not include the cabling within the private domain of the Belgacom end-user or of a Third Party, nor the costs related to colocation of Operator's transmission equipment in Belgacom's premises.

This cabling, if necessary, must be ordered prior to the ordering of the BROTSOLL Line.

Protection of BROTSOLL Line is not included in the indicated prices.

1.2.3 Long term Discount

Long term discounts specified in the table below are applicable per end-point outside the aggregated access defined in section 1.3.

Discount (in EURO) per non-aggregated access				
	2year contract	3year contract	4year contract	5year contract
64k-128k	5,34	10,69	16,03	21,38
192k-2048k(E1)	8,70	17,40	26,10	34,80
E3	104,76	209,53	314,29	419,05
STM1	118,80	237,59	356,39	475,19
STM4	127,37	254,74	382,11	509,48
STM16	162,24	324,49	486,73	648,97

If no long term discount is chosen, the BROTSOLL Line will be made available by default for an undefined term. In both cases line must remain in force for a minimum one year duration as of either its installation date if the line is totally new or the date of its administrative change if the line has been migrated from another contract to BROTSOLL.

At the end of the chosen term, the discount applicable at that time remains applicable as long as the concerned line is maintained unless the Customer has in the meantime subscribed to a new long term

commitment for this line. In the latter case, the discount corresponding to the new long term commitment is applied without any new minimum one year duration being applied.

1.3 **Aggregated Access on fiber**

The customer can choose for an aggregated access for all his BROTSOLL Lines terminated at the same end-point being an external OLO site.

1.3.1 **Installation fee**

- For the creation of a new aggregated access, installation fee as stated in section 1.2.1 will be applicable.
- For each existing BROTSOLL Line to be migrated in the aggregated access at its creation, an administrative cost (125€) will be applicable.
- For each existing BROTSOLL Line to be migrated in an existing aggregated access, 50% of the installation fee stated in section 1.2.1 will be applicable.

1.3.2 **Rental fee**

The customer shall pay a rental fee (*all values in EUR/month*) for the Aggregated access, as indicated in the table below:

Equipment	1year- contract	2year- contract	3year- contract	4year- contract	5year- contract
Multiple E1 on fiber (up to 16)	756,28	651,55	546,83	442,11	337,39
STM-1 or E4	940,93	822,13	703,33	584,54	465,74
STM-4	1.053,39	926,02	798,65	671,28	543,91
STM-16	1.510,91	1.348,67	1.186,42	1.024,18	861,94
Supplement per SYRAR or DNT connected to ADM or Mux	184,13	170,29	156,45	142,61	128,77

He will also pay the rental fee as stated in section 1.2.2 for each line in the aggregated access following the rules in the table below:

	Without Aggregated acces	With Aggregated acces at one end-point	With Aggregated access at both end-points
BROTSoLL line between two external sites	BROTSoLL External-external	BROTSoLL BGC-External	BROTSoLL BGC-BGC
BROTSoLL line between BGC site and external site	BROTSoLL BGC-External	BROTSoLL BGC-BGC	-
BROTSoLL line between two BGC sites	BROTSoLL BGC-BGC	-	-

All fees are due as from the day on which the BROTSOLL aggregated access has been made available to the Operator.

1.3.3 Long term Discount

Long term discounts as specified in section 1.3.2 are applicable for Aggregated access.

If no long term discount is chosen, the Aggregated access will be made available by default for an undefined term. In both cases line must remain in force for a minimum one year duration as of its installation date.

At the end of the chosen term, the discount applicable at that time remains applicable as long as the concerned Aggregated Access is maintained unless the Customer has in the meantime subscribed to a new long term commitment for this Aggregated Access. In the latter case, the discount corresponding to the new long term commitment is applied without any new minimum one year duration being applied.

The terms applied to the existing BROTSOLL Lines added in the aggregation remain valid and will continue to run.

1.4 BROTSoLL Ethernet

1.4.1 Installation fee

Installation fee of 2450 EUR will be billed per external end-point.

1.4.2 Rental fee

The monthly rental fee for a BROTSOLL Ethernet Line is indicated in the following tables (*all values in EUR/month*). Rental fees for each bit rate depend on the site where the end-point is located : Belgacom site (Belgacom building) or external site (OLO POP or end-user)

1.4.2.1 Between two external sites (BROTSoLL Ethernet Customer-sited)

	0-5 km	5-20 km	20-50 km	>50 km

Ethernet	650	1125	1800	2350
Fast Ethernet	1375	2060	3900	4385
Gigabit Ethernet	2650	3350	5950	6700

1.4.2.2 Between Belgacom site and external side (BROSToLL Ethernet BGC-sited)

	0-5 km	5-20 km	20-50 km	>50 km
Ethernet	525	900	1550	1850
Fast Ethernet	1075	1600	3050	3500
Gigabit Ethernet	2175	2750	4850	5450

1.4.2.3 Between two Belgacom sites (BROTSoLL Ethernet Dual BGC-sited)

	0-5 km	5-20 km	20-50 km	>50 km
Ethernet	-	-	-	-
Fast Ethernet	490	1050	2135	2450
Gigabit Ethernet	980	1790	3395	3815

1.4.3 Long term Discount

Long term discounts specified in the table below are applicable per BROTSoLL Ethernet line Customer-sited or BGC-sited:

1 year	0%
2 years	-9%
3 years	-12%
4 years	-15%
5 years	-17%

1.5 Termination

1.5.1 Termination before implementation

Until the line is made available, the Customer may terminate the contract immediately by a registered letter. If Belgacom has already carried out work for the line activation at the time of the contract termination, Belgacom will nevertheless bill the Customer for the full cost of the implementation. If Belgacom has not carried out such work, the Customer will be billed EUR 125.00 for administrative fees.

The same rules will be applicable in case of cancellation of request for transfer, change or capacity decrease before it is implemented.

1.5.2 Termination of line in service

Once the line has been made available, the parties may terminate the contract at any time, subject to a minimum one calendar-month notice by registered letter sent via the mail.

In case of early termination of an order, full compensation shall be payable to Belgacom:

- if the order (standard or fixed term contract) is terminated during the first year, 100% of the amounts payable by the Customer at standard rates for the order that has been terminated, starting from the termination date until the first anniversary of the activation date of the concerned order.
- moreover, if the order (fixed term contract) is terminated, reimbursement of any undue received discounts will be billed following a recalculation of the prices based on the actual term for which the order was provided.

1.5.3 Return of equipment

In the event of a contract termination, the Customer shall return the equipment belonging to Belgacom as soon as requested. The Customer shall authorize Belgacom to enter his premises during working hours to recover equipment, either in his own presence or that of one of his delegates. If the equipment removal takes place under normal conditions, Belgacom shall not bear the costs of restoring the premises to their original state.

If the Customer has not returned the equipment within fifteen working days of the day on which a registered letter was sent to him, he will be charged a penalty equal to 10% of the subscription charge, without prejudice to any legal action Belgacom that may take

1.6 Change/Move

1.6.1 One-time costs

The Customer can request a change to his line (i.e., a change of technical characteristics or a capacity increase/decrease) or the move of his line (i.e., the transfer of one connection point of his line without changing the technical characteristics or capacity). In this case, the contract that was originally concluded remains valid. The Customer is nevertheless required to pay the cost of the work carried out as stated below:

- 50% of the installation fee stated in section 1.2.1 in case of capacity increase (upgrade)
- 100% of the installation fee stated in section 1.2.1 in case of capacity decrease (downgrade)
- 40% of the installation fee stated in section 1.2.1 in case of move of one end-point

Any increase or decrease in the subscription charge resulting from a change requested by the Customer or a transfer shall take effect on the date this change or transfer has been carried out.

1.6.2 Capacity decrease (downgrade)

Any request submitted by the Customer for a capacity decrease of his line will be considered as a termination request by the Customer and as the entering into a new contract of at least one year for this lower-capacity line ordered. The terms and conditions foreseens in BROTSoLL and its Annexes apply to this new contract. Unless the new contract specifies a different duration, the contract for the new line is entered into for the same duration as the original line.

In addition to the costs covering the work carried out, the Customer shall owe the indemnity mentioned in section 1.4.2 if his request for a capacity decrease is submitted during the initial one-year term.

1.6.3 Capacity increase (upgrade)

If a capacity increase for the line is requested, the original line and the higher-capacity line will operate parallel to each other in the initial phase, in order to enable the Customer to migrate his applications.

If the Customer has not requested the cancellation of the original line within a period of ten business days of the activation of the higher-capacity line, the Customer will still be billed for his original line and will be billed for the higher-capacity line starting on the date it is activated. A reminder will be sent to the Customer within one calendar month following this period of ten working days.

If the Customer has not requested the cancellation of the original line within two calendar months of the activation date of the higher-capacity line, Belgacom will no longer consider the original request for a capacity as a request for a line change, but as an order for a new separate line, for which a new contract of at least one year will be entered into, and which will take effect on the activation date. The terms and conditions foreseens in BROTSoLL and its Annexes apply to this new contract. In this case, the Customer will owe Belgacom for any benefits it unduly obtained at the time of the activation of the higher-capacity line. Unless the new contract specifies a different duration, the contract for the new line is entered into for the same duration as the original line.

Belgacom does not guarantee uninterrupted service during the transfer, change or capacity decrease of the line.

1.7 Migration

Commercial national digital Leased Lines and ONS lines can migrate towards BROTSoLL equivalent products as far as the lines fulfil the conditions of BROTSoLL .

The term “migration” as used in the present section does not cover any changes of technical characteristics of the line (e.g. change of bit rate) or any move of one end-point (e.g. transfer of one end-point from a POP to a Colocation)

1.7.1 One-time costs

Administrative cost (125€) will be billed in case of administrative migration (modification of product – no technical intervention)

1.7.2 Rental fee

The rental fee for the BROTSoLL Line as described in section 1.2.2 and 1.4.2 will be billed as from the date of the migration.

1.7.3 Long term Discount

In principle, when a commercial national digital Leased Line or ONS line is migrated towards BROTSOLL product, the commercial national digital leased lines or ONS line is considered as terminated by the customer with all the contractual consequences foreseen in the initial agreement and the BROTSOLL Line is considered as a new line. If no long term discount is chosen, the BROTSOLL Line will be made available by default for an undefined term. In both cases line must remain in force for a minimum one year duration as of its administrative change. This principle also apply to the national digital leased lines or ONS line that were ordered after 08/04/2009 (date of adoption of the BROTSOLL Ethernet prices decision) even if they are migrated during the four months period indicated below.

Notwithstanding the principles indicated above, the following cumulative rules apply to the migration requests taking place between 15/09/2008 till 08/08/2009 (i.e. four months after the publication of the BROTSOLL Ethernet prices decision made on 08/08/09)

1. no penalty fee will be applicable (i) if due to said migration, the volume of Customer'spark of commercial national digital leased lines or ONS lines decreases and/or (ii) for the early termination of the concerned commercial national leased line or ONS line having been migrated to BROTSOLL .
2. the long term commitment initially taken by the Customer for the commercial national leased lines or the ONS lines and the minimum one year duration as of the initial installation date remain in force like if the line hadn't change of contract. If a commercial national digital leased line or ONS line included in a global contract is migrated to BROTSOLL, the date of the initial installation is considered as start point of the one year period and the effective date of the global contract is considered as start point of the long term commitment. The BROTSOLL long term discount corresponding to the initial commitment will be applied.
3. If the BROTSOLL line is terminated before the minimum one year duration, the remaining months are billed at standard BROTSOLL prices (without any discount) until the first anniversary of the installation date. Furthermore if the long term commitment is not observed, Belgacom reserves the right to regularize the discounts that were granted taking into account the effective line duration. This regularization will be applied according to the discount granted in the frame of each contract (commercial national digital leased lines/ONS lines and BROTSOLL) for their respective validity period.

Long term discounts such as described in section 1.2.3 are applicable for each specific migrated commercial national digital lines and the long term discounts such as described in section 1.4.3 are applicable for each specific migrated ONS line. Those discounts can be obtained by requesting a modification of the term of the concerned line via the order online form available on the personal page and by concluding a BROTSOLL contract.

1.8 Rush Order

Rush order is allowed for all BROTSOLL orders at the following conditions:

For BROTSOLL lines up to and including 2M: rush order is a paying option

- <=128k : 1000€
- >128k and <=2M : 1500€

For BROTSOLL lines above 2M and BROTSOLL Ethernet lines: rush order is for free but there is no guarantee that the delivery will be faster (it's best effort)

2. Billing

2.1. Preliminary

Parties are defined in the present document as Belgacom a telecommunication Operator in Belgium and Beneficiary, an undertaking authorized to practice the activities covered by this agreement under the Belgian regulatory framework.

The Belgacom billing process is based on a number of steps in which the two Parties have specific responsibilities. In order to implement this process, both Parties need to put in place (a) system(s) that will be used for the purposes of accounting and billing.

For each BROTSOLL product, Belgacom will invoice Beneficiary accordingly

Belgacom shall record, store and process the Billing Data in accordance with Section 2 of this Document.

The "Billing Data" is the data that is necessary to ascertain the charges payable by Beneficiary under the Agreement. The Billing Data is recorded via the Billing System as described in Section 2.2 of this Document.

All information related to the Billing procedures between Belgacom and Beneficiary is covered by the obligation of confidentiality set out in the Agreement. Specifically, such information will be kept strictly confidential by the Parties and will only be used for the purposes of accounting, and invoicing between the Parties and will only be disclosed between the Parties, or as legally required or in the framework of formal dispute procedures. Belgacom will be under no obligation to provide to Beneficiary direct access to its Billing system nor to any other system or facility generating the Billing Data.

Belgacom reserves the right to modify the layout and the presentation of the invoice to the Beneficiary.

2.2. Recording and storage of billing data

For each service chargeable under the Agreement, Belgacom shall record via its Billing System at least the following Billing Data:

- Product/service ID;
- Type of request
- Subscription date;
- End of month of Subscription date;
- Customer ID;
- Account ID;

The general list of billing data indicated above is not exhaustive. Pricing is set in the Section 1 of this Annex.

2.3. Confirmation of charging principles

All charges payable under this Agreement shall be calculated in accordance with the rules set out in the relevant provisions of this Agreement and its Annexes.

For internal purpose, Belgacom will use 6 decimals in Euro. The use of decimals is

set as follows:

- Per line items up to 4 decimals can be used in Euro.
- The revenues, VAT and the totals use decimals in Euro.

All the non-recurring charges will be mentioned in the Invoice of the Billing Period covering the Bringing Into Service Date.

The recurring charges for the product fees will be mentioned in the Invoice of the Billing Period which the Bringing In Service Date encompasses. The Charges will be calculated on the proportion of the Billing Period in which the product and service fee were operational

Beneficiary amount of charges will be divided in the groups of one-time fees and recurring fees for the services described in the pricelist of this offer (Section 1 of this Annex)

2.4. Invoices

For each Billing Period, Belgacom shall provide to Beneficiary the Invoice described hereafter. The Invoice will be established in accordance with the following rules:

- Invoice Details: the Invoice will list all the services by product that are provided by Belgacom to the Beneficiary.
- The above-mentioned Invoice will be transmitted via ordinary mail to the representatives or departments of Beneficiary as listed in Appendix A Contact persons.

Any invoice or credit note transmitted by Belgacom will contain the following information, in addition to any legally required mentions and information:

- relevant Billing Period;
- total net amount in Euro;
- due VAT amount;
- total amount due in Euro (including VAT);
- Due Date.

Belgacom shall use its best endeavours to issue invoices as of the start of the applicable Billing Period. Though Belgacom cannot ensure that the invoicing for the products and services provided will be performed within specific delays. Neither party may construe any late billing by the other party as a renunciation to its right to payment of the said bills.

Notwithstanding the foregoing, if an adjustment is required following a change in the referred Price List, a pending Dispute (for which the appropriate Dispute resolution mechanisms have been timely activated in accordance with this Agreement) or the outcome of commercial negotiations having a retroactive effect, the amount of such adjustment shall be established and Belgacom shall issue an invoice or a credit note as the case may be, within 30 days from the date of the relevant adjustment.

All changes to amounts invoiced in accordance with this Section 4 will be effected through credit notes or additional invoices.

2.5. Payment

All charges due by Beneficiary to Belgacom under the Agreement shall be paid within 30 Calendar Days after issuance of the invoice (the "Due Date").

If Beneficiary has sent to Belgacom a Notice of Dispute related to an amount invoiced by Belgacom and if such Dispute has not been resolved by the Due Date the disputed amount may be withheld until the dispute is resolved provided that the remaining balance is payable on the Due Date.

Credit notes will be set off against any payments due of the next invoice and are refundable when there are no outstanding invoices.

If payment is not received by Belgacom on or before the Due Date, Belgacom will be entitled to an interest calculated on the basis of the legal interest rate + 2 percent points on the unpaid balance for late payment interests, administrative and recovery costs, ~~but For disputed amounts, this interest~~ is only due if the dispute has been resolved in favour of Belgacom. ~~This interest shall accrue from the Due Date until the date of payment in full of the amount to be paid. Such interest shall accrue day by day and shall not be compounded. In the event that a Dispute resolution procedure has been initiated by Belgacom as provided by the Agreement (including Section 6 of this Document), this interest shall be limited to the legal interest rate.~~

Value Added Tax as well as any other applicable taxes, if any, shall be added to all or any part of the charges due under this Agreement and shall be paid by the Beneficiary responsible for making such payment.

Any payments under this Agreement will be made in Euro and will be made by bank transfer on the bank accounts mentioned in the Invoice. Payment costs are born by the Beneficiary. Costs of credit notes are born by Belgacom.

2.6. Disputes

The Parties shall use their reasonable endeavours to resolve, pursuant to this Section 6 disputes related to the calculation and settlement of the charges invoiced or to be invoiced pursuant to this Document. Notwithstanding the foregoing, either Party will be allowed to trigger at any time the dispute resolution procedure provided under the main body of the Agreement provided that such Party reasonably believes that the Dispute at stake involves aspects of the Parties' rights and obligations broader than the mere calculation and settlement of charges pursuant to this Document. The fact that a Dispute involves aspects broader than the mere calculation and settlement of charges pursuant to this Document will not release the Disputing Party from its obligation to pay any undisputed amount pursuant to Section 2.5.2.

Any Dispute under this Section 2.6 will be triggered by a Notice of Dispute sent by registered letter by the Beneficiary to Belgacom before the Due Date or by registered mail to the mailbox cbu.billing@belgacom.be. Such Notice of Dispute will indicate the disputed invoice, the disputed line reference, the disputed amounts, as well as a summary of the grounds for the Dispute and the position of the Disputing Party. Any amount invoiced under the Agreement will be deemed accepted unless a Notice of Dispute has been sent in accordance with above.

Upon receipt of the Notice of Dispute, the Parties shall exchange by ordinary mail any information necessary or useful for solving the Dispute.

Within 15 Working Days from the date of the Notice of Dispute, Belgacom will provide, by registered mail, an answer ("Notice of Reply") to the Beneficiary. If Belgacom does not accept some or all the arguments of the Beneficiary, the Notice of Reply will contain a justified reply to the arguments of the Beneficiary. If Belgacom accepts all or some arguments of the Beneficiary, Belgacom will, together with the Notice of Reply, issue a credit note for the relevant amount.

If, within 15 Working Days from the receipt of the Notice of Reply, the Beneficiary confirms its position in writing by registered letter, the Parties will escalate the Dispute within their respective organization as provided under Section 2.6.6. If the Beneficiary fails to confirm its position within 15 Working Days, from the date of the Notice of Reply, any outstanding amounts will be paid promptly and without delay and the Dispute will be deemed settled.

If the Parties have been unable to settle the Dispute as provided under the foregoing provisions, they will refer the matter to Implementation Committee, which, if deemed necessary by either Party, will be organized for this specific purpose. If after such meeting, the Dispute remains, the Parties will follow such additional steps in the escalation procedure as provided in the main body of the Agreement, or, if requested by either Party, the Dispute will be submitted to a certified accountant to be either jointly appointed by the Parties, or, failing agreement between the Parties in this respect, to be appointed by "Belgisch Instituut voor Bedrijfsrevisoren"/"Institut Belge des Réviseurs d'Entreprise". This certified accountant will investigate and determine a solution for the Dispute, acting as an expert and not as an arbitrator. Unless there is evidence of a manifest error, decision of the certified accountant will be final in respect of those elements covered by the Dispute referred to him/her and will be binding on the Parties. The Parties will co-operate with this investigation. The costs of the certified accountant will be borne as determined by him/her in proportion to the outcome of the Dispute. Prior to undertaking his/her mission, the certified accountant will provide the Parties with an estimate of the relevant fees and costs. Upon final settlement of the Dispute, any necessary credit note will be issued and any outstanding amount will be paid promptly and without delay.

Belgacom
Reference Offer
for Bitstream Access

BROBA II ADSL
(covering the technologies ADSL,
Reach Extended ADSL2
and ADSL2+)

Main Body

This document starts to produce effects as of XX/XX/2010 and until a subsequent Reference Offer is validly published - As from XX/XX/2010 interested Beneficiaries are in a position to make a request for the services covered by the present document.

This document is in accordance with BIPT's decision.

With a view to the signature of the contract, the BROBA can be negotiated by the parties and does not substitute for the parties' will.

Except otherwise agreed by the parties, the contract shall be adapted if the BROBA is modified. This adaptation shall be in accordance with this BROBA's modification.

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1. Glossary

- **Access Line:** an Access Line is an interface between a Belgacom ATM switch located in an ATM Access Point and the Beneficiary Equipment. From patch line + data link + transmission to the Beneficiary
- **ATM Access Point:** an ATM Access Point provides access to the Belgacom ATM network through NNI connection with a Belgacom ATM switch.
- **Beneficiary Equipment:** Beneficiary equipment or any other equipment.
- **DSLAM:** Digital Subscriber Line Access Multiplexer. DSLAMs are located in Belgacom Local Exchanges and they are owned and managed by Belgacom.
- **GE_NT aggregator:** GE_NT Aggregator is an ATM VC cross-connect, equipped with ATM LTs at access side and a Gigabit Ethernet NT card and more ATM LTs at network side.
- **LEX:** Belgacom Local Exchange
- **Network Termination Point (NTP):** The termination point of a loop at the User premises. The Network Termination Point is a part of the Belgacom network.
- **OAL:** OLO (Ethernet) Access Line. An Access Line is an interface between the Customer Equipment and a Belgacom Service Router located in the Service PoP of the Service Area.
- **OLO:** Other Licensed Operator.
- **P-bit:** priority bit.
- **Service PoP:** a Service PoP provides access to the Belgacom Ethernet network through NNI connection with a Belgacom Service Router.
- **VLAN:** Virtual Local Area Network. ~~In this document Unless specified otherwise, the word "VLAN" equally refers to a shared or to a dedicated VLAN, aggregating in one VLAN per service quality and per LEX the traffic of all user lines of a Beneficiary.~~
- Except in the Main Body where each concerned technology is clearly specified, in all other BROBA documents the word "ADSL" equally refers to ADSL, Reach Extended ADSL2, and ADSL2+, unless specified otherwise.
- Unless specified otherwise, the words "BROBA", or "BROBA II" equally refer to BROBA over ATM and to BROBA over Ethernet.

2. Scope

1. This document entails the conditions related to the provision by Belgacom to the Beneficiary, of the Broba II ADSL, Reach Extended ADSL2 or ADSL2+ service, which will enable the Beneficiary to define its own ADSL, Reach Extended ADSL2 or ADSL2+ products and to market, distribute and sell under its name and on its behalf its own ADSL, Reach Extended ADSL2 or ADSL2+ products towards Users, using Belgacom installed and existing Network infrastructure, pursuant to the technical limitation of this existing infrastructure for offering the service.
2. The attention is drawn to the fact that taking into account that the present offer by definition implies the use of Belgacom DSLAM, this offer is related to the provision of ADSL, Reach Extended ADSL2, or ADSL2+ services only. In the future, this offer could be enlarged to other DSL technologies, after approval by BIPT as soon as these technologies are tested and at least 3 months before they are commercialized (retail and/or wholesale) by Belgacom.
3. This offer and its tariffs are only applicable for case where DSLAMs are located in Belgacom premises (LEX or LDC or KVD when provided by Belgacom in the

framework of its own retail or wholesale offer). In particular, for ADSL2+, this offer will only be applicable for cases where ADSL2+ enabled DSLAMs are installed in Belgacom premises (LEX or LDC or KVD when provided by Belgacom in the framework of its own retail or wholesale offer). The list of ADSL2+ enabled DSLAMs will be available on the Operator Personal Page of the CWS secured website.

4. Due to incompatibilities between ADSL2+ and other technologies installed on the Belgacom loops, the loops served by some KVD's are excluded from the present offer. The list of the concerned KVD's is available on the Operator Personal Page of the CWS secured website.
5. This document contains the technical, operational and financial conditions, as well as a possible method of connection and the applicable terms and conditions related to such service.
6. The provision of the hereunder-described service supposes the following list of prerequisites that will need to be met at all times and in all circumstances:
 - Connection between the network of the Beneficiary and the Belgacom network (hereafter the "Network") is established pursuant to the principles set out in this document;
 - A line from the User to the LEX + LDC'S + Other relevant points where Belgacom installed DSLAM's must be available
 - If Small Networks Adaptations (SNA) works are required to deliver the service, they are allowed following the SNA rules used by Belgacom in its provisioning process;

If an impossibility to provision the service cannot be solved by SNA works, the order will be rejected;

3. Usage of a unique reference for migrations of without PSTN or ISDN Belgacom services

7. In scope of migration requests that a Beneficiary sends to take over a BRUO/BROBA service "without PSTN or ISDN Belgacom services" from another Beneficiary or a Belgacom ADSL without voice service, there will be an issue in the identification of the copper pair on addresses with for example more than one pair in service.
8. For a migration request from a BROBA/BRUO without PSTN or ISDN Belgacom service or from a Belgacom ADSL without voice service, the Beneficiary will include the circuit ID of the service communicated to the prior Beneficiary as identification of the service to be migrated.
9. The circuit ID that has been communicated by Belgacom at the provisioning of a new BRUO/BROBA service or of a new Belgacom ADSL without voice service is a unique reference that will identify both the service and the copper pair.
10. The service Beneficiary, communicates for all services without PSTN or ISDN Belgacom services the circuit ID, provided by Belgacom, to its User. This should be done by including this reference on the bills and contracts that is sent to the User for the service based on BRUO/BROBA. By that, in case of migration, the circuit ID can be exchanged between a Beneficiary and the User, just like is done today with the dial number. As a consequence the Circuit ID can be included systematically in the migration orders and this will avoid further problems in this case.
11. The Belgacom ADSL without voice service is identified by a circuit-id which can be found at the invoice as the identifier of the paragraph 'Internetverbinding/Connection Internet'.

4. Description of the Broba II ADSL, Reach Extended ADSL2 and ADSL2+ services in scope of the present offer

4.1 General

12. Beneficiaries shall be able to benefit from any changes in the Belgacom network infrastructure similar to what Belgacom is offering to its own retail services, and Beneficiaries shall be notified duly in advance of any changes in its "existing" infrastructure: at least 12 months in advance for any changes which may have a significant impact on the service offering and at least 6 months in advance for any minor changes. The BIPT will be informed in any case. Concerning the periods of notice, the BIPT can allow exceptions.
13. This offer is related to the provision of ADSL, Reach Extended ADSL2, or ADSL2+ services only but may evolve according to other DSL technologies planned by Belgacom and offered as Bitstream Access Services at least 3 months before commercialisation by Belgacom.
14. The present offer is offered with ATM transport (BROBA over ATM) and with Ethernet transport (BROBA over Ethernet). As from 01/01/2013, only Ethernet transport will remain available.
15. In **BROBA over ATM**, the Broba II ADSL, Reach Extended ADSL2, or ADSL2+ will allow the Beneficiary to connect on Belgacom network at ATM Access Points and to receive any ATM cells from the User using ADSL, Reach Extended ADSL2, or ADSL2+ technology. The transport end-to-end between the User and the Beneficiary is ATM.
16. In **BROBA over Ethernet**, the Broba II ADSL, Reach Extended ADSL2, or ADSL2+ will allow the Beneficiary to connect on Belgacom network at Belgacom Service PoPs and to receive any Ethernet frames from the User using ADSL, Reach Extended ADSL2, or ADSL2+ technology. The transport between the User and the Beneficiary is a combination of ATM and Ethernet.
17. The resources to satisfy new demands for additional ATM capacity might no longer be available. Belgacom shall in no event be obliged to engage new investments in order to satisfy additional ATM demands from Beneficiaries of the present offer.
18. In case of Belgacom is not able to satisfy new demands for additional ATM capacity, it is entitled to look for alternatives. In particular Belgacom will in such case be entitled to use Ethernet as technical means to ensure the BROBA transport. This without prejudice to the continuation of existing ATM transport used by the Beneficiary.
19. For any subsequent change in the handling and hand-over of the traffic from ATM to Ethernet Beneficiary will be notified prior to this change. The effective change will be done after the Beneficiary has been notified and after the Beneficiary was in the possibility to order its Ethernet connectivity for a specific location.
20. Belgacom's vendor of DSLAM for ADSL products is Alcatel. The Belgacom ADSL network is currently based on Alcatel A1000 and A7300 DSLAM's, version 4.x and 5.

21. The Bitstream access service is offered on basis of the equipment delivered by Belgacom's supplier at the moment of the equipment's bringing into service in a given site.
22. This implies that several versions can co-exist at the same time, for the use of Belgacom as well as for the Beneficiaries of the service.
23. When new DSLAM versions are planned by the supplier, Belgacom will inform the BIPT with a prior notice of 6 months or as soon as Belgacom is informed by its supplier. Belgacom will offer this equipment and equipment software to the Beneficiaries of the service. On the DSLAMs, the functions not related to ATM are not applicable within the BROBA framework.
- If Belgacom makes use of a "last buy option" proposed by its supplier at the moment of a version change, Belgacom will immediately inform the Beneficiaries and the BIPT.
24. Each new equipment or each new equipment software used by Belgacom for its retail or wholesale services will be made available for the Bitstream Access Services.
25. In case of software evolutions, Belgacom shall ensure that the software will be compatible with the previous one on the same configuration and will inform the Beneficiary, about the changes and their consequences. In case of Belgacom own pieces of software that would make the solution proprietary to the Belgacom environment, Belgacom shall ensure the compatibility of subsequent versions with the old ones
26. If Belgacom has to proceed to an upgrade or replacement of equipment or software equipment, this will be done under one or several of the following conditions:
- The new equipment software is compatible with the previous one and allows the same configurations;
 - The new equipment or equipment software is compatible with installed CPEs and modems;
 - The old equipment or equipment software is, for any reason, no more available from the supplier;
 - The concerned equipment or equipment software is written-off by all parties
 - Investments to be realized by all parties are reasonable and justified;

Belgacom can deviate from these conditions if justified to and approved by BIPT.

Belgacom will inform the concerned parties before any upgrade or replacement: six working days for an upgrade or a maintenance patch, one working day for a correcting maintenance patch.

Belgacom will give an estimation and a description of the eventual potential alteration of the service.

27. Belgacom will ensure the management of the DSLAM and the proper configuration of it. This management and all relevant possibilities-functionalities (also the database aspect) will be described to the Beneficiary on simple demand.
28. The offering of the BROBA over ATM service covers:
- The provision by Belgacom of one or several Access Lines between the Beneficiary Equipment and the Belgacom ATM Access Point;

- The provision by Belgacom of bandwidth between the DSLAMs located in the Local Exchanges and LDC's or other relevant points where Belgacom installed DSLAM's in which the Beneficiary wants to connect Users and the Belgacom ATM Access Points to which the Beneficiary Equipments are connected;
- The provision and the configuration by Belgacom of ATM Transport (use of CBR, VBR or UBR+ service as defined further in this offer) between the DSLAMs and the Beneficiary Equipment.
- The provision by Belgacom of ADSL, Reach Extended ADSL2, or ADSL2+ lines to the User.

29. The offering of the BROBA over Ethernet service covers:

- The provision by Belgacom of one or several OLO Access Lines between the Beneficiary Equipments and the Belgacom Service PoPs;
- The provision by Belgacom of bandwidth between the GE_NT aggregators located in the LEX in which the Beneficiary wants to connect Users and the Belgacom Service PoPs to which the Beneficiary Equipments are connected; These VLANs can be either shared between several users of a Beneficiary or dedicated per separate user.
- The provision and the configuration by Belgacom of Ethernet Transport between the GE_NT aggregators and the Customer Equipments;
- The provision and the configuration by Belgacom of ATM Transport (use of CBR, VBR or UBR+ service as defined further in this offer) between the DSLAMs and the GE_NT aggregators.
- The provision by Belgacom of ADSL, Reach Extended ADSL2, or ADSL2+ lines to the Users.

30. In any event the service shall only be provided on the condition that the provisioning is supported by fully implemented processes and systems and can be treated in an automated way, unless Belgacom chooses – e.g. for reasons of efficiency - to do otherwise for reasons of efficiency.

4.2 Transport over ATM backbone

4.2.1 Access Line between Belgacom ATM Access Point and the Beneficiary Equipment

31. An Access Line will be established between the Beneficiary Equipment and the Belgacom ATM switch, located in the Belgacom ATM Access Point, to which the Beneficiary equipment is connected.
32. The list of Belgacom Access Areas is available in Appendix B.
33. The connection between the Belgacom ATM switch and the Beneficiary Equipment is subject to successful testing procedure, as set forth in Annex 2 (Section 1: ATM tests for Belgacom Data Connectivity).
34. The Beneficiary is allowed to do overbooking on the access line. Each Beneficiary is responsible for its dimensioning and the risks run by this one. The Beneficiary is allowed to do overbooking on the access line and Belgacom cannot refuse to provision a new or an upgrade of a VP/VC. However, when the sum of the guaranteed bandwidths of all VP's on an access line exceeds the SCR of that access line capacity, any trouble ticket opened at Belgacom by the Beneficiary which leads to the conclusion that the request for repair has as origin an excessive overbooking will be invoiced to the Beneficiary at the tariff of Wrongful Repair Request and the timer conditions as set out in the SLA and Improved SLA will not be of application to this trouble ticket.
35. The Access Line is made of:
 - A Patch Line as described in Section 4.2.1.1;
 - A Data Link as described in Section 4.2.1.2;
36. For information on the Technical Specifications of the Access Line, reference is made to Annex 2 (Section 2: Specifications of the Access Line).

4.2.1.1 Patch Line

37. The Patch Line is the physical element which consists of a coax line between the Belgacom ATM switch and the Belgacom DDF for transmission capacities up to 34 Mbps. For rates exceeding this threshold, the Patch Line is the physical part which consists of the fibre link (including necessary transmission equipment) between the Belgacom ATM switch and the ODF.
38. The Patch Line is installed and maintained by Belgacom. The Patch Line has to be paid by the Beneficiary in both Customer-Sited and Belgacom-Sited Data Links Solutions.
39. The fees to be paid by the Beneficiary and corresponding to this Patch Line are specified in Annex 6 of this document.

4.2.1.2 Data Link

40. The Data Link is the physical element between Belgacom Distribution Frame and the Beneficiary equipment.
41. By default, Data Links consist of a Customer-Sited Data Link Service as described in Appendix A.

42. Depending on Beneficiary's request, as explained in Appendix A, Data Links can be realized by means of Belgacom-Sited Data Link Service as described in the same Appendix.

4.2.2 Bandwidth between the Local Exchanges and the Belgacom ATM Access Point to which the Beneficiary equipment is connected

43. The Beneficiary will order bandwidth and more precisely Virtual Paths (VPs) between each DSLAM¹ located in the Lex + LDC's + other relevant points where Belgacom installed DSLAM's in which the Beneficiary wants to connect Users and the Belgacom Access Point to which the Beneficiary is connected.
44. The minimum bandwidth that has to be ordered by the Beneficiary between each DSLAM² in a LEX (or LDC or KVD) when provided by Belgacom in the framework of its own retail or wholesale offer and a Belgacom ATM Access Point is 256kbps PCR³. Bandwidth is available on request of the Beneficiary with a granularity of 256 kbps. The maximum bandwidth that can be ordered by VP by Beneficiary is explained in the BROBA Annex 6 "Pricing and Billing", in section 1.3.1, paragraph 34.
45. The Belgacom ATM Access Point(s) to which the Beneficiary Equipment is connected by means of an Access Line has (have) to be located in the same Access Area as the DSLAM(s) in the Lex(s) (or LDC(s) or KVD(s)) in which he wants to connect Users.
46. The list of Access Areas is available in Appendix B. The list of DSLAM's is available on the Operator Personal Page of the CWS secured website.

4.2.3 ATM Transport between the DSLAM and the Beneficiary Equipment

47. Virtual Paths (VPs) will be configured by Belgacom, on behalf of the Beneficiary, to transport the ADSL and/or Reach Extended ADSL2 and/or the ADSL2+⁴ traffic of the Beneficiary's Users from the DSLAMs on which Beneficiary's Users are connected up to the Beneficiary's Equipment and reversely.
48. In each Lex + LDC's + other relevant points where Belgacom installed DSLAM's, Belgacom will create, for the Beneficiary, maximum 12 VP per DSLAM to which the Beneficiary's Users are connected to in order to transport the ADSL and/or Reach Extended ADSL2 and/or the ADSL2+⁵ traffic of these Users from the DSLAM they depend up to the Beneficiary Equipment and reversely.
49. These VP's can be of the following QoS:
- CBR;
 - VBR rt with PCR/SCR ratio between 1 and 8;
 - VBR nrt with PCR/SCR ratio between 1 and 8.
 - UBR+⁶
50. For more information on the CDVT and MBS, reference is made to Annex 2: Technical specifications – section 3 (VP connectivity between Belgacom DSLAM and the Beneficiary)

¹ Only applicable to the DSLAMs listed on the Operator Personal Page of the CWS secured website.

² Only applicable to the DSLAMs listed on the Operator Personal Page of the CWS secured website.

³ Ratio 1 only.

⁴ Only applicable for cases where ADSL2+ enabled DSLAMs are installed in Belgacom premises.

⁵ Only applicable for cases where ADSL2+ enabled DSLAMs are installed in Belgacom premises.

⁶ UBR+ is not specific to Belgacom equipment

4.3 Transport over Ethernet backbone

4.3.1 OLO Access Line between a Belgacom Service PoP and the Beneficiary Equipment

51. The connection between the network of the Beneficiary and the Belgacom network is realized through OLO Access Lines (OAL) between the Beneficiary Equipments and the Belgacom Service Routers, sited in the Belgacom Service PoPs.
52. To use BROBA over Ethernet to connect Beneficiary's users of a Service Area, the Beneficiary must interconnect with Belgacom in at least one Service PoP of this Area. If the Beneficiary wants to be active anywhere in Belgium, he needs at least one interconnection per Area.
53. The list of Belgacom Service PoPs is available in Appendix D.
54. The description of the OLO Access Lines, and in particular the exhaustive list of combinations of bandwidth, protection mode and type (Belgacom-sited or Beneficiary-sited) offered by Belgacom in the scope of this agreement is described in the Appendix C of this document.
55. The Beneficiary is responsible for
- the choice of the Service PoPs on which terminate its OALs,
 - their dimensioning,
 - the choice of their protection modes,
 - and the choice of their types.
56. The Beneficiary shall pay to Belgacom the installation and rental fees of its Access Lines, as set forth in the Annex 6 "Pricing and Billing".
57. For information on the Technical Specifications of the OLO Access Lines, reference is made to BROBA II ADSL - Annex 2A – Technical specifications of BROBA over Ethernet- Section 56: OLO Access Line and to WBA VDSL2 - Annex 2 - Technical specifications – Section 9: OLO Access Line.
58. The connection between the Belgacom Service Router and the Beneficiary Equipment is subject to successful testing procedure, as set forth in WBA VDSL2 - Annex 2 - Technical specifications – Section 9.3: Testing the OAL.
59. The same OLO Access Lines ~~will~~may be used by the Beneficiary for the services WBA VDSL2 and BROBA over Ethernet, for connection between the network of the Beneficiary and the Belgacom network.

4.3.2 Ethernet Transport between the GE NT aggregators and the Beneficiary Equipment

60. BROBA over Ethernet is offering an Ethernet connectivity between the OLO Access Lines and the GE NT aggregators.
61. Four service qualities are offered for the BROBA over Ethernet service, differentiated by the Ethernet p-bit (P):
P=0: best effort.
P=1: low priority.
P=3: medium priority.
P=5: highest priority.

62. There are 5 Service Areas for the whole of Belgium, each of them covering 1 geographical area. Per Service Area there are 2 Service PoPs, located in 2 different buildings. The list of Belgacom Service Areas, their definition and the address of the related Service PoPs is available in Appendix D.

63. Shared and dedicated VLANs

- o Shared VLANs: for the VC's of the BROBA lines that the Beneficiary chooses to transport over Ethernet⁷, the ATM traffic of the Beneficiary's Users is aggregated and transported in 1 VLAN per service quality and per LEX to a Service PoP where an OLO Access Line of the Beneficiary is connected. This Service PoP has to be located in the same Service Area as the LEX himself.

In each LEX where Belgacom installed GE_NT aggregators, Belgacom will create, for the Beneficiary, maximum 4 VLANs - each dedicated to a different service quality - to which the Beneficiary's Users are connected in order to transport their BROBA over Ethernet traffic from the GE_NT aggregators to the Beneficiary's Equipment(s) and reversely.

The same shared VLANs will be used by the Beneficiary for the services WBA VDSL2 and BROBA over Ethernet, for Ethernet connectivity between the OLO Access Lines and the LEX where the Beneficiary has subscribed to both services.

- o Dedicated VLAN's: per Customer's user, each VC is mapped in one dedicated VLAN to a Service PoP where an Access Line of the Customer is connected. This Service PoP has to be located in the same Service Area as the LEX of the Customer's user.

64. VLANs will be configured by Belgacom, on behalf of the Beneficiary, to transport the BROBA over Ethernet traffic of the Beneficiary's Users from the GE_NT aggregators on which Beneficiary Users are connected up to the Beneficiary's Equipment(s) and reversely.

4.3.24.3.3 Bandwidth between the Local Exchanges and the Belgacom Service PoP to which the Beneficiary equipment is connected

4.3.3.1 For shared VLAN's

60-65. The Beneficiary will order bandwidth and more precisely shared VLANs between each LEX in which the Beneficiary wants to connect End Users and where Belgacom installed GE_NT aggregators and the Belgacom Service PoP(s) to which the Beneficiary is connected.

61-66. The bandwidths that can be ordered by the Beneficiary between a LEX and a Belgacom Service PoP are summarized in the following table, in function of the service quality chosen by the Beneficiary for the related VLAN.

<u>Offered VLAN Bandwidth</u>	<u>P=0</u>	<u>P=1</u>	<u>P=3</u>	<u>P=5</u>
<u>50Mbps</u>	<u>yes</u>	<u>yes</u>	<u>yes</u>	<u>yes</u>
<u>100Mbps</u>	<u>yes</u>	<u>yes</u>	<u>yes</u>	<u>yes</u>

⁷ The Beneficiary may choose BROBA line per BROBA line, and VC per VC, the type of transport : ATM or Ethernet. On the same BROBA line, a mix of the two transport type (some VC's configured over ATM, and some over Ethernet) will also be possible.

200Mbps	yes	yes	yes	no
300Mbps	yes	yes	yes	no
500Mbps	yes	yes	no	no
1gigbps	yes	no	no	no

Offered VLAN Bandwidth (Mbps)	P=0	P=1	P=3	P=5
<u>2</u>	Y	Y	Y	Y
<u>4</u>	Y	Y	Y	Y
<u>6</u>	Y	Y	Y	Y
<u>8</u>	Y	Y	Y	Y
<u>10</u>	Y	Y	Y	Y
<u>12</u>	Y	Y	Y	Y
<u>14</u>	Y	Y	Y	Y
<u>16</u>	Y	Y	Y	Y
<u>18</u>	Y	Y	Y	Y
<u>20</u>	Y	Y	Y	Y
<u>30</u>	Y	Y	Y	Y
<u>40</u>	Y	Y	Y	Y
<u>50</u>	Y	Y	Y	Y
<u>60</u>	Y	Y	Y	Y
<u>70</u>	Y	Y	Y	Y
<u>80</u>	Y	Y	Y	Y
<u>90</u>	Y	Y	Y	Y
<u>100</u>	Y	Y	Y	Y
<u>120</u>	Y	Y	Y	N
<u>140</u>	Y	Y	Y	N
<u>160</u>	Y	Y	Y	N
<u>180</u>	Y	Y	Y	N
<u>200</u>	Y	Y	Y	N
<u>220</u>	Y	Y	Y	N
<u>240</u>	Y	Y	Y	N
<u>260</u>	Y	Y	Y	N
<u>280</u>	Y	Y	Y	N
<u>300</u>	Y	Y	Y	N
<u>320</u>	Y	Y	N	N
<u>340</u>	Y	Y	N	N
<u>360</u>	Y	Y	N	N
<u>380</u>	Y	Y	N	N
<u>400</u>	Y	Y	N	N
<u>420</u>	Y	Y	N	N
<u>440</u>	Y	Y	N	N
<u>460</u>	Y	Y	N	N
<u>480</u>	Y	Y	N	N
<u>500</u>	Y	Y	N	N
<u>600</u>	Y	N	N	N
<u>700</u>	Y	N	N	N
<u>800</u>	Y	N	N	N
<u>900</u>	Y	N	N	N
<u>1gig</u>	Y	N	N	N

4.3.3.2 For dedicated VLAN's

67. There is no pre-provisioning of the dedicated VLANs. Each dedicated VLAN is configured by Belgacom at the moment of the implementation of the corresponding VC, following specifications of the dedicated VLAN profile given by the Beneficiary in the VC ordering. The Beneficiary is responsible for the choice and definition of each dedicated VLAN profile.

68. The Beneficiary can obtain up to 10 dedicated VLAN profiles, and may only use its own dedicated VLAN profiles.

69. Each dedicated VLAN profile has following attributes:

- Layer 2 (p-bit) or Layer 3 Qos (precedence, DSCP),
- P-bit,
- Maximum Upstream bandwidth for P-bit/precedence, DSCP,
- Maximum Downstream bandwidth for P-bit/precedence, DSCP.

~~4.3.3 Ethernet Transport between the GE_NT aggregators and the Beneficiary Equipment~~

~~62. BROBA over Ethernet is offering an Ethernet connectivity between the OLO Access Lines and the GE_NT aggregators.~~

~~63. Four service qualities are offered for the BROBA over Ethernet service, differentiated by the Ethernet p-bit (P):~~

~~P=0: best effort.~~

~~P=1: low priority.~~

~~P=3: medium priority.~~

~~P=5: highest priority.~~

4.4 Activation of ADSL, Reach Extended ADSL2, or ADSL2+ on a specific User line

69-70. Subject to the conditions that the Beneficiary has ordered the necessary infrastructure (Access Line and Virtual Path(s) for BROBA over ATM, or OLO Access Line and VLANs for BROBA over Ethernet), the Beneficiary will be able to offer to Users services based on ADSL, Reach Extended ADSL2, or ADSL2+ technology, using Belgacom's installed and existing Network infrastructure, pursuant to the technical limitation of this existing infrastructure for offering ADSL, Reach Extended ADSL2, or ADSL2+ technology.

70-71. Belgacom will deliver Broba II ADSL, Reach Extended ADSL2 or ADSL2+ service to specific Users according to the Beneficiary's orders transmitted to Belgacom. Belgacom is able to configure the individual lines of Users at the DSLAM level on basis of following characteristics:

- Maximum 10 VC per ADSL, Reach Extended ADSL2 or ADSL2+ connection;
- ADSL, Reach Extended ADSL2 or ADSL2+ lines and ATM profiles⁸: see point 73-72.

71-72. The VCs of each BROBA line will be configured by Belgacom, on behalf of the Beneficiary, either with ATM or with Ethernet transport. On the same BROBA line, a mix of two services (some VC's configured over ATM, and some over Ethernet) will also be possible.

72-73. (For so long that the total number of line profiles in the system is below 128), the Beneficiary can obtain 8 own ADSL or Reach Extended ADSL2 or ADSL2+ Line Profiles and 8 own ATM Profiles. Additionally, the Beneficiary can use the profiles defined in a common pool of 20 ADSL, 2 Reach Extended ADSL2, and 2 ADSL2+ Line Profiles and 100 ATM Profiles. To provision a BROBA II line under a specific technology (i.e. : ADSL, Reach Extended ADSL2 or ADSL2+), the Beneficiary may only use its own profiles, or the common profiles, defined for this technology.

- The ADSL or ADSL2+ profiles in the common pool will be added after agreement of all concerned Beneficiaries and Belgacom.
- The Reach Extended ADSL2 profiles in the common pool will be defined for maximum downstream bit rates of 1120 kbps and 512 kbps, other values being maximum upstream bit rate 192, and minimum downstream and upstream bit rates of 32 kbps.
- The 2 ADSL2+ profiles in the common pool will be defined for maximum downstream bit rates of respectively 9.024 kbps and 12.000 kbps, other bit rate values being maximum upstream 512 kbps, minimum downstream 288 kbps and minimum upstream 96 kbps.

73-74. Only for BROBA over ATM: the QoS of a VC on the DSLAM has to be of the same type, or lower, than the VP requested in the ATM network: VBR rt VP (ATM) can content VBR rt VC or lower (DSLAM) and VBR nrt VP (ATM) can only content UBR+ or VBR nrt VC (DSLAM).

74-75. The provision of ADSL, Reach Extended ADSL2 or ADSL2+ on an existing User line requires the installation of an in-line filter or a full rate splitter both at the User designated premises and at the Belgacom Local Exchange concerned to split the traffic between data and voice. At the Belgacom Local Exchange side, this filter is integrated in the DSLAM.

⁸ ATM profiles: only for BROBA over ATM.

75-76. The provision of ADSL, Reach Extended ADSL2 or ADSL2+ on an existing User line also requires the installation of a modem or a modem/router at the User side. The access to the Broba II ADSL, Reach Extended ADSL2 or ADSL2+ Service at the User site will be at the Belgacom Network Termination Point (NTP).

76-77. For the BROBA II ADSL, Reach Extended ADSL2 or ADSL2+ with voice service, an intervention of a Belgacom technician on the User site will be required in the following cases:

- For ADSL or ADSL2+, if the User has an ISDN line and the User site does not have an AETHRA NT1-2ab as Belgacom Network Termination Point;
- In case of new activation, if the User line has an alarm configuration (X25 line)⁹
- In case of new activation, if the User line has a PABX configuration¹⁰

77-78. At the time of installation, this intervention, named Telecom installation¹¹, will relate to the fact that, in these cases, a splitter will be installed by Belgacom between the Belgacom Network and the Network Termination Point at the User site.

78-79. The Beneficiary is responsible to provide Belgacom with the correct information regarding the type of equipment present at the User premises only in case of PABX and/or ISDN and/or alarm configuration (if any).

79-80. For information, the modem or modem/router used by the User must be in conformity with the applicable standardization and its interoperability with the DSLAM must have been demonstrated. Belgacom will participate together with the Beneficiary in the solving of interworking issues.

80-81. The ATU-C handles different standards and supports ADSL, Reach Extended ADSL2 or ADSL2+ modems in conformity with Belgacom's UNI. The technical specifications of the User to Network Interface (UNI) for ADSL, Reach Extended ADSL2 or ADSL2+ equipments to be connected to the Belgacom network can be found on:

- http://www.belgacom.com/group/9/legal_technic/en/network-specifications.html

81-82. However, attention is drawn to the fact that an ATU-R based on the mentioned standards does not guarantee full interoperability with the ATU-C of Alcatel up to service level since interoperability is still under investigation.

82-83. Reach Extended ADSL2 is not supported for ISDN lines.

83-84. For ADSL or ADSL2+, the splitter and modem type are dependent on the type of telephone line (PSTN or ISDN). Consequently, any cancellation or any conversion on the telephone services may possibly affect the Beneficiary ADSL or ADSL2+ based service and requires the installation of new equipment at the User premises, at the Beneficiary expense, for the ADSL or ADSL2+ based service in question.

⁹ A line containing an alarm is fixed for security reasons into the wall or the wall socket. Installation using a micro filter is therefore impossible. A full rate splitter is installed by Belgacom.

¹⁰ The Telecom installation of a BROBA ADSL with voice line consists of the installation of a full rate splitter (conventional splitter), the placement of maximum 20 meters cable after the introduction point and a RJ11 plug on which the User can connect his modem.

¹¹ The Telecom installation consists of the installation of a full rate splitter (conventional splitter), the placement of maximum 20 meters cable after the introduction point and a RJ11 plug on which the User can connect his modem.

84.85. Attention of the Beneficiary is drawn to the fact that, for ADSL over ISDN related technology, the ISDN-low-pass filter standardization is not standardized yet (type 3 within ANNEX E from ITU-T 992.1) and mentioned as subject for further study by the standardization commissions. When applying an ADSL over ISDN low-pass filter at the Beneficiary side, it needs to be taken into consideration that in the Belgacom network, for ISDN, 4B3T line coding is used.

4.5 Small Network Adaptations

85.86. The Introduction Cable (also referred to as drop wire) is defined as the physical part of a End-User line that connects the Distribution Cable to the End-User Network Termination Point.

86.87. In some cases, the pair of fully metallic continuous unequipped copper wires exists from the Belgacom Main Distribution Frame at the Belgacom LEX or LDC up to the Distribution Cable in the street in front of the User premises.

87.88. In case no Introduction Cable is available for the provisioning of a Broba II ADSL, Reach Extended ADSL2 or ADSL2+ without voice, the following solutions, called Small Network Adaptations, will be applicable:

- Realization of a new introduction in the building of the Beneficiaries User
- Renewal of the introduction in the building of the Beneficiaries User
- Splicing additional pairs in the existing introduction splice of the building of the Beneficiaries User
- Moving existing introduction from an existing Distribution Cable to another existing Distribution Cable.

88.89. These solutions will only be available upon specific request of the Beneficiary and providing that the Belgacom standard conditions for access are fulfilled. This requires that a free duct or an open trench is available on the private domain. If a free duct or an open trench is not available on the private domain, Belgacom can be asked to also perform this part of the work on condition that the Beneficiary agrees to pay the non-discriminatory commercial price for that part of the work performed by Belgacom. This price will be determined on a case-by-case basis.

89.90. Belgacom will only perform the Small Network Adaptations if the splicing is done in front of the premises of that specific User. Belgacom will provide an Introduction Cable with a standard length of 20 meters to provide connection between the Distribution cable and the Network Termination Point. In case an introduction with a length more than 20 meters has to be provided, Belgacom will charge the Beneficiary the relevant price for the extra work. On the private domain, duct and trench must be provided by the Beneficiary.

90.91. In case no more free pairs are available in the Distribution Cable or the Feeder Cable, the request for Broba II ADSL, Reach Extended ADSL2 or ADSL2+ without voice will be rejected. The construction or trenching of new distribution cabling, new street cabinets or new feeder cabling is outside the scope of the present offer.

4.6 Network Termination Point

91.92. The Network Termination Point is the first termination point of a loop at the User premises.

92.93. The access to the high bandwidth at the User will be at:

- The Belgacom Network Termination Point (NTP) in case of distributed splitter
- The splitter egress in case of Full Rate Splitter (Also called conventional splitter)

93.94. The provision of ADSL, Reach Extended ADSL2 or ADSL2+ on an existing User line requires the installation of a modem or a modem/router at the User side:

- For single line PSTN service, the Beneficiary will install a distributed splitter on the Belgacom Network Termination Point at User site or a Full rate splitter between the Belgacom Network and the Network Termination Point at User site.
- For ADSL or ADSL2+ and a single line ISDN service with Telecom installation, Belgacom will install a Full Rate splitter between the Belgacom Network and the Network Termination Point at the User site. Belgacom is responsible up to the splitter-splitter included
- For ADSL or ADSL2+ and a single line ISDN service without Telecom installation, the Beneficiary will install a Full Rate splitter between the Belgacom Network and the Network Termination Point at the User site. Belgacom is responsible up to the splitter-splitter excluded
- For line without voice, Belgacom will in some cases install a Network Termination Point.¹²

94.95. The provision of ADSL or Reach Extended ADSL2 on an existing User line requires the installation of a modem or a modem/router at the User side:

- For single line PSTN service, the Beneficiary will install a distributed splitter on the Belgacom Network Termination Point at User site or a Full rate splitter between the Belgacom Network and the Network Termination Point at User site.
- For ADSL and a single line ISDN service with Telecom installation, Belgacom will install a Full Rate splitter between the Belgacom Network and the Network Termination Point at the User site. Belgacom is responsible up to the splitter-splitter included
- For ADSL and a single line ISDN service without Telecom installation, the Beneficiary will install a Full Rate splitter between the Belgacom Network and the Network Termination Point at the User site. Belgacom is responsible up to the splitter-splitter excluded
- For line without voice, Belgacom will install a Network Termination Point in case the information of the Beneficiary or the documentation of Belgacom indicates that the NTP is not present. The process is further detailed in Appendix E: "NTP process for Provide New BROBA II without voice products". This intervention will be called Telecom installation.

95.96. In case of Small Network Adaptation, if a Network Termination Point must be installed, it will be at no extra cost for the Beneficiary, as this cost is included in the SNA fee.

96.97. The NTP can be of the following types:

• PSTN Lines:

- i. TF95
- ii. TF2001
- iii. TF2007

¹² For line without voice, Belgacom will install a Network Termination Point in case the documentation of the Beneficiary or the documentation of Belgacom indicates that the NTP is not present. The process is further detailed in Appendix [EB](#): "NTP process for Provide New BROBA II without voice products".

- ISDN Lines (in case of ADSL):
 - iv. TWIN
 - v. NT1
- Lines without voice:
 - vi. TF2001
 - vii. TF2007

| [97.98.](#) The Network Termination Point is a part of the Belgacom network.

| [98.99.](#) The NTP makes part of the Belgacom public infrastructure. Belgacom is owner of this infrastructure and of this NTP.

4.7 Move from LDC to LEX

| [99.100.](#) If a DSLAM is available in the LDC, VPs may be ordered in the LDC concerned in case the Beneficiary wants to connect end-users in that local net.

| [100.101.](#) However, if a Beneficiary requests to move an end-user line from a LDC to a LEX, Belgacom will perform the work under the condition that there are enough available copper cables in the junction between the LEX and the LDC.

| [101.102.](#) Since this move can often lead to malfunctioning of the end-user line, any trouble ticket that will be opened by the Beneficiary - and for which the diagnostic is that the issue is the consequence of the move - will be considered as a wrongful repair request.

| [102.103.](#) If the Beneficiary asks to move back the line to its LDC, an activation fee will be invoiced to the Beneficiary.

4.8 Deployment rules

4.8.1 ADSL

103.104. ADSL is allowed for loops with attenuation at 800Hz less than 6,5dB.

104.105. In order to improve the provisioning process and the repair process of Broba II, ADSL deployment curves have been developed on basis of statistics of actual network. Different curves are defined for ADSL over POTS and for ADSL over ISDN as well as for the upstream and the downstream for both ADSL flavours. Those curves are only deployment rules and not a performance guarantee. The curves are subject to evolution and could be reviewed.

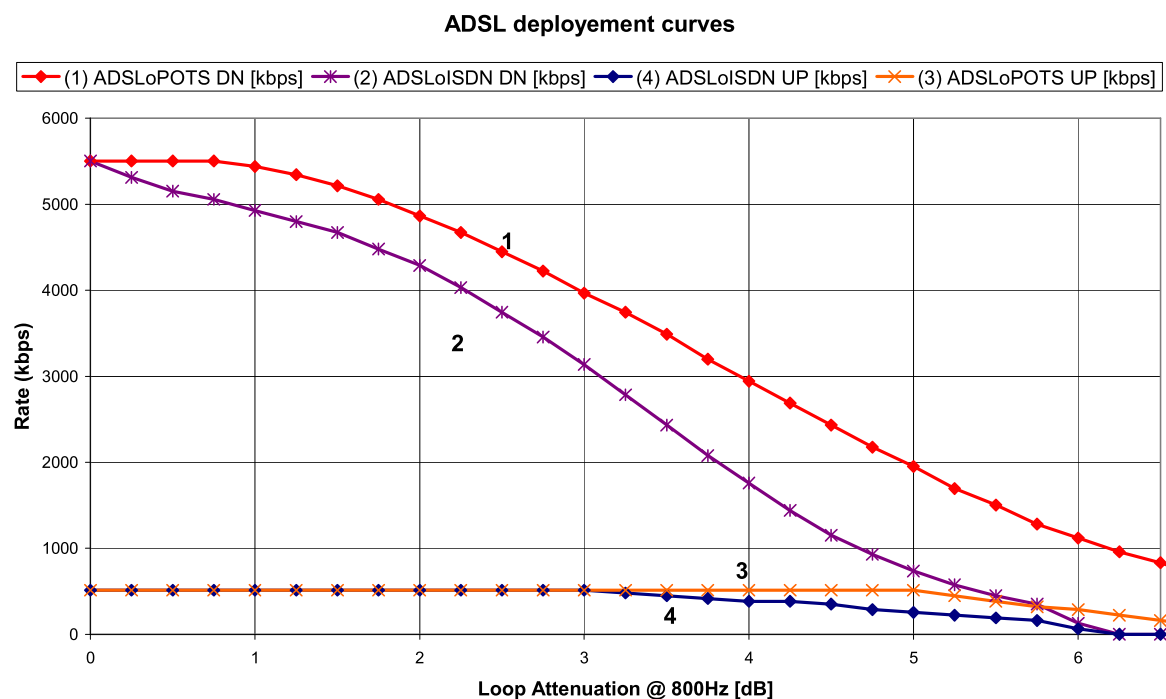


Fig. 1

The axes of the above graphic are the loop attenuation at 800Hz, versus the attainable bit rate.

Line 1, the most upper line, represents the ADSL over POTS downstream.

Line 2 represents the ADSL over ISDN downstream.

Line 3 represents the ADSL over POTS upstream.

Line 4 represents the ADSL over ISDN upstream.

105.106. The discrete values related to the above curve are listed hereunder:

Att @ 800Hz [dB]	ADSLoPOTS		ADSLoISDN	
	(3) ADSLoPOTS UP [kbps]	(1) ADSLoPOTS DN [kbps]	(4) ADSLoISDN UP [kbps]	(2) ADSLoISDN DN [kbps]
0	512	5504	512	5504

0,25	512	5504	512	5312
0,5	512	5504	512	5152
0,75	512	5504	512	5056
1	512	5440	512	4928
1,25	512	5344	512	4800
1,5	512	5216	512	4672
1,75	512	5056	512	4480
2	512	4864	512	4288
2,25	512	4672	512	4032
2,5	512	4448	512	3744
2,75	512	4224	512	3456
3	512	3968	512	3136
3,25	512	3744	480	2784
3,5	512	3488	448	2432
3,75	512	3200	416	2080
4	512	2944	384	1760
4,25	512	2688	384	1440
4,5	512	2432	352	1152
4,75	512	2176	288	928
5	512	1952	256	736
5,25	448	1696	224	576
5,5	384	1504	192	448
5,75	320	1280	160	352
6	288	1120	64	128
6,25	224	960	0	0
6,5	160	832	0	0

Table 1: Table of ADSL deployment rules

106-107. The provisioning and repair rules, for ADSL, are the following:

- Belgacom will provision BROBA II ADSL service on an end-user line only if loop attenuation at 800Hz is less than 6,5dB and if both upstream and downstream Minimum bit rates of the Line Profile are lower than indicated in above table for the corresponding ADSL flavour and loop attenuation.
- Belgacom will accept trouble tickets for resynchronisation problems only if both upstream and downstream Maximum bit rates of the Line Profile are lower than indicated in above table for the corresponding ADSL flavour and loop attenuation.

(The nearest above loop length in the table shall be considered).

4.8.2 Reach Extended ADSL2

107-108. Reach Extended ADSL2 is allowed for loops with attenuation at 800Hz comprised between 6,5 and 7,5dB.

108-109. Reach Extended ADSL2 is not allowed over ISDN loops.

109-110. The provisioning and repair rules, for Reach Extended ADSL2, are the following:

- Belgacom will provision BROBA II Reach Extended ADSL2 service on an end-user line only if following conditions are respected :
 - The loop attenuation at 800Hz is comprised between 6,5 and 7,5dB.
 - Upstream minimum bit rate is not greater than 64kbps.
 - Downstream minimum bit rate is not greater than 256kbps.

- Belgacom will accept trouble tickets for resynchronisation problems only if :
 - Upstream Maximum bit rate is not greater than 192kbps.
 - Downstream Maximum bit rate is not greater than 512kbps.

4.8.3 ADSL2+

110.111. If the Beneficiary has chosen one of the 2 common ADSL2+ line profiles defined in § 7352, Belgacom will provision BROBA II ADSL2+ service on an end-user line in function of the following table:

Att @ 800Hz [dB]	Maximum Upstream [kbps]	Maximum Downstream [kbps]	Minimum Upstream [kbps]	Minimum Downstream [kbps]
<1,5	512	12.000	256	288
<2,5	512	9.024	256	288

These values are applicable for BROBA ADSL2+ with voice lines on PSTN, or for BROBA ADSL2+ without voice lines. In case of ADSL2+ with voice lines on ISDN, the following values will be applicable:

Att @ 800Hz [dB]	Maximum Upstream [kbps]	Maximum Downstream [kbps]	Minimum Upstream [kbps]	Minimum Downstream [kbps]
1,25	512	12.000	256	288
<2,25	512	9.024	256	288

Those values are only deployment rules and not a performance guarantee. The values are subject to evolution and could be reviewed.

111.112. Belgacom could add other line profiles than the 2 above-defined. This will only be possible after individual validation of the profiles by Belgacom, in line with the delays specified hereafter, and conditional to the availability of Belgacom IT resources to validate and to implement them in the Belgacom systems.

- The validation of a line profile by Belgacom consists in defining for which attenuation range this profile can be configured by Belgacom, in order to guarantee the stability of the lines dimensioned with this profiles, as well as of all other xDSL lines installed in the same cable bundle.
- The attenuation range will of course also be used to validate each individual order of a BROBA ADSL2+ line: every order of a line that falls outside the attenuation range applicable for the profile specified in the order will be rejected (either for a common or for an additional line profile).
- For any demand of additional profiles, the Operator must specify 6 months in advance the number of profiles (in line with rules on number of profiles defined in §7352) needed and their main characteristics (maximum upstream and downstream bitrates). The complete definition of the profiles (maximum and minimum, upstream and downstream bitrates, PSTN or ISDN) must be defined 4 months in advance. Same timing are applicable for own and common profiles.
- Conditional to the availability of sufficient resources for validation and IT resources, the creation of additional profiles is expected to be possible in

the subsequent Belgacom release at the earliest, or in any subsequent release, provided the delays for communication described above have been respected. In any event these delays do not contain a commitment of Belgacom.

112-113. In order to clarify the rule applicable in case of repair, and to help the operators to define, if necessary, additional line profiles for ADSL2+, Belgacom delivers hereunder the ADSL2+ deployment table. This table is based on the ADSL percentile 90 and on the estimated gain between ADSL2+ and ADSL.

	ADSL2+overPOTS		ADSL2+overISDN	
Att @ 800Hz [dB]	(3) ADSL2+oPOTS UP [kbps]	(1) ADSL2+oPOTS DN [kbps]	(4) ADSL2+oISDN UP [kbps]	(2) ADSL2+oISDN DN [kbps]
0	512	11008	512	11008
0,25	512	10656	512	10464
0,5	512	10336	512	9984
0,75	512	9984	512	9536
1	512	9536	512	9024
1,25	512	9024	512	8480
1,5	512	8480	512	7936
1,75	512	7904	512	7328
2	512	7296	512	6720
2,25	512	6720	512	6080
2,5	512	6112	512	5408

- By similarity to ADSL, Belgacom will accept trouble tickets for resynchronization problems on a BROBA ADSL2+ line only if both upstream and downstream Maximum bit rates of the Line Profile are lower than indicated in above table for the corresponding ADSL2+ flavour and loop attenuation.
- For lines dimensioned with a line profile above the curve, BGC will not do physical repair for instabilities or transmission quality issues for lines ADSL2+ provisioned at 9 or 12Mbps. The same principle as for ADSL shall be applied and a decrease speed to a target bit rate below the estimated ADSL2+ percentile 90 curve shall be requested before sending a technician.

4.9 Termination of the voice subscription with Broba II with voice

113-114. In case of a Broba II ADSL, Reach Extended ADSL2 or ADSL2+ with voice service where both Belgacom and the Beneficiary provide services to an User, it can occur that the User cancels his voice subscription for that Broba II with voice service. In that case, independent of the reason for termination of the voice subscription, Belgacom will ensure that the service on the high bandwidth remains into service.

114-115. Belgacom will inform the Beneficiary that the Broba II ADSL, Reach Extended ADSL2 or ADSL2+ with voice service has been converted to a Broba II ADSL, Reach Extended ADSL2 or ADSL2+ without voice service, for which the Beneficiary will be charged the monthly rental fee for Broba II on a non-active loop instead of Broba II on an active loop. For the change to Broba II ADSL, Reach Extended ADSL2 or ADSL2+ without voice, a conversion fee as specified in Annex 6 Pricing and Billing is applicable.

4.10 Migration

115.116. For more information on migrations, reference is made to the Migrations Offer (BRUO Annex K).

5. Operational Processes

5.1 Bandwidth and Access Line

~~111. Prior to the connection by Belgacom of a specific Beneficiary's User line,~~

- ~~• The Beneficiary must have provided Belgacom with a bandwidth order between each DSLAM¹³ in a Lex (or LDC or KVD when provided by Belgacom in the framework of its own retail or wholesale offer) in which he wants to connect Users and Belgacom ATM Access Point to which he is connected.~~
- ~~• Belgacom must have performed, on the Beneficiary request, the installation of a dedicated Access Line between an ATM switch located in a Belgacom ATM Access Point and the Beneficiary's equipment.~~

~~112. In any event, as far as operational processes related to the Access Line are concerned, both Parties will use at any time their best efforts to implement all necessary co-operation to ensure an adequate level of service provision both between the Parties and towards the Users concerned.~~

~~113. Delays for the provisioning of these access lines take into account the fact that, when public infrastructure works have to be realized, several actions and several actors can extend the time needed for provisioning of the access lines. Examples of interventions can be:~~

- ~~• Studies~~
- ~~• Creation of implementation plan~~
- ~~• Requests to Public Authorities for authorization to realize works on the Public Infrastructure (often 2 months or more)~~
- ~~• Realization of the works~~

~~114. In the event that difficulties or problems arise in this respect, the Parties will use all necessary co-operation and consultation with a view to developing appropriate and workable solutions subject to agreement between the Parties.~~

~~120-117.~~ For more information on processes, reference is made to Annex 4.

¹³ Only applicable to the DSLAMs listed on the Operator Personnel Page of the CWS secured website.

5.2 Activation of ADSL, Reach Extended ADSL2 or ADSL2+ on a specific User line

5.2.1 General

~~121.118.~~ At the moment the Beneficiary requests the activation of ADSL, Reach Extended ADSL2 or ADSL2+ on an User line, within a specific Lex + LDC's + other relevant points where Belgacom installed DSLAM's, Belgacom verifies the existence on the DSLAM where this User line is connected of the VP¹⁴ necessary to transport the ADSL traffic of this User between the DSLAM from which this User depends and the Beneficiary equipment and reversely.

~~122.119.~~ When the existence of the necessary VP¹⁵ has been confirmed, Belgacom does the configuration of the individual line (i.e. the configuration of the ATM profile & the ADSL, Reach Extended ADSL2 or ADSL2+ profile) of the User on DSLAM level.

5.2.2 Request for inquiry

~~123.120.~~ The Beneficiary can request a check of an individual User line prior to the request for activation. This request is called an "inquiry". The check will be snapshot based and will rely on the following elements:

- Technical spectral check of the system at the time of inquiry;
- Pair gain system check;
- Check of spectral saturation of cable.

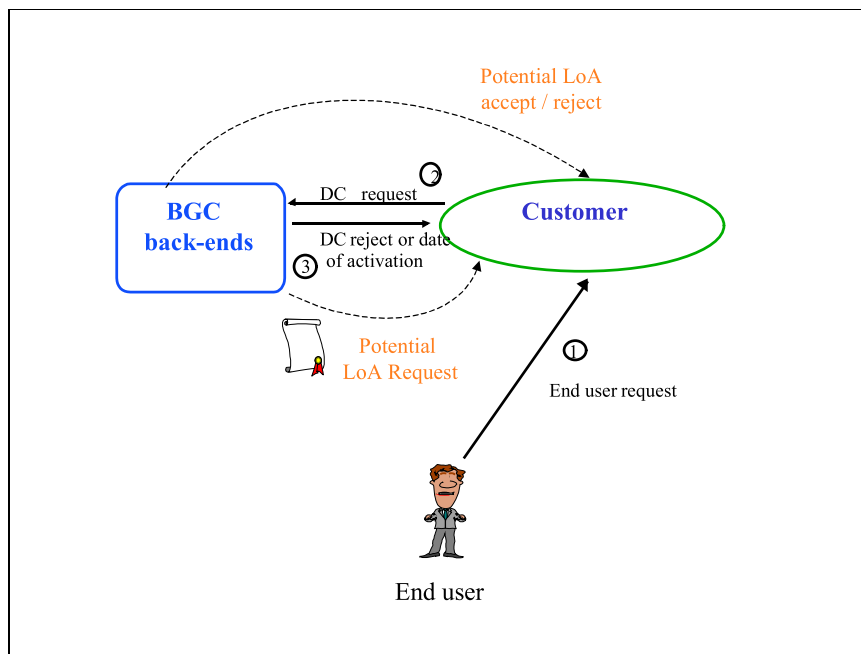
~~124.121.~~ On the basis of these parameters a positive or negative technical advice will be given on the possibility to activate an ADSL, Reach Extended ADSL2 or ADSL2+ service on the considered User line at the moment this check is carried out. Therefore, a positive technical advice does not necessarily mean or guarantee that the service can be made available to the Beneficiary at any time.

¹⁴ In Broba over ATM: VP; In Broba over Ethernet, with shared VLAN: shared VLAN.

¹⁵ In Broba over ATM: VP; In Broba over Ethernet, with shared VLAN: shared VLAN.

5.2.3 Process

- **Graphic illustration**



DC = Data Connectivity service (Broba II ADSL)

Fig. 2

- **Description**

125.122. A commercial contract is signed between a user and the Beneficiary.

- 126.123. The Beneficiary introduces a Broba II ADSL, Reach Extended ADSL2 or ADSL2+ request to Belgacom, with the following mandatory information:
- The Beneficiary requested date of activation (binding for Belgacom – see SLA);
 - For line with voice, Directory Number and address are mandatory. For line without voice, address is mandatory. Currently, CID is optional in all cases.
 - The name, address, contact person phone number during office hours, of the User.

The request will be managed between Belgacom and the Beneficiary via electronic messages or via fax as back-up procedure. For more information, reference is made to Annex 4 – Appendix D.

- 127.124. In order to activate ADSL, Reach Extended ADSL2 or ADSL2+ on an User line, Belgacom will perform, for each request, some checks, and a.o.
- Technical spectral check of the system at the time of request for activation;
 - Pair gain system check;
 - Spectral saturation of cable.
 - Reach Extended ADSL not supported over ISDN
 - ADSL2+ not supported on KVDs where in conflict with VDSL1
 - ADSL2+ supported only on ADSL2+ enabled DSLAMs

On the basis of these checks, the order will be rejected and/or accepted.

If the order is accepted, the Beneficiary order intake will be performed including:

- The performance of the necessary preparatory works in the Local Exchange for connecting an individual User line to DSLAM installed in the Belgacom Local Exchange;
- The realization of the necessary documentation to track that the User line carries ADSL, Reach Extended ADSL2 or ADSL2+ technology of the Beneficiary (only for Belgacom purposes).

The list of reject codes is available on the Belgacom CWS secured website.

5.3 Bandwidth Modification

5.3.1 General

~~123. To be able to offer the Broba II ADSL, Reach Extended ADSL2 or ADSL2+, the Beneficiary needs to order bandwidth between each DSLAM's¹⁶ in the Lex + LDC's + other relevant points where Belgacom installed DSLAM's to which he wants to connect Users and the ATM Access Point to which the Beneficiary is connected.~~

~~124. In the limits of the VP specifications as mentioned in this offer (VP QoS and VP minimum dimensioning), the Beneficiary can request:~~

- ~~- For an upgrade of the total bandwidth he ordered between a specific DSLAM located in a Lex + LDC's + other relevant points where Belgacom installed DSLAM's and the ATM Access Point to which he is connected~~
- ~~- For a downgrade of the total bandwidth he ordered between a specific DSLAM located in a Lex + LDC's + other relevant points where Belgacom installed DSLAM's and the ATM Access Point to which he is connected~~
- ~~- For a modification of the bandwidth's allocation amongst the different VPs within a specific Lex + LDC's + other relevant points where Belgacom installed DSLAM's.~~

~~125. The Beneficiary will pay the corresponding fee for the modification of the Bandwidth ("Change of ATM transport parameters") as set forth in Annex 6.~~

5.3.2 Process

~~126. Firm orders of bandwidth per DSLAM shall be done through the use of an XML order as described in the XML content description documents available on the Operator Personal Page of the CWS secured website.~~

~~132-125.~~ For more information on processes, reference is made to Annex 4.

¹⁶ Only applicable to the DSLAMs listed on the Operator Personal Page of the CWS secured website.

5.4 Repair

5.4.1 General

133-126. Repairs are carried out on the Network after the Beneficiary has informed Belgacom provided the Beneficiary has made the preliminary investigations and is confident that the problem is in Belgacom Network. The Beneficiary, when reporting that there is a problem, has to give precise information about the nature of the problem. Belgacom will, when appropriate, confirm the existence of the problem.

134-127. If Belgacom becomes aware of a problem on the network, Belgacom automatically coordinates the necessary actions to resolve the problem according to the applicable arrangements.

Note: modification and interruptions

135-128. The maintenance and the development of the Network may require Belgacom to limit the Broba II ADSL, Reach Extended ADSL2 or ADSL2+ service or to suspend it temporarily. Belgacom undertakes to limit the duration of this period to the time that is required for the execution of the work and that duration will, in no way, be longer than the period that Belgacom would require if her own services needed to be suspended. In such cases, Belgacom will inform the Beneficiary in due time at least 48 hours in advance, and communicate the estimated suspension time and the reason of suspension. Such service interruptions are not included in the (I)SLA on service availability.

5.4.2 Repair on a specific User line

136-129. The Beneficiary will communicate possible network related problems of Users to Belgacom. Belgacom will never be first line of contact with the User for the Beneficiary ADSL, Reach Extended ADSL2 or ADSL2+ based service, based on Broba II ADSL, Reach Extended ADSL2 or ADSL2+ service.

5.4.3 Repair for spectral issues reasons

137-130. If problems occur as a consequence of a Beneficiary ADSL, Reach Extended ADSL2 or ADSL2+ based service (for instance: interference of the Beneficiary system with existing system in service in the cable bundle, connection of non-compatible equipment), Belgacom may solve the problem by removing the concerned Beneficiary service on the concerned User line under LIFO (Last In First Out) mode. The related costs will be invoiced to the Beneficiary. In case of dispute regarding the costs either party can ask BIPT to verify the claimed costs.

138-131. Note that the inquiry "loop attenuation" doesn't examine the spectral characteristics of the line and cannot consequently determine with 100% accuracy that the line won't present technical problems.

139-132. If the xDSL services offered by the Beneficiary appear to be the cause of an abnormal¹⁷ perturbation, Belgacom will demonstrate that this was caused by the services of the Beneficiary and will, eventually, interrupt the service to be able to make this demonstration. The same procedure applies if the XDSL services offered

¹⁷ Abnormal : when disturbances on other lines in the same cable are not in line with the technical rules and authorisation conditions as defined within the context of the technical specifications

by Belgacom appear to be the cause of a abnormal perturbation. The general rule that must be followed is: first system in service should stay in service. The Beneficiary has, at all time, the right of verification.

5.5 Billing

5.5.1 General

140.133. Principle: all Standard Fees as described in Annex 6, whenever relevant, will be invoiced to and are to be paid by the Beneficiary.

5.5.2 Process

- **Graphic illustration**

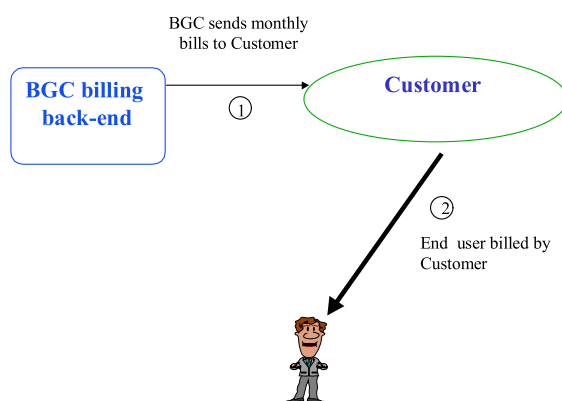


Fig. 3

- **Description**

141.134. The Beneficiary will receive a monthly invoice containing the fees (recurring and non-recurring) for that period. Invoices related to any relevant fees are to be paid within the foreseen deadlines as set out in the Pricing & Billing document (Annex 6)

Appendix A: Access Line

6. Customer-Sited Data Link

6.1 Preliminary

142.135. The terms, conditions and requirements set out in this section determine the general framework between Belgacom and the Beneficiary on Customer-Sited Data Link Service in the framework of provision of a connection between a Belgacom ATM switch, located in an ATM Access Point, and the Beneficiary Equipment, in the framework of this Agreement. This service will be referred to hereafter as "Customer-Sited Data Link".

143.136. For the provision of 2Mbit/s, 34Mbit/s or STM-1 Customer-Sited Data Link, The Beneficiary will subscribe a one (1) year contract, under which the 2Mbit/s, 34Mbit/s or STM-1 Customer-Sited Data Link Service is made available to the Beneficiary for a fixed term of one year. At the end of this period, the contract will be tacitly renewed for an indefinite duration and can be terminated at any time with a notice of at least one calendar month. If the Beneficiary wishes to terminate the contract during the initial one-year term, the Beneficiary will pay to Belgacom a termination fee equal to the total of the rental fees until the end of such term.

6.2 Description

144.137. Customer-Sited Data Link is a connection system that is provided in its entirety by Belgacom between the Beneficiary Connection point at the Beneficiary premises, and Belgacom ATM Access Point.

145.138. Belgacom will install the necessary transmission equipment at the premises of the Beneficiary.

146.139. The Customer-Sited Data Link Service consists of one (1) or more 2Mbit/s, 34 Mbit/s or STM-1 Systems.

147.140. 2Mbit/s, 34Mbit/s or STM-1 Systems provided under this Service Plan do not have Diversity of routing.

148.141. Diversity of routing can be available as an option (when technically feasible and at a price based on a quote from Belgacom for the diversity routing aspect).

149.142. The Beneficiary Connection point is located at the Beneficiary's premises.

6.3 Implementation

150.143. The implementation of Customer-Sited Data Link Service will be in accordance with the Technical Specifications provided in Annex 2 – Section 2: Technical Specifications of the Access Line.

6.4 General Conditions

- | ~~151.144.~~ A Customer-Sited Data Link Service can be ordered by the Beneficiary between a specified Belgacom ATM Access Point (Connection Point) and the specified Beneficiary's premises.
- | ~~152.145.~~ The Beneficiary shall provide and maintain, at its expense, the cabling from the Point of Connection to the Beneficiary equipment including any cross connections that are required.
- | ~~153.146.~~ All Belgacom transmission equipment shall comply with the appropriate Belgacom Technical Specifications provided in Annex 2 – Section 2: Technical Specifications of the Access Line.

6.5 Prices

- | ~~154.147.~~ The Beneficiary shall pay to Belgacom the installation and rental fees provided in Annex 6 for Customer-Sited Data Link Service.

6.6 Specific Conditions

- | ~~155.148.~~ Belgacom will identify each 2Mbit/s, 34Mbit/s or STM-1 Customer-Sited Data Link provided pursuant to the conditions of this Section through attributing them a codification number.

7. Belgacom-Sited Data Link

7.1 Preliminary

- | ~~156.149.~~ The terms, conditions and requirements set out in this section determine the general framework between Belgacom and the Beneficiary on Belgacom-Sited Data Link Service in the framework of the provision of a connection between a Belgacom ATM switch, located in a Belgacom ATM Access Point and the Beneficiary Equipment, in the framework of this service. This Service will be referred to hereafter as "Belgacom-Sited Data Link".
- | ~~157.150.~~ A Belgacom-Sited Data Link Service can be brought into service with regard to a specified site, and the Beneficiary can be entitled to install the equipment required to this effect in the Belgacom building concerned, if and only if the Beneficiary has prior to this time signed an appropriate Colocation Agreement with regard to the site concerned.
- | ~~158.151.~~ The Belgacom-Sited Data Link Service can only be used for all connection purposes with Belgacom ATM/FR data network. If the Beneficiary benefits from Belgacom-Sited Data Link Service with regard to a certain site, the Beneficiary is authorized to lease Data Link facilities to or from another party for the purpose of allowing a direct connection between the Network and such other party.
- | ~~159.152.~~ For the sake of clarity, it is noted that Data Links covered by this document are either 2Mbit/s, 34Mbit/s or 155Mbit/s Data Links.

7.2 Description

- | ~~160-153.~~ Belgacom-Sited Data Link Service will only be available in Belgacom ATM Access Points.
- | ~~161-154.~~ A "Belgacom-Sited Data Link Service" is a connection service where Belgacom offers the possibility to a Beneficiary to provide the entire Data Link including the transmission equipment that is installed in a Belgacom technical building. The Beneficiary will install its cable infrastructure at least up to an introduction duct designated by Belgacom in the immediate vicinity of the Belgacom ATM Access Point (building) in which any Belgacom ATM switch (Access Point) is located.
- | ~~162-155.~~ The Beneficiary Point of Connection for this type of Data Link is located in the Belgacom premises on the indoor cable connecting the Beneficiary's transmission equipment to the Belgacom DDF, at the place where that cable enters the collocation room.
- | ~~163-156.~~ In the event that Belgacom is caused to replace the collocation room in which the transmission equipment of the Beneficiary is to be installed, then both Parties will cooperate to find a mutually acceptable solution.
- | ~~164-157.~~ The Beneficiary shall install equipment in its collocation area and following the rules set out in the collocation agreement. The Beneficiary's transmission facilities will be extended outside the collocation room to a digital distribution frame (DDF) within Belgacom's technical area to allow the 2Mbit/s and 34Mbit/s or to an Optical Light Distribution Frame (OLDF) within Belgacom's technical area to allow the 155Mbit/s Links to be established. Belgacom or Belgacom's authorized staff working under its responsibility will carry out this extension under the financial conditions stated in Annex 6.

7.3 Scheme

165-158. See below for a general scheme illustrating Belgacom-Sited Data Link (scheme valid for 2 Mbit/s and 34Mbit/s configurations):

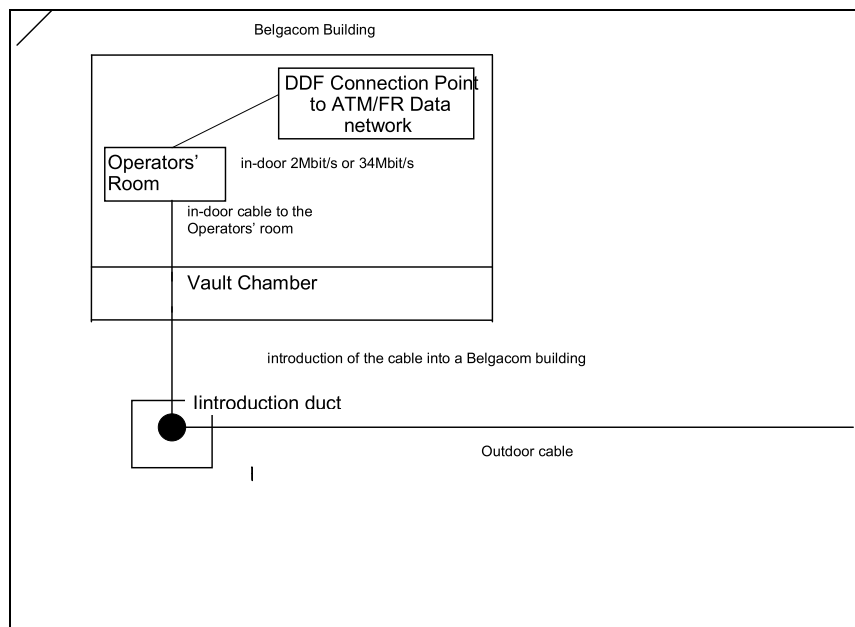


Fig. 4

7.4 General Conditions

166-159. All Beneficiary transmission equipment shall comply with the Technical Specifications provided in Annex 2 – Section 2: Technical Specifications of the Access Line.

167-160. The Beneficiary shall provide to its employees full information regarding the content of the rules to be respected regarding Belgacom-Sited Data Links.

7.5 Procedures

~~168.161.~~ The Beneficiary is responsible for determining the number of Belgacom-Sited Data Link Service that the Beneficiary requires. In this respect, Belgacom does not make a representation that it will at all times be in a position to provide the full capacity ordered by the Beneficiary. In particular, it is not excluded that, taking into account possible evolutions in the future, Belgacom may be confronted with a high number of requests for the installation of additional collocation spaces in different buildings that would not allow Belgacom to respect all relevant timers. In these cases, Belgacom will have to inform the market and BIPT.

7.6 Prices

~~169.162.~~ The Beneficiary shall pay to Belgacom the installation and rental fees specified in Annex 6 for Belgacom-Sited Data Link Service.

Appendix B: List of Access Areas and ATM Access Points

8. List of Access Areas

Access Area	Included Telephone Zones
Antwerpen:	03
Bruxelles:	02
Gent:	09 (*), 052, 053, 054, 055
Kortrijk:	050, 051, 056, 057, 058, 059
Liège:	04 (*), 019, 080 (*), 085, 086, 087
Leuven-Hasselt:	013, 014, 015, 016, 011, 012, 089
Mons-Charleroi:	065, 068, 069, 071, 060, 064, 067
Namur:	081, 082, 083, 084, 061, 063, 010

170-163. (*): For the sake of clarity, it is confirmed that the zone codes indicated above in the context of the present offer are limited to the numbers which identify fixed network termination points. In particular, 09 and 04 are respectively limited to the number series 092, 093 and 042, 043. As far as the code 080 is concerned, the numbers starting with 0800 are excluded.

9. List of ATM Access Points

City	Address	NCOW
Aalst	Ridderstraat 43	5321
Antwerpen - Berchem	Karel Coggestraat 2	3227
Antwerpen - Centrum	Lange Nieuwstraat 106	3224
Arlon	Avenue Jean-Baptiste Nothomb 40	6321
Ath	Rue Jean Jaurès, 11	6828
Brugge - Assebroek	Matmeers 2 A	5033
Brussels - Ixelles/Elsene	Rue Borrens - Borrensstraat 16	2646
Brussels - Etterbeek	Rue J. de Lalaing - J. de Lalaingstraat 36-40	2280
Brussels - Evere	Avenue des Anciens Combattants - Oudstrijderlaan 94	2726
Brussels - Linthout	Rue V. Lefèvre - V. Lefèvre 24-26	2732
Brussels - Marais	Rue du Marais - Broekstraat 72-74	2220
Brussels - Paille	Rue Lebeau - Lebeaustaat 2	2513
Brussels - Sacré-Coeur	Avenue A.J. Slegers - A.J. Slegerslaan 36	2770
Brussels - Schaarbeek	Rue Jan Blockx - Jan Blockxstraat 26-30	2215
Brussels - St-Gilles- /St. Gillis	Rue Steens - Steensstraat 11	2538
Brussels - Uccle	Rue Rodenbach - Rodenbachstraat 133	02
Brussels - Woluwe	Voordestraat 10	2725
Charleroi - Centre	Rue de la science 2	7127
Charleroi - Gilly	Sentier de la Limite 80	7141
Chimay	Rue Reine Astrid 5	6021
Ciney	Rue d'Omalus 67 B	8321
Dendermonde	Courtenstraat 22	5221
Diest	Ferd. Allenstraat 38	1333
Dinant	Rue Bribosia 9	8222
Durbuy	Chainrue 52	8621
Genk	Europalaan 27	8930
Gent - Centrum	Sint Niklaasstraat 27	9223
Gent - Keizer Karel	Keizer Karelstraat 1	9265
Hasselt	Paardsdemerstraat 10	1127
Herentals	Molenvest 13	1421
Huy	Rue du Vieux-Pont 16	85
Ieper	Vooruitgangsstraat 1	5720
Jemelle	Rue Delvigne 76	8421
Kortrijk	Doorniksestraat 61-65	5622
La Louvière	Rue de la Concorde 17	6422
Leuven	Vismarkt 17	1621
Libramont	Rue des alliés 1	6122
Liège - Centre	Rue de l'université 30	4223
Liège - Grétry	Rue d'Harscamp 17	4349
Mechelen	Stationstraat 58	1540
Mons	Rue des fosses 7	6533
Namur	Rue Marie-Henriette 60	8172
Namur	Rue Rogier 2	8123
Ninove	Groenmarkt 42	5433
Nivelles	Place Albert 1	6722
Oostende	Hendrik Serruyslaan 18 A	5970
Roeselare	H. Consciencestraat 3-5	5120
Ronse	Politieke Gevangenerstraat 14	5521
Stavelot	Cour de l'hôtel de ville 3	8088
Tournai	Rue de la Tête d'Or 9	6922
Verviers	Rue Thil Lorrain 6	8733
Veurne	Pannestraat 1	5831
Waremmes	Rue Joachim 67	1932
Wavre	Rue de la Limite 2	1022

Appendix C: Description of the OLO Access Line

- | [171.164.](#) The OLO Access Line is a point-to-point, high-speed data transfer service, offering a speed from 1Gb, between your site and the Belgacom Ethernet network.
- | [172.165.](#) The OLO Access Line is based on Belgacom's fibre optic infrastructure. This is a comprehensive service which includes the network infrastructure, the transmission equipment and proactive management by Belgacom.
- | [173.166.](#) OLO Access Line is available throughout Belgium. Nevertheless, for each request, Belgacom will carry out a preliminary feasibility study to determine the infrastructure works that are required (works in the public and/or private domain, installation of fibre optic cables, entry points into buildings, etc.).
- | [174.167.](#) The terms, conditions and requirements set out in this section determine the general framework between Belgacom and the Customer on OLO Access Line Service in the framework of the provision of a connection between a Belgacom Service Router, located in a Belgacom Service PoP, and the Customer Equipment, in the framework of this service. This Service will be referred to hereafter as "OLO Access Line".
- | [175.168.](#) For the provision of OLO Access Line, the Customer will subscribe a one (1) year contract, under which the OLO Access Line is made available to the Customer for a fixed term of one year. At the end of this period, the contract will be tacitly renewed for an indefinite duration and can be terminated at any time with a notice of at least one calendar month. If the Customer wishes to terminate the contract during the initial one-year term, the Customer will pay to Belgacom a termination fee equal to the total of the rental fees until the end of such term.
- | [176.169.](#) The OLO may order Customer-Sited OLO Access Lines, in case the line terminates in the Customer premises, outside any Belgacom colocation or Belgacom-Sited OLO Access Lines, in case the line must terminate in its colocation in the same building as the Service PoP.

10. Customer-Sited OLO Access Line

a. Description

~~177-170.~~ Customer-Sited OLO Access Line is a connection system that is provided in its entirety by Belgacom between the Customer Connection point at the Customer premises, and a Belgacom Service Router.

~~178-171.~~ Belgacom will install the necessary transmission equipment at the premises of the Customer.

~~179-172.~~ The Customer-Sited OLO Access Line Service consists of one (1) or more Gigabit Ethernet (GbE) systems.

~~180-173.~~ The 1 GbE Systems provided under this Service Plan do not have Diversity of routing.

~~181-174.~~ The Customer Connection point is located at the Customer's premises.

b. Implementation

~~182-175.~~ The implementation of Customer-Sited OLO Access Line Service will be in accordance with the Technical Specifications provided in [the WBA VDSL2 offer](#), Annex 2, Technical Specifications – (Section 9: OLO Access Line).

c. General Conditions

~~183-176.~~ A Customer-Sited OLO Access Line Service can be ordered by the Customer between a specified Belgacom Service PoP (Connection Point) and the specified Customer's premises.

~~184-177.~~ The Customer shall provide and maintain, at its expense, the cabling from the Point of Connection in the Customer Premises to the Customer equipment including any cross connections that are required.

~~185-178.~~ All Belgacom transmission equipment shall comply with the appropriate Belgacom Technical Specifications provided in [WBA VDSL2 offer](#), Annex 2, Technical Specifications – (Section 9: OLO Access Line).

d. Specific Conditions

~~186-179.~~ Belgacom will identify each 1GbE Customer-Sited OLO Access Line provided pursuant to the conditions of this Section through attributing them a codification number.

11. Belgacom-Sited OLO Access Line

a. Preliminary

- ~~187.180.~~ A Belgacom-Sited OLO Access Line Service can be brought into service with regard to a specified site, and the Customer can be entitled to install the equipment required to this effect in the Belgacom building concerned, if and only if the Customer has prior to this time signed an appropriate Colocation Agreement with regard to the site concerned.
- ~~188.181.~~ The Belgacom-Sited OLO Access Line Service can only be used for all connection purposes with Belgacom Ethernet data network.
- ~~189.182.~~ For the sake of clarity, it is noted that OLO Access Lines covered by this document are 1 GbE OLO Access Lines.

b. Description

- ~~190.183.~~ Belgacom-Sited OLO Access Line Service will only be available in Belgacom Service PoP.
- ~~191.184.~~ A "Belgacom-Sited OLO Access Line Service" is a connection service where Belgacom offers the possibility to a Customer to provide the entire OLO Access Line including the customer transmission equipment that is installed in a Belgacom technical building. The Customer will install its cable infrastructure at least up to an introduction duct designated by Belgacom in the immediate vicinity of the Belgacom Service PoP (building) in which any Belgacom Service Router is located.
- ~~192.185.~~ The Customer Point of Connection for this type of OLO Access Line is located in the Belgacom premises on the indoor cable connecting the Customer's transmission equipment to the Belgacom DDF, at the place where that cable enters the collocation room.
- ~~193.186.~~ In the event that Belgacom is caused to replace the collocation room in which the transmission equipment of the Customer is to be installed, then both Parties will cooperate to find a mutually acceptable solution.
- ~~194.187.~~ The Customer shall install equipment in its collocation area and following the rules set out in the collocation agreement.

c. General Conditions

- ~~195.188.~~ All Customer transmission equipment shall comply with the Technical Specifications provided in [the WBA VDSL2 offer](#), Annex 2 – (Section 9: OLO Access Line).
- ~~196.189.~~ The Customer shall provide to its employees full information regarding the content of the rules to be respected regarding Belgacom-Sited OLO Access Lines.

d. Procedures

- ~~197.190.~~ The Customer is responsible for determining the number of Belgacom-Sited OLO Access Line Service that the Customer requires. In this respect, Belgacom does not make a representation that it will at all times be in a position to provide the full capacity ordered by the Customer. In particular, it is not excluded that, taking into account possible evolutions in the future, Belgacom may be confronted with a high number of requests for the installation of additional collocation spaces

in different buildings that would not allow Belgacom to respect all relevant timers. In these cases, Belgacom will have to inform the market.

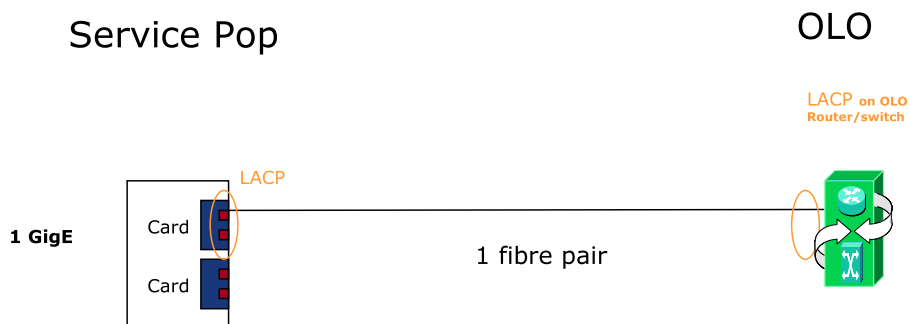
12. Product Options

The Belgacom-sited and Customer-sited implementations, generate following “product options”, and offering different levels of redundancy.

Options	Protection
1 GE BGC-sited	-
1 GE Customer-sited	-
1+1 GE BGC- and Customer-sited	Port + fibre + card in BGC Service Pop

a. 1 GE / BGC sited

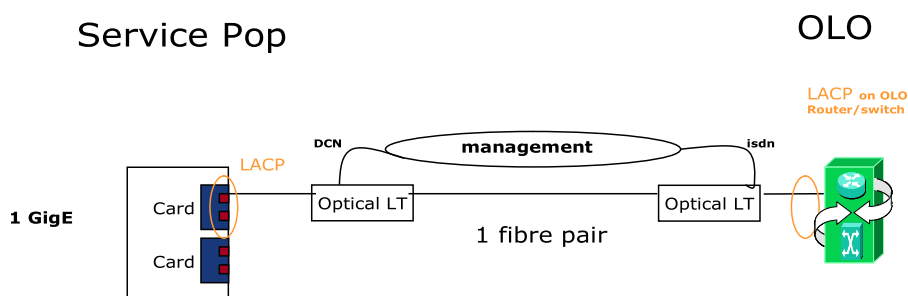
1GE / BGC sited



Graph 2: design of the OLO Access Line 1GE Belgacom-sited

b. 1GE / Customer sited

1GE / Customer sited

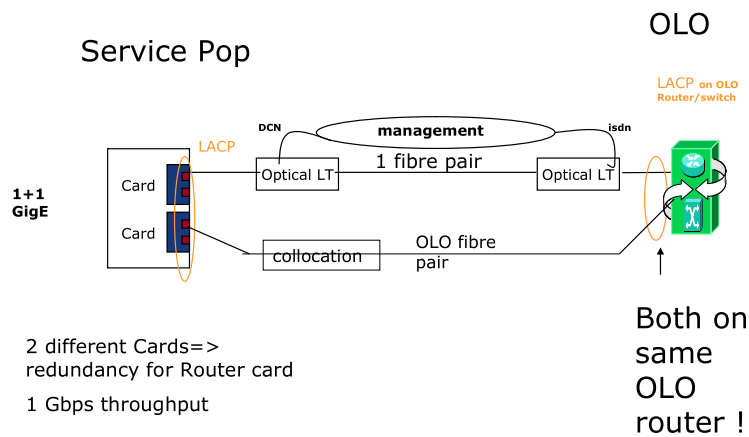


Graph 3: design of the OLO Access Line 1GE Customer-sited)

c. 1+1 GE / Belgacom + Customer sited

The BGC link is working / The OLO fibre pair is stand-by.

1+1 GE / BGC + Customer sited

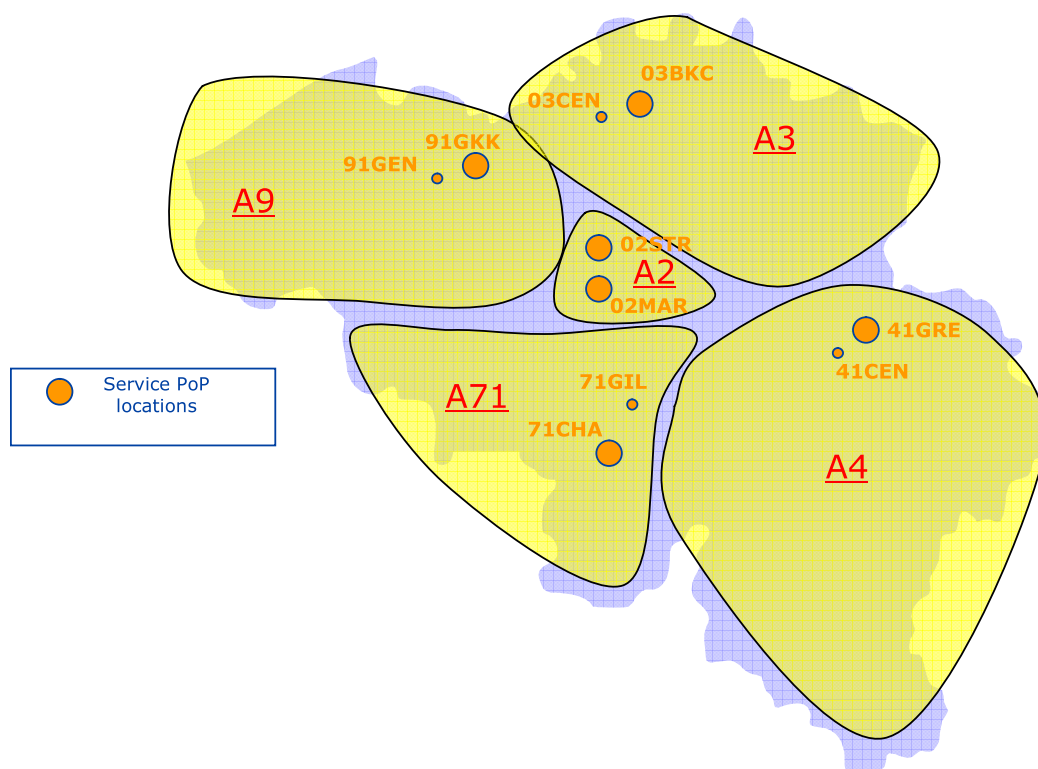


Graph 4: design of the OLO Access Line 1+1 GE Belgacom- & Customer-sited

Appendix D: List of Service Areas and Service PoPs

13. Overview

5 Service Areas and 10 Service PoPs



14. Definition of the Service Areas

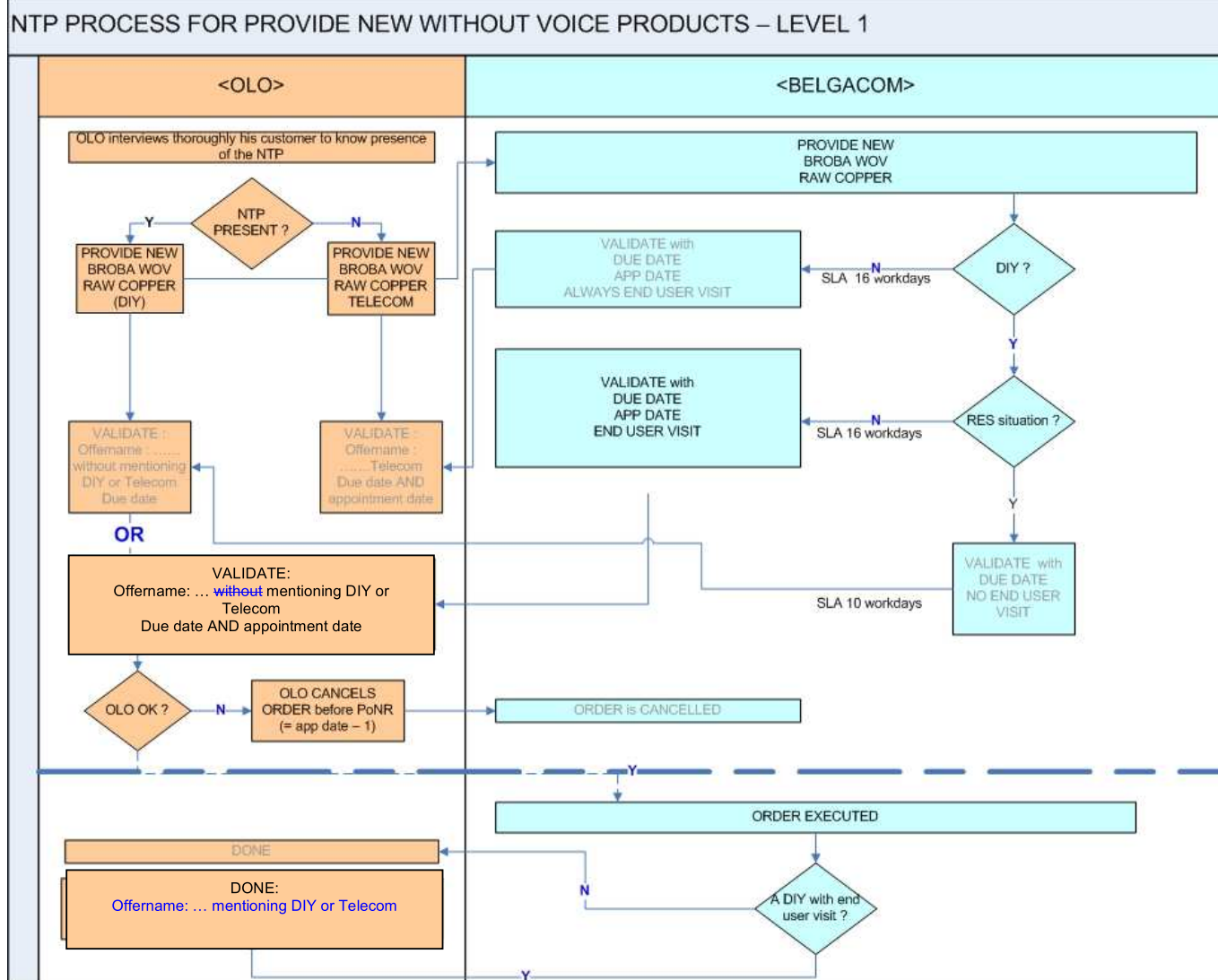
Service Area	Included Telephone Zones
A3:	03, 011, 012, 013, 014, 015, 016, 089
A2:	02
A4:	019, 04, 061, 063, 080, 081, 082, 083, 084, 085, 087
A71:	010, 060, 064, 065, 067, 068, 069, 071
A9:	050, 051, 052, 053, 054, 055, 056, 057, 058, 059, 09

198-191. (*):For the sake of clarity, it is confirmed that the zone codes indicated above in the context of the present offer are limited to the numbers which identify fixed network termination points. In particular, 09 and 04 are respectively limited to the number series 092, 093 and 042, 043. As far as the code 080 is concerned, the numbers starting with 0800 are excluded.

15. List of Service PoPs

Area		City	Address	NCOW
A9	91GKK	Gent - Keizer Karel	Keizer Karelstraat 1	9265
A9	91GEN	Gent - Centrum	Sint Niklaasstraat 27	9223
A3	03CEN	Antwerpen - Centrum	Lange Nieuwstraat 106	3224
A3	03BKC	Antwerpen - Berchem	Karel Coggestraat 2	3227
A2	02MAR	Brussels - Marais	Rue du Marais - Broekstraat 72-74	2220
A2	02STR	Brussels - Paille	Rue Lebeau - Lebeauststraat 2	2513
A71	71GIL	Charleroi - Gilly	Sentier de la Limite 80	7141
A71	71CHA	Charleroi - Centre	Rue de la science 2	7127
A4	41CEN	Liège - Centre	Rue de l'université 30	4223
A4	41GRE	Liège - Grétry	Rue d'Harscamp 17	4349

Appendix E: NTP Process for Provide New BROBA II without voice



◆◆◆◆◆ End of document ◆◆◆◆◆

Belgacom Reference Offer For Bitstream Access

BROBA II SDSL

Main Body

This document starts to produce effects as of XX/XX/2010 and until one subsequent Reference Offer is validly published - As from XX/XX/2010 interested Beneficiaries are in a position to make a request for the services covered by the present document.

This document is in accordance with BIPT's decision.

With a view to the signature of the contract, the BROBA can be negotiated by the parties and does not substitute for the parties' will.

Except otherwise agreed by the parties, the contract shall be adapted if the BROBA is modified. This adaptation shall be in accordance with this BROBA's modification.

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16. LIST OF ACCESS AREAS.....ERROR! BOOKMARK NOT DEFINED.

17. LIST OF ATM ACCESS POINTS.....ERROR! BOOKMARK NOT DEFINED.

1. Preliminary

1. In this document, for reasons of facility, the acronym SDSL will be used instead of g.Shdsl.

~~2. All information and descriptions concerning the ATM part of this offer included in this document are related to SDSL in VC switching mode. For VP switching, reference is made to the Belgacom BROBA II ADSL Main Body and other annexes.~~

~~3.2. For Broba over ATM¹: p~~Precisions concerning VP / VC switching options:

- In VC switching mode, contrarily to VP switching mode, there is no pre-provisioning of the ATM part: VCs are configured at the moment of the implementation of the service
- VPs/~~VLANS~~ implemented in the framework of Broba II ADSL can be used for Broba II SDSL in VP switching mode

~~3. All information and descriptions concerning the ATM transport (between the DSLAM's and the ATM access points) included in this document are related to SDSL in VC switching mode. For Ethernet transport and ATM transport in VP switching, reference is made to the Belgacom BROBA II ADSL Main Body and other annexes.~~

4. The ATM access points, and the Service PoPs, are the same for Broba II SDSL (in VP & VC switching modes) as for Broba II ADSL.

2. Glossary

- **Access Line:** an Access Line is an interface between a Belgacom ATM switch located in an ATM Access Point and the Beneficiary Equipment. From patch line + data link+ transmission to the Beneficiary
- **ATM Access Point:** an ATM Access Point provides access to the Belgacom ATM network through NNI connection with a Belgacom ATM switch.
- **Beneficiary Equipment:** Beneficiary equipment or any other equipment
- **DSLAM:** Digital Subscriber Line Access Multiplexer. DSLAMs are located in Belgacom Local Exchanges, Local Distribution Centers or other relevant points where Belgacom has installed such equipment and they are owned and managed by Belgacom.
- **GE_NT aggregator:** GE_NT Aggregator is an ATM VC cross-connect, equipped with ATM LTs at access side and a Gigabit Ethernet NT card and more ATM LTs at network side.
- **Lex:** Belgacom Local Exchange
- **Network Termination Point (NTP):** The termination point of a Broba II SDSL loop at the End User premises. The Network Termination Point is a part of the Belgacom network.
- **OAL:** OLO (Ethernet) Access Line. An Access Line is an interface between the Customer Equipment and a Belgacom Service Router located in the Service PoP of the Service Area.
- **OLO:** Other Licensed Operator.
- **P-bit:** priority bit.
- **Service PoP:** a Service PoP provides access to the Belgacom Ethernet network through NNI connection with a Belgacom Service Router.

¹ [See §18 and §19 for description of Broba over ATM and Broba over Ethernet.](#)

- **VLAN:** Virtual Local Area Network. In this document, the word "VLAN" equally refers to a shared or a dedicated VLAN, ~~aggregating in one VLAN per service quality and per LEX the traffic of all user lines of a Beneficiary.~~
- xDSL: for example: ADSL, ADSL2, ADSL2+, gShDSL, enhanced SDSL, VDSL.
- Unless specified otherwise, the words "BROBA", or "BROBA II" equally refer to BROBA over ATM and to BROBA over Ethernet.

3. Scope

5. This document entails the conditions related to the provision by Belgacom to the Beneficiary, of the Broba II SDSL service, which will enable The Beneficiary to define its own SDSL products and to market, distribute and sell under its name and on its behalf its own SDSL products towards End Users, using Belgacom's installed and existing Network infrastructure, pursuant to the technical limitation of this existing infrastructure for offering the service.
6. The attention is drawn to the fact that taking into account that the present offer by definition implies the use of Belgacom DSLAM, this offer is related to the provision of SDSL services only. In the future, this offer could be enlarged to other DSL technologies, after approval by BIPT as soon as these technologies are tested and at least 3 months before they are commercialized (retail and/or wholesale) by Belgacom.
7. This offer and its tariffs are only applicable for cases where DSLAMs are located in Belgacom premises (Lex or LDC or KVD when provided by Belgacom in the framework of its own retail or wholesale offer).
8. This document contains the technical, operational and financial conditions, as well as a possible method of connection and the applicable terms and conditions related to such service.
9. The provision of the hereunder-described service supposes the following list of prerequisites that will need to be met at all times and in all circumstances:
 - Connection between the network of the Beneficiary and the Belgacom network (hereafter the "Network") is established pursuant to the principles set out in this document;
 - A line from the End User to the LEX + LDC'S + other relevant points where Belgacom has installed DSLAMs must be available
 - If Small Networks Adaptations (SNA) works are required to deliver the service, they are allowed following the SNA rules used by Belgacom in its provisioning process;
 - If an impossibility to provision the service cannot be solved by SNA works, the order will be rejected.

4. Usage of a unique reference for migrations of without PSTN or ISDN Belgacom services

10. In scope of migration requests that a Beneficiary sends to take over a BRUO/BROBA service "without PSTN or ISDN Belgacom service" from another Beneficiary or a Belgacom ADSL without voice service, there will be an issue in the identification of the copper pair on addresses with for example more than one pair in service.
11. For a migration request from a BROBA/BRUO without PSTN or ISDN Belgacom service or from a Belgacom ADSL without voice service, the Beneficiary will include the circuit ID of the service communicated to the prior Beneficiary as identification of the service to be migrated.
12. The circuit ID that has been communicated by Belgacom at the provisioning of a new BRUO/BROBA service or of a Belgacom ADSL without voice service is the unique reference to identify both the service and the copper pair.
13. The Beneficiary will communicate for all BRUO/BROBA without PSTN or ISDN Belgacom products the circuit ID provided by Belgacom to the User. This is best done by including this reference on the bills and contracts that is sent to the User for the service based on BRUO/BROBA. By that, in case of migration, the circuit ID can be exchanged between a Beneficiary and the End User, just like is done today with the dial number. As a consequence the Circuit ID can be included systematically in the migration orders and this will avoid further problems in this case.
14. The Belgacom ADSL without voice service is identified by a circuit-id which can be found at the invoice as the identifier of the paragraph 'Internetverbinding/Connection Internet'.

5. Description of Broba II SDSL

5.1 General

15. Beneficiaries shall be able to benefit from any changes in the Belgacom network infrastructure similar to what Belgacom is offering to its own retail services, and Beneficiaries shall be notified duly in advance of any changes in its "existing" infrastructure: at least 12 months in advance for any changes which will have a significant impact on the service offering and at least 6 months in advance for any minor changes that will have a minor impact on the service offering. The BIPT will be informed in any case. Concerning the periods of notice, the BIPT can allow exceptions.
16. This offer is related to the provision of SDSL services.
17. The present offer is offered in combination with ATM transport (BROBA over ATM), for VP and VC switching services, and with Ethernet transport (BROBA over Ethernet), ~~for VP-switching service~~ with shared or dedicated VLAN's. As from 01/01/2013, only Ethernet transport will remain available.
18. In **BROBA over ATM**, the Broba II SDSL service will allow the Beneficiary to connect on Belgacom network at ATM Access Points and to receive any ATM cells from the End User using SDSL technology. The transport end-to-end between the End User and the Beneficiary is ATM.
19. In **BROBA over Ethernet**, the Broba II SDSL service will allow the Beneficiary to connect on Belgacom network at Belgacom Service PoPs and to receive any Ethernet frames from the User using SDSL technology. The transport between the User and the Beneficiary is a combination of ATM and Ethernet.
20. The resources to satisfy new demands for additional ATM capacity might no longer be available. Belgacom shall in no event be obliged to engage new investments in order to satisfy additional ATM demands from Beneficiaries of the present offer.
21. In case of Belgacom is not able to satisfy new demands for additional ATM capacity, it is entitled to look for alternatives. In particular Belgacom will in such case be entitled to use Ethernet as technical means to ensure the BROBA transport. This without prejudice to the continuation of existing ATM transport used by the Beneficiary.
22. For any subsequent change in the handling and hand-over of the traffic from ATM to Ethernet Beneficiary will be notified prior to this change. The effective change will be done after the Beneficiary has been notified and after the Beneficiary was in the possibility to order its Ethernet connectivity for a specific location.
23. Belgacom's vendor of DSLAM for SDSL products is Alcatel. The Belgacom SDSL network is currently based on Alcatel A1000 and A7300 DSLAM's, version 4.x.
24. The Bitstream access service is offered on basis of the equipment delivered by Belgacom's supplier at the moment of the equipment's bringing into service in a given site.
25. This implies that several versions can co-exist at the same time, for the use of Belgacom as well as for the Beneficiaries of the service.

26. Each new equipment or each new equipment software used by Belgacom for its retail or wholesale services will be made available for the Bitstream Access Services.
27. In case of software evolutions, Belgacom shall ensure that the software will be compatible with the previous one on the same configuration and will inform the Beneficiary about the changes and their consequences. In case of Belgacom own pieces of software that would make the solution proprietary to the Belgacom environment, Belgacom shall ensure the compatibility of subsequent versions with the old ones.
28. If Belgacom has to proceed to an upgrade or replacement of equipment or software equipment, this will be done under one or several of the following conditions unless other reasons are justified by Belgacom and approved by the BIPT:
- The new equipment software is compatible with the previous one and allows the same configurations;
 - The new equipment or equipment software is compatible with installed CPEs and modems as agreed by BelcomLab;
 - The old equipment or equipment software is, for any reason, no more available from the supplier;
 - The concerned equipment or equipment software is written-off by all parties
 - Investments to be realized by all parties are reasonable and justified;

Belgacom will inform the concerned parties before any upgrade or replacement: six working days for an upgrade or a maintenance patch, one working day for a correcting maintenance patch.

Belgacom will give an estimation and a description of the eventual potential alteration of the service.

29. Belgacom will ensure the management of the DSLAM and the proper configuration of it. This management and all relevant possibilities-functionalities (also the database aspect) will be exhaustively described to the Beneficiary on simple demand.
30. The offering of the BROBA over ATM service under this document covers:
- The provision by Belgacom of an Access Line between the Beneficiary Equipment and the Belgacom ATM Access Point;
 - The provision by Belgacom of bandwidth between the DSLAMs located in the Local Exchanges and LDC's or other relevant points where Belgacom has installed DSLAM's in which the Beneficiary wants to connect End Users and the Belgacom ATM Access Points to which the Beneficiary Equipment are connected;
 - The provision and the configuration by Belgacom of ATM Transport (use of CBR or VBR or UBR+ service as defined further in this offer) between the DSLAMs and the Beneficiary Equipment.
 - The provision by Belgacom of SDSL lines to the Users.

5.2 The "connection" that is established between the end-user and the Beneficiary can be seen as follows:

5.2.1 End-user and DSLAM from which end-user depends:

31. The Beneficiary will ask Belgacom to activate SDSL on this line and is free to choose one of the SDSL-data rates defined in the table of the section 7.1 of this document.

In the framework of Broba II SDSL, there is no rate-adaptiveness, as the bitrate delivered on the physical line is guaranteed (see section 7).

5.2.2 DSLAM from which end-user depends and ATM switch from which the DSLAM depends²:

32. A link of 155 Mbps, shared among several Beneficiaries, is brought to the back of the DSLAM rack and is connected to the Belgacom ATM switch from which the DSLAM depends. It is the responsibility of BELGACOM to manage the interface cards.

5.2.3 The ATM switch from which the DSLAM depends and the ATM Access Point (ATM switch) to which the Beneficiary equipment is ~~connected~~¹connected²:

33. 1 to 10 VCs will be configured between the DSLAM and the Beneficiary equipment to transport the SDSL traffic of an end-user up to the Beneficiary. The Beneficiary is responsible for the bandwidth dimensioning of the VCs between the DSLAM and the ATM Access Point.

5.3 Access Line between Belgacom ATM Access Point and the Beneficiary ~~Equipment~~¹Equipment²

34. An Access Line will be established between the Beneficiary Equipment and the Belgacom ATM switch, located in the Belgacom ATM Access Point, to which the Beneficiary equipment is connected.
35. The list of Belgacom Access Areas is available in Appendix C.
36. The connection between the Belgacom ATM switch and the Beneficiary Equipment is subject to successful testing procedure, as set forth in Broba II ADSL Data Connectivity Annex 2 (Section 1: ATM tests for Belgacom Data Connectivity).
37. The Beneficiary is allowed to do overbooking on the access line. Each Beneficiary is responsible for its dimensioning and the risks run by this one. The Beneficiary is allowed to do overbooking on the access line and Belgacom cannot refuse to provision a new or an upgrade of a VP/VC. However, when the sum of the guaranteed bandwidths of all VP's on an access line exceeds the SCR of that access line capacity, any trouble ticket opened at Belgacom by the Beneficiary which leads to the conclusion that the request for repair has as origin an excessive overbooking will be invoiced to the Beneficiary at the tariff of Wrongful Repair Request and the timer conditions as set out in the SLA and Improved SLA will not be of application to this trouble ticket.

² All information and descriptions concerning the ATM part of this offer included in this document are related to SDSL in VC switching mode. For [Ethernet transport and ATM transport in](#) VP switching, reference is made to the Belgacom BROBA II ADSL Main Body and other annexes.

38. The Access Line is made of:
 - A Patch Line as described in Section 5.3.1;
 - A Data Link as described in Section 5.3.2.
39. For information on the Technical Specifications of the Access Line, reference is made to Broba II ADSL Data Connectivity Annex 2 (Section 2: Specifications of the Access Line).

5.3.1 Patch Line

40. The Patch Line is the physical element, which consists of a coax line between the Belgacom ATM switch and the Belgacom DDF for transmission capacities up to 34 Mbps. For rates exceeding this threshold, the Patch Line is the physical part that consists of the fiber link (including necessary transmission equipment) between the Belgacom ATM switch and the ODF.
41. The Patch Line is installed and maintained by Belgacom. The Patch Line has to be paid by the Beneficiary in both Customer-Sited and Belgacom-Sited Data Links Solutions.
42. The fees to be paid by the Beneficiary and corresponding to this Patch Line are specified in Annex 6 of this document.

5.3.2 Data Link

43. The Data Link is the physical element between Belgacom Distribution Frame and the Beneficiary equipment.
44. By default, Data Links consist of a Customer-Sited Data Link Service as described in Broba II ADSL Main Body - Appendix A.
45. Depending on Beneficiary's request, as explained in Appendix A, Data Links can be realized by means of Belgacom-Sited Data Link Service as described in the same Appendix.

6. Schematic ~~Presentation~~¹Presentation²

46. The service is provisioned on a non-active loop or active loop where telephone service or leased line service or other relevant service (s), if any, has to be released, (which means that, if the service is firstly released, the loop turns back to a non-active loop), using processes similar to those developed for raw copper loops, on top of a Circuit ID.
47. From the MDF, the end-user line will be connected to the DSLAM using a 24-pair type II cable and will be terminated on a SDSL line card.
48. The data is then put on the data network. The data stream is managed via PVC and is handed over to the Beneficiary at the ATM Access Points. No LF is returned to the Belgacom voice switch since SDSL doesn't support this service. Similarly, splitters are not necessary, neither in the LEX nor at the end-user premises.
- ~~49.~~
50-49. The Beneficiary connects to a Belgacom ATM Access Point by means of an Access Line. Belgacom~~ELGACOM~~ will configure each VC on behalf of the Beneficiary to transport the SDSL traffic of each end-user up to Beneficiary's equipment. Belgacom~~ELGACOM~~ will also configure the end-user line with profiles defined by the Beneficiary.

6.1 Broba II SDSL Service with Belgacom-Sited Data Link

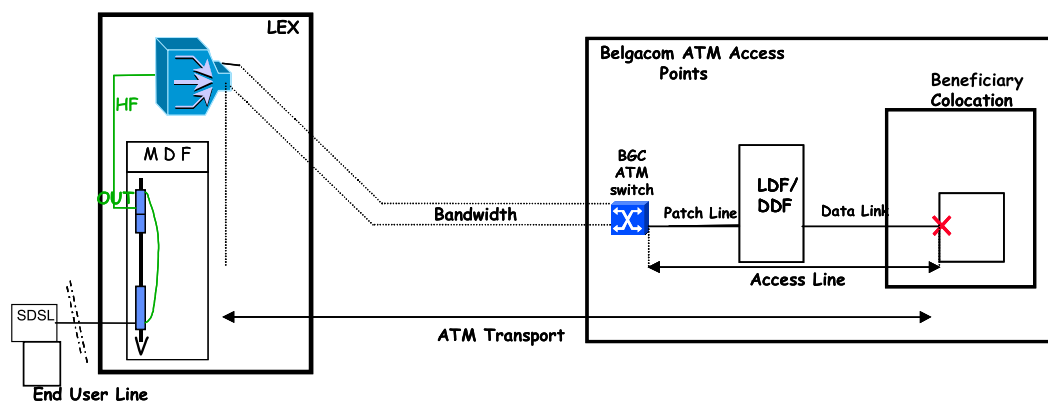


Fig. 1

[51.50.](#) The customer needs physical (separate room or comingling) collocation in the Belgacom Access Point.

6.2 Broba II SDSL Service with Customer-Sited Data Link

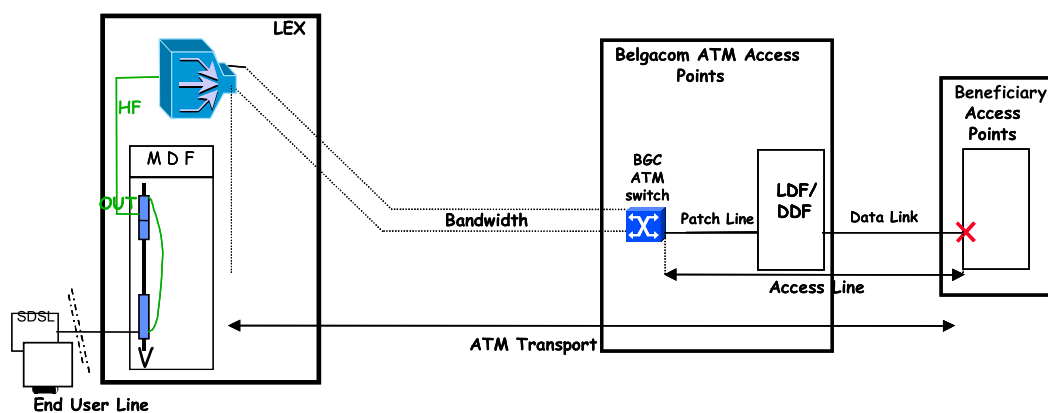


Fig. 2

7. Broba II SDSL profiles

7.1 Physical line from end-user to DSLAM

52.51. When activating an SDSL line, the Beneficiary can choose one of the SDSL line profile defined in the following table. Those profiles are applicable both for Broba II SDSL VC and VP switching modes.

Bit rate
192 Kbps
384 Kbps
640 Kbps
832 Kbps
1024 Kbps
1216 Kbps
1472 Kbps
1664 Kbps
2048 Kbps
2304 Kbps

7.2 DSLAM – ATM backbone (VC switching)

53.52. In VC switching, the Beneficiary can choose its ATM profiles within the following table.

Traffic descriptor	DSLAM	ATM backbone	ATM Bitrate	
ATM01	CBR	CBR	64	64
ATM02	CBR	CBR	128	128
ATM03	CBR	CBR	192	192
ATM04	CBR	CBR	256	256
ATM05	CBR	CBR	384	384
ATM06	CBR	CBR	512	512
ATM07	CBR	CBR	1023	1023
ATM08	CBR	CBR	1536	1536
ATM09	CBR	CBR	1984	1984
ATM10	UBR	VBR-nrt	256	1023
ATM11	UBR	VBR-nrt	512	1023
ATM12	UBR	VBR-nrt	512	2047
ATM13	UBR	VBR-nrt	64	64
ATM14	UBR	VBR-nrt	128	128

54.53. Additionnally, the Beneficiary can use the ATM profiles defined in VC switching mode in the common pool of ATM Profiles (see list "Shared ATM TD" on Personal Page). The profiles in the common pool will be added after agreement of all concerned Beneficiaries and Belgacom.

55.54. The QoS of a VC on the end-user side of the DSLAM has to be of the same type, or lower, than the VC requested in the ATM network : VBR rt VC (ATM) can content VBR rt VC or lower (DSLAM) and VBR nrt VC (ATM) can only content UBR+ or VBR nrt VC (DSLAM).

7.3 DSLAM – ATM backbone (VP switching)

56.55. If a Beneficiary opts for SDSL in VP switching mode, the rules as defined in Broba II ADSL are applicable, as the VPs/~~VLANS~~ implemented in the framework of Broba II ADSL can be used for Broba II SDSL in VP switching mode :

- The Beneficiary can obtain 8 own ATM Line Profiles³. usable for VP (ADSL or SDSL) switching.
- Additionnally, the Beneficiary can use the ATM profiles² defined in VP switching mode in the common pool of ATM Profiles (see list "Shared ATM TD" on Personal Page). The profiles in the common pool will be added after agreement of all concerned Beneficiaries and Belgacom.

57.56. The QoS of a VC on the DSLAM has to be of the same type, or lower, than the VP requested in the ATM network : VBR rt VP (ATM) can content VBR rt VC or lower (DSLAM) and VBR nrt VP (ATM) can only content UBR+ or VBR nrt VC (DSLAM).

8. Provisioning

58.57. At the moment that the Beneficiary requests the activation of SDSL on a specific End User line, Belgacom:

- Makes the physical connection of the end-user line on the DSLAM
24-pair cables, 48-pair blocks, DSLAM sub-racks and line cards are shared between OLOs and Belgacom.
- Makes the setup and the configuration of the VCs on behalf of the Beneficiary following the VC parameters.
- Configures the End User line with a SDSL profile and with max. 4 VCs per SDSL connection; each VC has its own profile (Belgacom could increase this number in the future if a motivated demand is made by a Beneficiary).

59.58. Prior to the connection by Belgacom of a specific Beneficiary's End User line,

- Belgacom must have performed, in Broba over ATM (respectively, in Broba over Ethernet), on the Beneficiary request, the installation of a dedicated Access Line (respectively, an OLO Access Line) between an ATM switch (respectively, a Service router) located in a Belgacom ATM Access Point (respectively, a Belgacom Service PoP) and the Beneficiary's equipment.
- If the Beneficiary already has a possibility to use an access line (for Broba II ADSL or wholesale xDSL for instance, which can be of another party)~~==~~, he may make use of this one to connect, in Broba over ATM (respectively, in Broba over Ethernet), to the ATM Point (respectively, a Belgacom Service PoP) for Broba II SDSL (see also Broba II ADSL - Annex 6 – Pricing & Billing point 1.3).

60.59. In any event, as far as operational processes related to the Access Line are concerned, both Parties will use at any time their best efforts to implement all necessary co-operations to ensure an adequate level of service provision both between the Parties and towards the End Users concerned.

³ ATM profiles: only for BROBA over ATM

| 61.60. Delays for the provisioning of these access lines take into account the fact that, when public infrastructure works have to be realized, several actions and several actors can extend the time needed for provisioning of the access lines. Examples of interventions can be:

- Studies
- Creation of implementation plan
- Requests to Public Authorities for authorization to realize works on the Public Infrastructure (often 2 months or more)
- Realization of the works

| 62.61. In the event that difficulties or problems arise in this respect, the Parties will use all necessary co-operation and consultation with a view on developing appropriate and workable solutions subject to agreement between the Parties.

9. Inquiries

- | 63-62. The Beneficiary can request a check of an individual End User line prior to the request for activation. This request is called an "inquiry".
- | 64-63. If the request is done via XML, an inquiry fee will be invoiced to the Beneficiary. If it's done via the web tool, a loop attenuation check fee will be invoiced (see Annex 6 – Pricing & Billing – points 1.1.1 and 1.1.2).
- | 65-64. The check will be snapshot based and will rely on the following elements:
- Technical spectral check of the system at the time of inquiry;
 - Pair gain system check;
 - Check of spectral saturation of cable.
- | 66-65. On the basis of these parameters a positive or negative technical advice will be given on the possibility to activate a SDSL service on the considered End User line at the moment this check is carried out. Therefore, a positive technical advice does not necessarily mean or guarantee that the service can be made available to the Beneficiary at any time.
- | 67-66. If Beneficiaries want to make inquiries via the web tool, they can consult the Belgacom website (www.belgacom.be - Wholesale – Lancer le site Web – Personal Page) - enter your login name and password – Broba II – Broba II SDSL Inquiry tool). After having introduced the data needed to identify the end-user loop, the Beneficiary will receive the distance and the attenuation at 800 Hz of the loop between the end-user and the nearest DSLAM equipped for SDSL.
- An utilisation manual of the Inquiry Tool is available on the Belgacom Wholesale Personal Page (Regulatory Information/BROBA) describing the functionalities of this tool, the input needed and providing all needed explanations to interpret correctly its output.
- | 68-67. This inquiry will be billed to the Beneficiary (seen Annex 6 – Pricing & Billing – point 1.1.2).

10. Rules to follow with respect to End-user lines

10.1 Types of lines

- | 69-68. Access to- and ordering of end-user lines for the Broba II SDSL service is based on following definitions:
- Beneficiaries have the right to gain access to an end-to-end copper pair at Belgacom Local Exchange buildings or LDC or KVD when provided by Belgacom in the framework of its own retail or wholesale offer (consult the Belgacom website (www.belgacom.be - Wholesale – Lancer le site Web – Personal Page)), on the condition that the requested copper pair is unequipped, i.e. that no load coils or Active Equipment (coupling, repeaters, correctors, etc.) are present in the relevant circuit/s. It is further required

that the copper pair exists and can be used without the need of severe network modification works, which have to be proved to the Beneficiary. In this respect, the small network adaptations performed by Belgacom are described in 10.2.

- For more information on migrations, reference is made to the Migrations Offer (BRUO Annex K).
- Belgacom currently doesn't plan any implementation of SDSL multi-pair. If Belgacom, in the future, decides to deploy the SDSL service on multiple pairs, this will be included in the Broba II SDSL offer and communicated to the market 3 months before the start of the service.

10.2 Small Network Adaptations

- | 70-69. The Introduction Cable (also referred to as drop wire) is defined as the physical part of a End-User line that connects the Distribution Cable to the End-User Network Termination Point.
- | 71-70. In some cases, the pair of fully metallic continuous unequipped copper wires exists from the Belgacom Main Distribution Frame at the Belgacom LEX or LDC up to the Distribution Cable in the street in front of the User premises.
- | 72-71. In case no Introduction Cable is available for the provisioning of a Data Connectivity (Broba II) without voice, the following solutions, called Small Network Adaptations, will be applicable:
 - Realization of a new introduction in the building of the Beneficiaries User
 - Renewal of the introduction in the building of the Beneficiaries User
 - Splicing additional pairs in the existing introduction splice of the building of the Beneficiaries User
 - Moving existing introduction from an existing Distribution Cable to another existing Distribution Cable.
- | 73-72. These solutions will only be available upon specific request of the Beneficiary and providing that the Belgacom standard conditions for access are fulfilled. This requires that a free duct or an open trench is available on the private domain. If a free duct or an open trench is not available on the private domain, Belgacom can be asked to also perform this part of the work on condition that the Beneficiary agrees to pay the non-discriminatory commercial price for that part of the work performed by Belgacom. This price will be determined on a case-by-case basis.
- | 74-73. Belgacom will only perform the Small Network Adaptations if the splicing is done in front of the premises of that specific User. Belgacom will provide an Introduction Cable with a standard length of 20 meters to provide connection between the Distribution cable and the Network Termination Point. In case an introduction with a length of more than 20 meters has to be provided, Belgacom will charge the Beneficiary the relevant price for the extra work. On the private domain, the Beneficiary must provide duct and trench.
- | 75-74. In case no more free pairs are available in the Distribution Cable or the Feeder Cable, the request will be rejected. The construction or trenching of new distribution cabling, new street cabinets or new feeder cabling is outside the scope of the present offer.
- | 76-75. If small network adaptations are necessary to provide the requested service and Beneficiary did not include his approval in his request, Belgacom shall

point out to the Beneficiary that he has the possibility to ask for small network adaptations (an absence of approval in the initial request shall not be considered as a reject).

10.3 Network Termination Point

- | [77.76.](#) The Network Termination Point is the first termination point of a loop at the End User premises.
- | [78.77.](#) If no Network Termination Point is present, Belgacom will install it at the moment of the line provisioning. This is automatically the case for Small Network Adaptations.
- | [79.78.](#) The NTP can be of the following types :
 - TF2001
 - TF2007
- | [80.79.](#) The NTP makes part of the Belgacom public infrastructure. Consequently, only Belgacom is allowed to install and to modify the NTP, unless otherwise stated.

10.4 Move from LDC to LEX

- | [81.80.](#) If a DSLAM is available in the LDC, VPs may be ordered in the LDC concerned in case the Beneficiary wants to connect end-users in that local net.
- | [82.81.](#) However, if a beneficiary requests to move an end-user line from a LDC to a LEX, Belgacom will perform the work under the condition that there are enough available copper cables in the junction between the LEX and the LDC.
- | [83.82.](#) Since this move can often lead to malfunctioning of the end-user line, any trouble ticket that will be opened by the beneficiary - and for which the diagnostic is that the issue is the consequence of the move - will be considered as a wrongful repair request.
- | [84.83.](#) If the beneficiary asks to move back the line to its LDC, an activation fee will be invoiced to the beneficiary.

10.5 Spectrum Management and equipment aspects

- | 85-84. The rules mentioned hereunder may be modified or completed on basis of the proposals of the Task Group Spectrum Management, approved by the BIPT.
- | 86-85. The number of broadband systems that can be deployed within an access cable is not limited. It does not mean that spectral interference between different systems is under control. Adding a lot of broadband systems within a cable leads to a general decrease of the performance, compared with the situation where only a few high frequency systems are deployed.
- | 87-86. In order to maintain a good performance level for the xDSL services, Belgacom is applying some pair selection rules. The purpose is to keep the new xDSL technologies at a distance of the existing and disturbing technologies.
- | 88-87. The only rules to be considered are the following: a line type 2 will not be located in the same quad than or in the adjacent quad of an existing 2 Mbits system.
- | 89-88. The pair selection rules do not offer any guarantees as to the potential bit rate in any access cable or on any specific copper pair.
- | 90-89. Note: particular requisites in terms of performance could lead to the definition of new rules and new types of lines in the future.

11. SDSL deployment rules

- 91.90. This table doesn't show the bit rates Beneficiaries can order. These bit rates are defined in the table in section 7.
- 92.91. However, this table shows the limitations bit rates versus loop attenuation at 800Hz as proposed by Belgacom. This means that if a Beneficiary's order exceeds these rules, his order will be rejected.
- 93.92. The limitations were calculated by taking into account the presence of potential signal perturbations (ADSL, SDSL) in the same quad and adjacent ones.
- 94.93. Tests were performed on feeding and distribution cables on the test environment of Belgacom.
- 95.94. Equipment: Chipset: Globespan, version 1.5
- 96.95. The maximum deployment of SDSL systems can limit the deployment of ADSL to some extent because of the risk of interference between SDSL and ADSL, which may be found in the same quad according to the pair selection rules. Therefore, the following attenuation at 800Hz restrictions have to be respected for the SDSL systems:

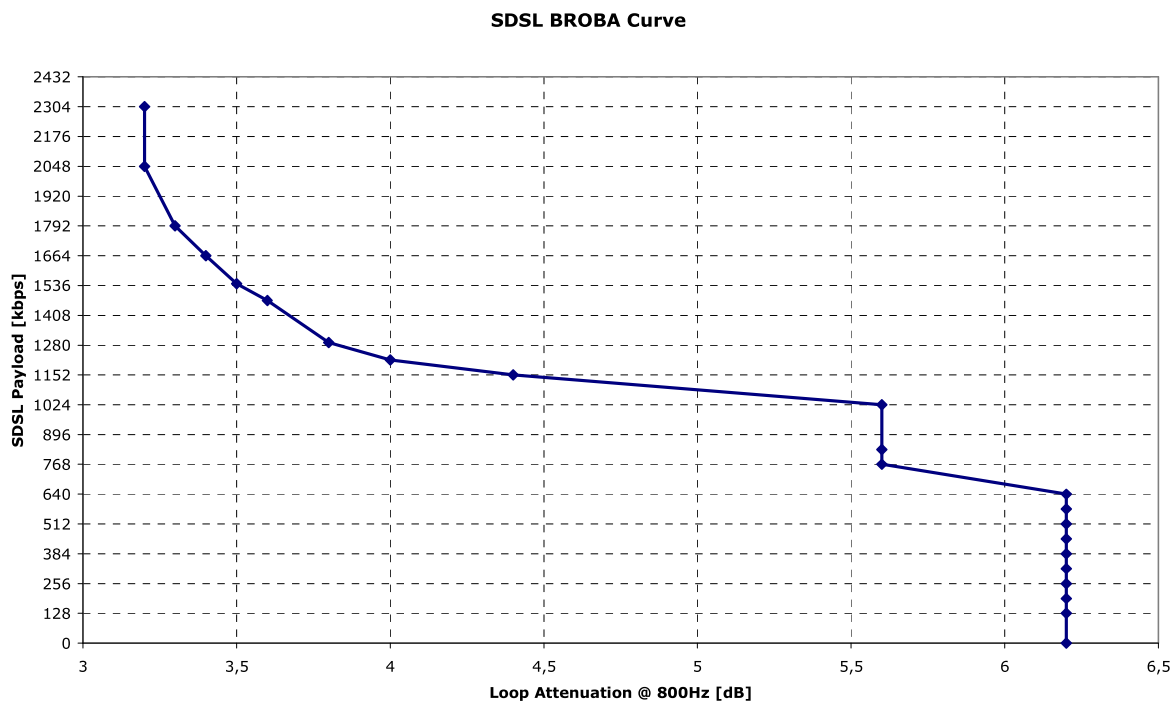


Fig.3

97.96. The following table gives the x-y data of this graph, linear interpolation is to be used for points that are not listed in the table:

Att @ 800Hz	SDSL Line Rate (kbps)	SDSL Payload [kbps]
3,2	2312	2304
3,2	2056	2048
3,3	1800	1792
3,4	1672	1664
3,5	1552	1544
3,6	1480	1472
3,8	1300	1292
4	1224	1216
4,4	1160	1152
5,6	1032	1024
5,6	840	832
5,6	776	768
6,2	656	640
6,2	592	576
6,2	528	512
6,2	464	448
6,2	400	384
6,2	336	320
6,2	272	256
6,2	200	192
6,2	136	128
6,2	0	0

Note: this curve is subject to evolution.

12. Ordering of Broba II SDSL Services

98.97. Belgacom delivers access to the Broba II SDSL service at the LEX or LDC or KVD when provided by Belgacom in the framework of its own retail or wholesale offer according to the Beneficiary's orders transmitted to Belgacom in accordance with the rules set out in this document.

12.1 Services that can be ordered

99.98. An exhaustive list of the Broba II SDSL services can be found in Annex 6 – Pricing & Billing.

12.2 Rejection of Requests for Broba II SDSL

100.99. Belgacom will reject a Request for Broba II SDSL service, in particular:

- if no Non-active loops are available (in case of a Request for a Non-active Loop); without prejudice of the right of the Beneficiary to request in that

case a small network adaptation by Belgacom, according to the conditions as set out in 10.2;

- if no loop compatible with the applicable pair selection rules as defined above is available;
- if the order specifies a bit rate/attenuation that exceeds the attenuation/bit rate limitation curve.

~~101.100.~~ In case a migration cannot be executed, the Beneficiary's request will be rejected. However, in that case the Beneficiary has the possibility to send to Belgacom a Non-active Loop Request. In the event that the latter Request can neither be executed, this Request will also be rejected.

12.3 Ordering process

~~102.101.~~ Orders to activate the Broba II SDSL service on end-user lines are submitted by the Beneficiary to Belgacom through the use of the electronic messaging system MTS (Message Transfer System), by sending an e-mail or via fax. Each message contains one order form in attachment, coded in XML in case of MTS e-mail. On the condition that the Beneficiary has validly contracted for the provisioning of BROBA", he will obtain the encryption keys in order to sign and encrypt the message.

~~103.102.~~ The order must carry the following minimal information:

- Beneficiary's identification;
- Name and full address of the end user to connect;
- Customer ID (optional)⁴;
- When relevant (in case of migrations or active loops), directory number (NA);
- Ready for service date;
- Profile chosen by the Beneficiary.

12.4 Migration

~~104.103.~~ For more information on migrations, reference is made to the Migrations Offer (BRUO Annex K).

⁴ This point is still under study. In the meantime, the general rule is: for an order on a non-active loop: address, for an order of an active loop: address + dial number.

13. Billing

13.1 General

105.104. Principle: all Standard Fees as described in Annex 6, whenever relevant, will be invoiced to and are to be paid by the Beneficiary.

13.2 Process

- **Graphic illustration**

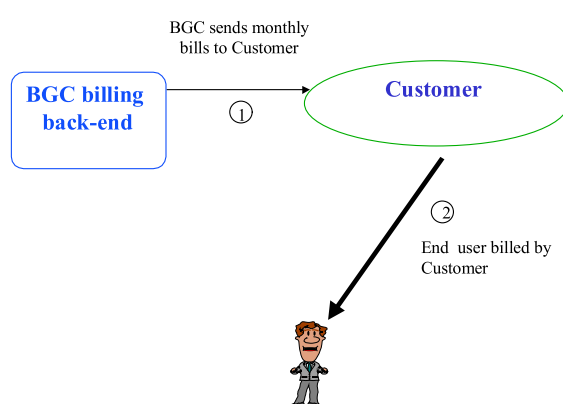


Fig. 4

- **Description**

106.105. The Beneficiary will receive a monthly invoice containing the fees (recurring and non-recurring) for that period. Invoices related to any relevant fees are to be paid within the foreseen deadlines as set out in Pricing & Billing document (Annex 6).

14. Repair

14.1 General

107.106. Repairs are carried out on the Network after the Beneficiary has informed Belgacom provided the Beneficiary has made the preliminary investigations and is confident that the problem is in Belgacom Network. The Beneficiary, when reporting that there is a problem, has to give precise information about the nature of the problem. Belgacom will, when appropriate, confirm the existence of the problem.

~~108.107.~~ If Belgacom becomes aware of a problem on the network, Belgacom automatically coordinates the necessary actions to resolve the problem according to the applicable arrangements.

Note: modification and interruptions

~~109.108.~~ The maintenance and the development of the Network may require Belgacom to limit the service or to suspend it temporarily. Belgacom undertakes to limit the duration of this period to the time that is required for the execution of the work and that duration will, in no way, be longer than the period that Belgacom would require if her own services needed to be suspended. In such cases, Belgacom will inform the Beneficiary in due time at least 48 hours in advance, and communicate the estimated suspension time and the reason of suspension. Such service interruptions are not included in the (I)SLA on service availability.

14.1.1 Repair on a specific End User line

~~110.109.~~ The Beneficiary will communicate possible network related problems of End Users to Belgacom. Belgacom will never be first line of contact with the End User for the Beneficiary SDSL based service, based on the Broba II SDSL service.

14.1.2 Repair for spectral issues reasons

~~111.110.~~ If problems occur as a consequence of a Beneficiary SDSL based service (for instance: interference of the Beneficiary system with existing system in service in the cable bundle, connection of non-compatible equipment), Belgacom may solve the problem by removing the concerned Beneficiary service on the concerned End User line under LIFO (Last In First Out) mode. The related costs will be invoiced to the Beneficiary. In case of dispute regarding the costs either party can ask BIPT to verify the claimed costs.

~~112.111.~~ Note that the inquiry "loop attenuation" doesn't examine the spectral characteristics of the line and cannot consequently determine with a 100% accuracy that the line won't present technical problems.

~~113.112.~~ If the SDSL services offered by the Beneficiary appear to be the cause of an abnormal⁵ perturbation, Belgacom will demonstrate that this was caused by the services of the Beneficiary and will, eventually, interrupt the service to be able to make this demonstration. The same procedure applies if the DSL services offered by Belgacom appear to be the cause of an abnormal perturbation. The general rule that must be followed is: first system in service should stay in service. The Beneficiary has, at all time, the right of verification. Repair requests can be submitted by phone or e-mail in function of the types of faults (see Annex 4 – Planning & Operations point 8 for more information)..

⁵ Abnormal : when disturbances on other lines in the same cable are not in line with the technical rules and authorisation conditions as defined within the context of the technical specifications

Appendix A: Access Line

15. Customer-Sited Data Link

15.1 Preliminary

- | ~~114.113.~~ The terms, conditions and requirements set out in this section determine the general framework between Belgacom and the Beneficiary on Customer-Sited Data Link Service in the framework of provision of a connection between a Belgacom ATM switch, located in a ATM Access Point, and the Beneficiary Equipment, in the framework of this service. This service will be referred to hereafter as "Customer-Sited Data Link".
- | ~~115.114.~~ For the provision of 2Mbit/s, 34Mbit/s or STM-1 Customer-Sited Data Link, The Beneficiary will subscribe a one (1) year contract, under which the 2Mbit/s, 34Mbit/s or STM-1 Customer-Sited Data Link Service is made available to the Beneficiary for a fixed term of one year. At the end of this period, the contract will be tacitly renewed for an indefinite duration and can be terminated at any time with a notice of at least one calendar month. If the Beneficiary wishes to terminate the contract during the initial one-year term, The Beneficiary will pay to Belgacom a termination fee equal to the total of the rental fees until the end of such term.

15.2 Description

- | ~~116.115.~~ Customer-Sited Data Link is a connection system that is provided in its entirety by Belgacom between the Beneficiary Connection point at the Beneficiary premises, and Belgacom ATM Access Point.
- | ~~117.116.~~ Belgacom will install the necessary transmission equipment at the premises of the Beneficiary.
- | ~~118.117.~~ The Customer-Sited Data Link Service consists of one (1) or more 2Mbit/s, 34 Mbit/s or STM-1 Systems.
- | ~~119.118.~~ 2Mbit/s, 34Mbit/s or STM-1 Systems provided under this Service Plan do not have Diversity of routing.
- | ~~120.119.~~ Diversity of routing can be available as an option (when technically feasible and at a price based on a quote from Belgacom for the diversity routing aspect).
- | ~~121.120.~~ The Beneficiary Connection point is located at the Beneficiary's premises.

15.3 Implementation

- | ~~122.121.~~ The implementation of Customer-Sited Data Link Service will be in accordance with the Technical Specifications provided in Annex 2 – Section 2: Technical Specifications of the Access Line.

15.4 General Conditions

- | ~~123.122.~~ A Customer-Sited Data Link Service can be ordered by the Beneficiary between a specified Belgacom ATM Access Point (Connection Point) and the specified Beneficiary's premises.
- | ~~124.123.~~ The Beneficiary shall provide and maintain, at its expense, the cabling from the Point of Connection to the Beneficiary equipment including any cross connections that are required.
- | ~~125.124.~~ All Belgacom transmission equipment shall comply with the appropriate Belgacom Technical Specifications provided in Annex 2 – Section 2: Technical Specifications of the Access Line.

15.5 Prices

- | ~~126.125.~~ The Beneficiary shall pay to Belgacom the installation and rental fees provided in Annex 6 for Customer-Sited Data Link Service.

15.6 Specific Conditions

- | ~~127.126.~~ Belgacom will identify each 2Mbit/s, 34Mbit/s or STM-1 Customer-Sited Data Link provided pursuant to the conditions of this Section through attributing them a codification number.

16. Belgacom-Sited Data Link

16.1 Preliminary

- | ~~128.127.~~ The terms, conditions and requirements set out in this section determine the general framework between Belgacom and the Beneficiary on Belgacom-Sited Data Link Service in the framework of the provision of a connection between a Belgacom ATM switch, located in a Belgacom ATM Access Point and the Beneficiary Equipment, in the framework of this service. This Service will be referred to hereafter as " Belgacom-Sited Data Link".
- | ~~129.128.~~ A Belgacom-Sited Data Link Service can be brought into service with regard to a specified site, and the Beneficiary can be entitled to install the equipment required to this effect in the Belgacom building concerned, if and only if the Beneficiary has prior to this time signed an appropriate Colocation Agreement with regard to the site concerned.
- | ~~130.129.~~ The Belgacom-Sited Data Link Service can only be used for all connection purposes with Belgacom ATM/FR data network. If the Beneficiary benefits from Belgacom-Sited Data Link Service with regard to a certain site, the Beneficiary is authorized to lease Data Link facilities to or from another party for the purpose of allowing a direct connection between the Network and such other party.
- | ~~131.130.~~ For the sake of clarity, it is noted that Data Links covered by this document are 2Mbit/s, 34Mbit/s or 155Mbit/s Data Links.

16.2 Description

- | ~~132.~~131. Belgacom-Sited Data Link Service will only be available in Belgacom ATM Access Points.
- | ~~133.~~132. A "Belgacom-Sited Data Link Service" is a connection service where Belgacom offers the possibility to a Beneficiary to provide the entire Data Link including the transmission equipment that is installed in a Belgacom technical building. The Beneficiary will install its cable infrastructure at least up to an introduction duct designated by Belgacom in the immediate vicinity of the Belgacom ATM Access Point (building) in which any Belgacom ATM switch (Access Point) is located.
- | ~~134.~~133. The Beneficiary Point of Connection for this type of Data Link is located in the Belgacom premises on the indoor cable connecting the Beneficiary's transmission equipment to the Belgacom DDF, at the place where that cable enters the collocation room.
- | ~~135.~~134. In the event that Belgacom is caused to replace the collocation room in which the transmission equipment of The Beneficiary is to be installed, then both Parties will cooperate to find a mutually acceptable solution.
- | ~~136.~~135. The Beneficiary shall install equipment in its collocation area and following the rules set out in the collocation agreement. The Beneficiary's transmission facilities will be extended outside the collocation room to a digital distribution frame (DDF) within Belgacom's technical area to allow the 2Mbit/s and 34Mbit/s or to an Optical Light Distribution Frame (OLDF) within Belgacom's technical area to allow the 155Mbit/s Links to be established. Belgacom or Belgacom's authorized staff working under its responsibility will carry out this extension under the financial conditions stated in Annex 6.

16.3 Scheme

137-136. See below for a general scheme illustrating Belgacom-Sited Data Link (scheme valid for 2 Mbit/s and 34Mbit/s configurations):

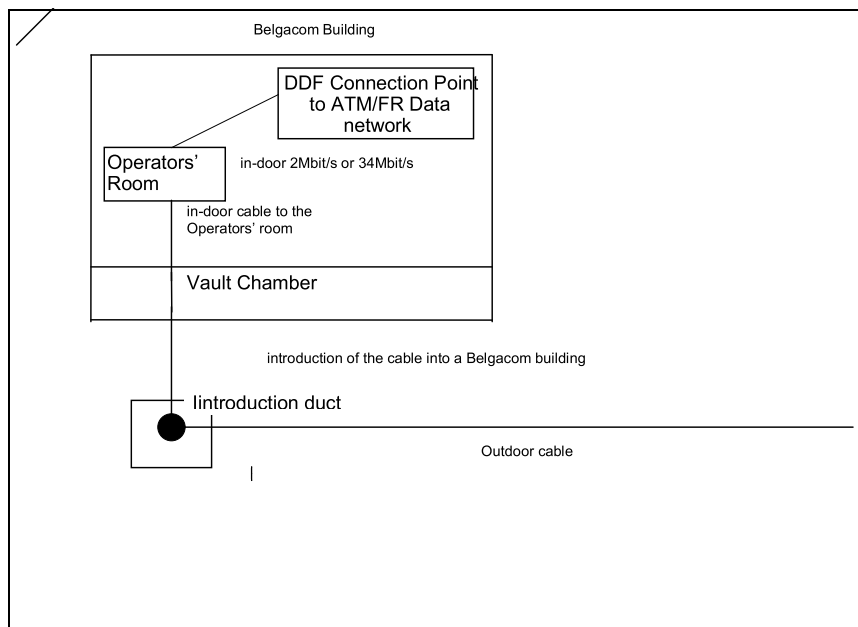


Fig. 5

16.4 General Conditions

138-137. All Beneficiary transmission equipment shall comply with the Technical Specifications provided in Annex 2 – Section 2: Technical Specifications of the Access Line.

139-138. The Beneficiary shall provide to its employees full information regarding the content of the rules to be respected regarding Belgacom-Sited Data Links.

16.5 Procedures

140-139. The Beneficiary is responsible for determining the number of Belgacom-Sited Data Link Service that the Beneficiary requires. Belgacom does not make a representation that it will at all times be in a position to provide the full capacity ordered by the Beneficiary. In particular, it is not excluded that, taking into account possible evolutions in the future, Belgacom may be confronted with a high number of requests for the installation of additional collocation spaces in different buildings that would not allow Belgacom to respect all relevant timers. In these cases, Belgacom will have to inform the market and BIPT.

16.6 Prices

141-140. The Beneficiary shall pay to Belgacom the installation and rental fees specified in Annex 6 for Belgacom-Sited Data Link Service.

Appendix B: Beneficiary Terms & Conditions

- | ~~142.141.~~ Unless the Beneficiary is expressly authorized by Belgacom to do so, The Beneficiary is prohibited to bring any change to the public telecommunications infrastructure at the End User site, including the termination point. The Beneficiary will take good care of the Belgacom installations in the End User premises. The Beneficiary is responsible to ensure that its End User doesn't disturb the traffic on the Network nor put the xDSL-based service in danger by action or omission.
- | ~~143.142.~~ The Beneficiary will ensure that equipment used at the End User premises does not negatively impact the Belgacom network. The equipment used by The Beneficiary at the End User premises must be conform to the applicable standardization and its interoperability with the Belgacom Central Office Equipment must have been demonstrated.
- | ~~144.143.~~ The software version running on the DSLAM of Belgacom networks is the version 4.2. The ATU-C handles different standards and supports DSL modems conform to Belgacom UNI. The complete list of standards and supported modems can be found on:
http://www.belgacom.com/group/9/legal_technic/fr/network-specifications.html
- | ~~145.144.~~ However, attention is drawn to the fact that an ATU-R is based on the mentioned standards does not guarantee full interoperability with the ATU-C of Alcatel up to service level since interoperability is still under investigation.

Appendix C: List of Access Areas and ATM Access Point

17. List of Access Areas

Access Area	Included Telephone Zones
Antwerpen:	03
Bruxelles:	02
Gent:	09 (*), 052, 053, 054, 055
Kortrijk:	050, 051, 056, 057, 058, 059
Liège:	04 (*), 019, 080 (*), 085, 086, 087
Leuven-Hasselt:	013, 014, 015, 016, 011, 012, 089
Mons-Charleroi:	065, 068, 069, 071, 060, 064, 067
Namur:	081, 082, 083, 084, 061, 063, 010

(*): For the sake of clarity, it is confirmed that the zone codes indicated above in the context of the present offer are limited to the numbers which identify fixed network termination points. In particular, 09 and 04 are respectively limited to the number series 092, 093 and 042, 043. As far as the code 080 is concerned, the numbers starting with 0800 are excluded.

18.List of ATM Access Points

City	Address	NCOW
Aalst	Ridderstraat 43	5321
Antwerpen - Berchem	Karel Coggestraat 2	3227
Antwerpen - Centrum	Lange Nieuwstraat 106	3224
Arlon	Avenue Jean-Baptiste Nothomb 40	6321
Ath	Rue Jean Jaurès, 11	6828
Brugge - Assebroek	Matmeers 2 A	5033
Brussels - Ixelles/Elsene	Rue Borrens - Borrensstraat 16	2646
Brussels - Etterbeek	Rue J. de Lalaing - J. de Lalaingstraat 36-40	2280
Brussels - Evere	Avenue des Anciens Combattants - Oudstrijderlaan 94	2726
Brussels - Linthout	Rue V. Lefèvre - V. Lefèvre 24-26	2732
Brussels - Marais	Rue du Marais - Broekstraat 72-74	2220
Brussels - Paille	Rue Lebeau - Lebeauststraat 2	2513
Brussels - Sacré-Coeur	Avenue A.J. Slegers - A.J. Slegerslaan 36	2770
Brussels - Schaarbeek	Rue Jan Blockx - Jan Blockxstraat 26-30	2215
Brussels - St-Gilles- /St. Gillis	Rue Steens - Steensstraat 11	2538
Brussels - Uccle	Rue Rodenbach - Rodenbachstraat 133	02
Brussels - Woluwe	Voordestraat 10	2725
Charleroi - Centre	Rue de la science 2	7127
Charleroi - Gilly	Sentier de la Limite 80	7141
Chimay	Rue Reine Astrid 5	6021
Ciney	Rue d'Omalius 67 B	8321
Dendermonde	Courtenstraat 22	5221
Diest	Ferd. Allenstraat 38	1333
Dinant	Rue Bribosia 9	8222
Durbuy	Chainrue 52	8621
Genk	Europalaan 27	8930
Gent - Centrum	Sint Niklaasstraat 27	9223
Gent - Keizer Karel	Keizer Karelstraat 1	9265
Hasselt	Paardsdemerstraat 10	1127
Herentals	Molenvest 13	1421
Huy	Rue du Vieux-Pont 16	85
Ieper	Vooruitgangsstraat 1	5720
Jemelle	Rue Delvigne 76	8421
Kortrijk	Doorniksestraat 61-65	5622
La Louvière	Rue de la Concorde 17	6422
Leuven	Vismarkt 17	1621
Libramont	Rue des alliés 1	6122
Liège - Centre	Rue de l'université 30	4223
Liège - Grétry	Rue d'Harscamp 17	4349
Mechelen	Stationstraat 58	1540
Mons	Rue des fosses 7	6533
Namur	Rue Marie-Henriette 60	8172
Namur	Rue Rogier 2	8123
Ninove	Groenmarkt 42	5433
Nivelles	Place Albert 1	6722
Oostende	Hendrik Serruyslaan 18 A	5970
Roeselare	H. Consciencestraat 3-5	5120
Ronse	Politieke Gevangenerstraat 14	5521
Stavelot	Cour de l'hôtel de ville 3	8088
Tournai	Rue de la Tête d'Or 9	6922
Verviers	Rue Thil Lorrain 6	8733
Veurne	Pannestraat 1	5831
Waremmme	Rue Joachim 67	1932
Wavre	Rue de la Limite 2	1022

BROBA II ADSL & SDSL

Annex 1

General Terms & Conditions

General information

This document constitutes an integral part of the Belgacom Offer for Bitstream Access Services (BROBA II) communicated to the Belgian Institute for Post and Telecom (hereafter the BIPT). It includes the general terms and conditions applicable to the provision of Bitstream Access to establish end-to-end Data Connectivity services that encompasses BROBA 2 ADSL Services and BROBA 2 SDSL Services (hereafter referred to as respectively as "BROBA 2 ADSL" and "BROBA 2 SDSL"). These Bitstream Access services are provided in conformity with the relevant laws and decrees in effect. The present Terms and Conditions shall remain applicable until they are replaced by other terms and conditions.

A distinction should be made between the following:

The Main Body

The Belgacom Reference for Bitstream Access Offer (BROBA II) that describes in broad terms the conditions of the Bitstream Access services offered by Belgacom as it has been communicated to the BIPT.

The Order Forms

The order forms list the information requested by Belgacom to enable it to provide respectively the BROBA 2 ADSL or BROBA 2 SDSL Services. It is signed by the Beneficiary or by his authorized agent.

The General Terms and Conditions

The General Terms and Conditions comprehensively list the rights and obligations of Belgacom and the Beneficiary with regard to the provision of the Bitstream Access Services.

The Exchange Information

Information flow between Belgacom and Beneficiary

The Technical Specifications

The technical conditions define the technical specifications and the quality standards for each type of Bitstream Access Service.

The Planning & Operations Manual

The Planning & Operations Manual describes the conditions of delivery of both the BROBA 2 ADSL and BROBA 2 SDSL Services.

The Operational Systems

Description of the Tools to be used for operational purposes

The Pricing and Billing

The Pricing and Billing indicates the rates and the billing and payment conditions respectively for the Belgacom BROBA 2 ADSL and BROBA 2 SDSL Services.

The Order Form, General Terms and Conditions, Main Body, the relevant sections of the Planning and Operations Manual, Price List, Technical Requirements, Exchange of Information, SLA, Improved SLA, Operational Systems, Prepayment Conditions, Guaranteed Positions, Escalation Procedure and, if any, the specific terms and conditions agreed upon by the Parties constitute the Belgacom's reference offer for Bitstream Access (BROBA II) (hereinafter, the "BROBA II Reference Offer").

With a view to the signature of the BROBA 2 ADSL or SDSL Contract, the BROBA II Reference Offer can be negotiated by the parties and does not substitute for the parties' will.

Except otherwise agreed by the parties, the BROBA 2 ADSL or SDSL Contract shall be adapted if the BROBA II Reference Offer is modified. This adaptation shall be in accordance with this BROBA II Reference Offer's modification.

Anyone may examine the General Terms and Conditions relating to the Bitstream Access Services, and the up-dated price lists as they are approved by BIPT and applicable at the time of consultation. These may be obtained either from Belgacom's Internet site or from Belgacom's Customer service department. The other Annexes are available on the Secured website of Belgacom and may be consulted further to the signature of a non-disclosure Agreement.

Glossary

The capitalized terms in the present General Terms and Conditions for Bitstream Access Services have the meaning as defined below:

BROBA 2 ADSL Contract	Any agreement concluded between Belgacom and a Beneficiary following the negotiations between Belgacom and the Beneficiary on the basis of the present General Terms and Conditions, technical, operational, billing, planning and financial conditions for the BROBA 2 ADSL as described in the Reference Offer of Belgacom. The BROBA 2 ADSL Contract is concluded as mentioned in the first chapter of the present		Conditions.
		Contract	As the case may be a contract for a BROBA 2 ADSL line or BROBA 2 SDSL line.
		Bitstream Access Services	All the Services described in the Belgacom Reference Offer for Bitstream Access Services that are ordered by the Beneficiary.
		Party	Either Belgacom or Beneficiary.
		Parties	Collectively, Belgacom and Beneficiary.

Contract procedure

Request by the Beneficiary

1. In view of the offering of a Bitstream access based service to End-Users pursuant to the provisions of the Contract, the Beneficiary must submit his request for a Service to the Customer Service department of Belgacom by completing and signing the appropriate order form. The specific terms and conditions for delivering the Services are described here-after.
2. The Beneficiary shall consult the general terms and conditions and, the relevant BROBA II Reference Offer as well as the list of technical requirements. These can be obtained from Belgacom's Internet site or by requesting them from Belgacom's Customer Service department.
3. Belgacom may not refuse to execute the Beneficiary's request conform the BROBA II Reference Offer, without prejudice to the negotiations between Belgacom and the Beneficiary, except on one of the following grounds:
 - a) the Beneficiary or his authorized agent refuses to provide Belgacom with official documents to identify himself;
 - b) in an emergency situation (i.e., exceptional cases of *force majeure*), for the purpose of ensuring the safe operation of the network, after all necessary measures taken by Belgacom to ensure access to the service are without effect;
 - c) following the Beneficiary's failure to observe obligations arising from the present General Terms and Conditions for the use of the service, subject to the prior consent of the BIPT;
 - d) for the purpose of maintaining network integrity or the interoperability of the services or for any other technical reasons that make the delivery of unbundled service impossible;
 - e) the Beneficiary has refused to provide proof of the existence of the unconditional financial guarantee as specified in the provision Financial Guarantees here-under.
4. In the event of a refusal, Belgacom shall notify within 3 working days the Beneficiary of its decision and the grounds for the decision by ordinary mail. A copy will be sent to the BIPT in the same delay.
5. The Beneficiary may lodge an appeal against this decision by the procedure provided under the Dispute Resolution Procedure and in accordance with these General Terms and Conditions.

Conclusion, entry into force and duration of the Contract

6. The provision of the BROBA II ADSL or SDSL Service is subject to the conclusion of a Contract between Beneficiary and Belgacom according to the present General Terms and Conditions and the negotiations between the parties.
7. Unless otherwise stipulated, the Contract takes effect on the day after the date on which the BROBA 2 ADSL or BROBA 2 SDSL Service (as described here-after) is made available to the Beneficiary. Belgacom shall confirm this date to the Beneficiary in writing.

8. The Service is made available to the Beneficiary for an indefinite term.

Services covered by these General Terms and Conditions

Bitstream Access – Data connectivity – ADSL (BROBA 2 - ADSL)

9. Belgacom shall provide to Beneficiary and maintain on behalf of Beneficiary Data Connectivity Services in accordance with BROBA 2 - ADSL and its Annexes and/or Appendixes.
10. Subject to the successful completion of testing as defined in and pursuant to the provisions of BROBA 2 - ADSL, the Parties will bring the Data Connectivity Services into service on the agreed Bringing Into Service Date.
11. The data connectivity between the respective networks of the Parties shall be implemented in accordance with the technical specifications of Access Line in Annexes 2 and 2A.
12. The Data Connectivity Service purchased by Beneficiary according to the foregoing will enable Beneficiary to define its own ADSL products and to market, distribute and sell under its name and on its behalf its own ADSL products towards End-Users. In this respect Belgacom will inform the Beneficiary of any modification of the technical specification, enabling a modification of the services offered, at the latest 3 months before the commercial launch by Belgacom of a commercial service based on these technical specifications.
13. For each End-User to whom Beneficiary will sell an ADSL

product in accordance with the foregoing, Belgacom will, in accordance with and subject to the limitation set out in BROBA 2 - ADSL, install, implement and provide connectivity from the End-User premises up to the demarcation point between Belgacom network and Beneficiary network, as defined in BROBA 2 - ADSL.

14. Within the limits of what is permitted under the applicable regulatory framework, both Parties shall exchange appropriate operational information as provided in BROBA 2 - ADSL (including, in particular, maintenance contact numbers, network information, information required to comply with law enforcement and other security agencies of the government and such other information as the Parties shall mutually agree).

Bitstream Access – Data connectivity - SDSL (BROBA 2 - SDSL)

15. Belgacom shall provide to Beneficiary and maintain on behalf of Beneficiary Data Connectivity Services in accordance with BROBA 2 - SDSL and its Annexes and/or Appendixes.
16. Subject to the successful completion of testing as defined in and pursuant to the provisions of BROBA 2-SDSL the Parties will bring the Data Connectivity Services into service on the agreed Bringing Into Service Date.
17. The data connectivity between the respective networks of the Parties shall be implemented in accordance with the technical specifications of Access Line in Annexes 2 and 2A.

18. The Data Connectivity Service purchased by Beneficiary according to the foregoing will enable Beneficiary to define its own SDSL products and to market, distribute and sell under its name and on its behalf its own SDSL products towards End-Users. In this respect Belgacom will inform the Beneficiary of any modification of the technical specification, enabling a modification of the services offered, at the latest 3 months before the commercial launch by Belgacom of a commercial service based on these technical specifications.
19. For each End-User to whom Beneficiary will sell an SDSL product in accordance with the foregoing, Belgacom will, in accordance with and subject to the limitation set out in BROBA 2-SDSL, install, implement and provide connectivity from the End-User premises up to the demarcation point between Belgacom network and Beneficiary network, as defined in BROBA 2-SDSL.
20. Within the limits of what is permitted under the applicable regulatory framework, both Parties shall exchange appropriate operational information as provided in BROBA 2 - SDSL(including, in particular, maintenance contact numbers, network information, information required to comply with law enforcement and other security agencies of the government and such other information as the Parties shall mutually agree).

Obligations of the Parties

Bitstream Access – Data connectivity – ADSL (BROBA 2 ADSL)

Obligations of the Beneficiary

21. The Beneficiary is at all times fully responsible in particular for the following tasks in respect of the establishment of the connection between the Beneficiary network and the Network:
 - To order for BROBA over ATM (respectively: BROBA over Ethernet), an Access Line (respectively: an OLO Access Line) between Belgacom ATM Access Point (respectively: Service PoP) and the Beneficiary Equipment (including Belgacom-sited Access Lines or OLO Access Line);
 - To inform Belgacom immediately and in writing of any change that may have an impact on the Network integrity, or on the performance of other services delivered by Belgacom towards End-Users. The present rule does not imply that such changes can be made by the Beneficiary;
 - To use the Network in conformity with the prevailing regulations on telecommunications and data protection and in conformity with the applicable law in general and especially the normal behaviour of a professional beneficiary;
 - To ensure that its End-Users behave in a manner that is fully compatible with these elements and take also responsibility for such behaviour;
 - To comply with the instructions (which are preliminary approved by the BIPT) that Belgacom may issue to the Beneficiary from time to time to ensure the security and correct operation of the Network and of any other network or infrastructure used by Belgacom for the supply of the connection between the End-User premises and the demarcation

point between the Network and the Beneficiary's network, or used in any other manner by Belgacom.

22. In respect of the necessary interventions of Belgacom related to connectivity between Belgacom and the Beneficiary, the latter will communicate in good faith to Belgacom, in relevant cases and in a sufficiently timely and complete manner, all information needed by Belgacom for performing, for BROBA over ATM (respectively: BROBA over Ethernet), repair on the ATM Virtual Path (respectively: on the VLAN). Beneficiary may refuse to communicate confidential data for which Beneficiary motivates it is not relevant for the requested purpose. Belgacom may ask to BIPT the communication of this data if Belgacom can prove the need to know.
23. In respect of the offering of an ADSL based service to End-Users pursuant to the provisions of the Contract:
- to communicate orders for ADSL connection of End-Users to Belgacom;
 - to communicate the type of equipment present at the End-User premises in case the End-User has an ISDN line;
 - to ensure accurate communication of End-Users information to Belgacom in accordance with the relevant provisions of the Contract;
 - to ensure the marketing, selling, distribution of its own ADSL products based on these Terms and Conditions, as well as the billing and collection of the fees to be charged to End-User, without this affecting the Beneficiary's liability towards Belgacom;
 - to communicate to Belgacom Network related problems;
 - to ensure by the Beneficiary, or to have the latter impose on its

End-User, the use of Premises Equipment (modem CPE) pursuant to the RTTE rules;

- to be the single and only point of contact of End-User with regard to the ADSL service offered by the Beneficiary to the End-User and abstain from redirecting this End-User towards Belgacom in any circumstance for any problem related to the ADSL service offered by the Beneficiary to the End-User on the concerned line except otherwise stated in the Annex 5 SLA;
- To not modify Belgacom infrastructure and equipment at End User premises (as specified in appendix B of the Main Body)
- to pay to Belgacom the prices pursuant to the Contract;
- to handle responsibility related to network/equipment issues that are non Belgacom related.

Obligations of Belgacom

24. Belgacom will provide and maintain ADSL technology on behalf of the Beneficiary from the End-User premises up to the demarcation point between Belgacom network and the Beneficiary network. In this respect, Belgacom and Belgacom only will be entitled to carry out physical modifications to the Network.
25. Belgacom will not provide ADSL on behalf of the Beneficiary on a specific End-User line, if Belgacom has determined on the basis of a technical objective assessment that:
- (a) ADSL is not technically feasible over existing facilities;
 - (b) ADSL will cause interference problems, according to the rules submitted to the BIPT or to the rules stated by the legal and regulatory framework, within the Network or other facilities. In this respect, ADSL is incompatible with:

- some line transmission systems in the same cable bundle;
- pair gain systems;

(applicable rules are described in BRUO Spectrum Management)

- (c) Cable is spectrally saturated according to the rules submitted to the BIPT or to the rules stated by the legal and regulatory framework.

(applicable rules are described in BRUO Spectrum Management)

26. In such cases of rejection, Belgacom will communicate to the Beneficiary:

- in case of inquiry, the reason why it has been rejected.
- in case of firm order, the type of rejection, i.e., definitive rejection or temporarily rejection;

On demand of the Beneficiary, Belgacom will communicate when and at what costs it can be remedied to the rejection; alternatives will be tested and proposed to the Beneficiary. In case the Beneficiary does not take the proposed solution by Belgacom, the study cost will be charged after approval by the BIPT.

The Beneficiary has the possibility to ask a detailed justification as well as verification with or without site visit, if necessary, in case where many rejections occur at a specific moment, in a specific place.

27. Belgacom shall respect all service levels, timers and other guarantees mentioned in the SLA-document or otherwise shall conform to the applicable penalties.

28. Belgacom further reserves the right to reject requests for implementation of ADSL on behalf of the Beneficiary on a specific End User line based on wrong data.

Bitstream Access – Data connectivity - SDSL (BROBA 2 - SDSL)

Obligations of the Beneficiary

29. The Beneficiary is at all times fully responsible in particular for the following tasks in respect of the establishment of the connection between the Beneficiary network and the Network:

- To order for BROBA over ATM (respectively: BROBA over Ethernet), an Access Line (respectively: an OLO Access Line) between Belgacom ATM Access Point (respectively: Service PoP) and the Beneficiary Equipment;
- To inform Belgacom immediately and in writing of any change that may have an impact on the Network integrity, or on the performance of other services delivered by Belgacom towards End-Users. The present rule does not imply that such changes can be made by the Beneficiary;
- To use the Network in conformity with the prevailing regulations on telecommunications and data protection and in conformity with the applicable law in general and especially the normal behaviour of a professional beneficiary.
- To ensure that its End-Users behave in a manner that is fully compatible with these elements and take also responsibility for such behaviour;
- To comply with the instructions (which are preliminary approved by the BIPT) that Belgacom may

issue to the Beneficiary from time to time to ensure the security and correct operation of the Network and of any other network or infrastructure used by Belgacom for the supply of the connection between the End-User premises and the demarcation point between the Network and the Beneficiary's network, or used in any other manner by Belgacom.

30. In respect of the necessary interventions of Belgacom related to connectivity between Belgacom and the Beneficiary, the latter will communicate in good faith to Belgacom, in relevant cases and in a sufficiently timely and complete manner, all information needed by Belgacom for performing, for BROBA over ATM (respectively: BROBA over Ethernet), repair on the ATM Virtual Path (respectively: on the VLAN). Beneficiary may refuse to communicate confidential data for which Beneficiary motivates it is not relevant for the requested purpose. Belgacom may ask to BIPT the communication of this data if Belgacom can prove the need to know.
31. In respect of the offering of an SDSL based service to End-Users pursuant to the provisions of the Contract:
- to communicate orders for SDSL connection of End-Users to Belgacom;
 - to communicate the type of equipment present at the End-User premises in case the End-User has an ISDN line;
 - to ensure accurate communication of End-Users information to Belgacom in accordance with the relevant provisions of the Contract;
 - to ensure the marketing, selling, distribution of its own SDSL products based on these Terms and Conditions, as well as the billing and collection of the fees

to be charged to End-User, without this affecting the Beneficiary's liability towards Belgacom;

- to communicate to Belgacom Network related problems;
- to ensure by the Beneficiary, or to have the latter impose on its End-User, the use of Premises Equipment (modem CPE) pursuant to the RTTE rules;
- to be the single and only point of contact of End-User with regard to the SDSL service offered by the Beneficiary to the End-User and abstain from redirecting this End-User towards Belgacom in any circumstance for any problem related to the SDSL service offered by the Beneficiary to the End User on the concerned line except otherwise stated in the Annex 5 SLA;
- To not modify Belgacom infrastructure and equipment at End User premises (as specified in appendix B of the Main Body)
- to pay to Belgacom the prices pursuant to the Contract;
- to handle responsibility related to network/equipment issues that are non Belgacom related.

Obligations of Belgacom

32. Belgacom will provide and maintain SDSL technology on behalf of the Beneficiary from the End User premises up to the demarcation point between Belgacom network and the Beneficiary network. In this respect, Belgacom and Belgacom only will be entitled to carry out physical modifications to the Network.
33. Belgacom will not provide SDSL on behalf of the Beneficiary on a specific End User line, if a.o. Belgacom has determined on the basis of a technical objective assessment that:
- 33.1. SDSL is not technically feasible over existing facilities;

33.2. SDSL will cause interference, according to the rules communicated to the BIPT or to the rules stated by the legal and regulatory framework problems, within the Network or other facilities. In this respect, SDSL is incompatible with:

- some line transmission systems in the same cable bundle;
- pair gain systems.

(applicable rules are described in BRUO Spectrum Management)

33.3. Cable is spectrally saturated according to the rules communicated to the BIPT or to the rules stated by the legal and regulatory framework.

(applicable rules are described in BRUO Spectrum Management)

34. In such cases of rejection, Belgacom will communicate to the Beneficiary:

- in case of inquiry, the reason why it has been rejected. By the end of the year, a web tool will ensure that the Beneficiary is correctly informed;
- in case of firm order, the type of rejection, i.e., definitive rejection or temporarily rejection;

On demand of the Beneficiary, Belgacom will communicate when and at what costs it can be remedied to the rejection; alternatives will be tested and proposed to the Beneficiary. In case the Beneficiary does not take the proposed solution by Belgacom, the study cost will be charged, after approval by the BIPT.

the Beneficiary has the possibility to ask a detailed justification as well as verification with or without site visit, if necessary, in case where many rejections occur at a specific moment, in a specific place.

35. Belgacom shall respect all service levels, timers and other guarantees mentioned in the SLA-document or otherwise shall conform to the applicable penalties.

36. Belgacom further reserves the right to reject requests for implementation of SDSL on behalf of the Beneficiary on a specific End User line based on wrong data.

Financial Conditions

Billing and Payments

37. In consideration for Bitstream Access Services provided by Belgacom under the Contract, Beneficiary shall pay the charges and fees provided in BROBA 2 and BROBA 2 SDSL.

Financial Guarantees

General Principle - Pre-payment

38. Notwithstanding anything to the contrary in the Contract, in order to guarantee the payment by the Beneficiary of the prices due for Services provided by Belgacom that are invoiced on a monthly basis under the Contract, the Beneficiary will provide Belgacom with a monthly pre-payment based on the average of the monthly amount due by the Beneficiary. The amount of the pre-payment shall be based on the average of the invoices issued by Belgacom during three months for the Services ordered

in accordance with the Contract. The amount of the pre-payment shall be reviewed every three months. The terms and conditions of this prepayment are described in Annex 8.

39. Without prejudice to any other legal or contractual remedies and notwithstanding anything to the contrary in the Contract, in the event Beneficiary fails to pay in due time any undisputed amount due under the pre-payment conditions as defined in the present section and in Annex 8, Belgacom shall be entitled to execute the following alternatives until full payment is made:
- suspension of any SLA obligations that are not foreseen in the Basic SLA;
 - refusal in writing of any new Order, including Migration Services, and excepted Cancellation and Deactivation;
 - Suspension of the existing Services in accordance with article 84 hereafter.

Sufficient Creditworthiness

40. This monthly pre-payment will not be required in the following circumstances.
41. The Beneficiary has sufficient creditworthiness as evidenced by either of the following alternatives:
- the Beneficiary has obtained a "Ba2" rating or above for its debt (Moody's); or
 - the Beneficiary has obtained a rating similar to Moody's "Ba2" rating, provided that (i) such rating is generally accepted by the market as giving similar reliability as Moody's, (ii) such rating is reviewed and updated on a regular basis.

42. In the event that the Beneficiary would lose the above described creditworthiness at some point in time (either through the loss of "Ba2" credit rating or similar, or upon the occurrence of any default or delay of payment), Beneficiary will have to provide Belgacom with a pre-payment or with another financial guarantee as defined in the present chapter within 10 working days of Belgacom's request thereto.

Other Financial Guarantees

43. The Beneficiary obtains an irrevocable and unconditional parent corporation guarantee for the debts incurred by the Beneficiary for the Services ordered in accordance with the Contract provided that such parent company is issued by a company that has sufficient creditworthiness as defined above. In the event that the Parent Company would lose the above described credit worthiness at some point in time, the Beneficiary will provide Belgacom with a pre-payment or with another financial guarantee as described in the present article within 10 working days of the request of Belgacom.
44. The Beneficiary has constituted a Deposit on an escrow account with a reputable bank or financial institution established in the EU. The amount of that deposit will be equal to an estimate of three months of invoices due by the Beneficiary for the Services ordered in accordance with the Contract. Based on the actual evolution of the amounts due for the Services, the Beneficiary and Belgacom will have the right to require an adaptation of the amount of the deposit every three months. Upon the request for adaptation of the amount of deposit, necessary steps will be taken to ensure adaptation within 10 working days. In case of

default by the Beneficiary to pay sums due under the Contract, the sums deposited on the escrow account will accrue to Belgacom. The interests accrued on the escrow account will be payable to the Beneficiary. In the event the sums deposited are accrued to Belgacom, Beneficiary will provide Belgacom with a pre-payment or with another financial guarantee as defined in the present article within 10 working days of the request of Belgacom.

45. The Beneficiary has provided Belgacom with an irrevocable and unconditional bank guarantee on first demand issued by a reputable bank or financial institution established in the EU. That bank guarantee will be issued for a minimum period of three years and for an amount equal to an estimate of three months of amounts due by the Beneficiary for the Services ordered in accordance with the Contract. Based on the evolution of the amounts due for the Services, Beneficiary and Belgacom will have the right to require an adaptation of the amount of the bank guarantee every three months. Upon the request for adaptation of the amount of bank guarantee, necessary steps will be taken to ensure adaptation within 10 working days. Upon expiration of the bank guarantee or after the Belgacom has called upon the bank guarantee, the Beneficiary shall provide Belgacom with a pre-payment or with another financial guarantee as defined in the present article within 10 working days of the request of Belgacom.

Principles

Retail Pricing & Billing

46. Beneficiary shall be responsible for the setting of the tariffs that Beneficiary will apply to the End-Users to whom Beneficiary will sell telecom service using the Bitstream Access Services (BROBA 2 ADSL and BROBA 2 SDSL) and for the billing and invoicing of such End-Users.
47. Except as provided otherwise in the Contract or its Annexes, no deductions or reductions shall be made from the payment of any charges or fees due for the Services for any bad or unpaid debts or any unrecoverable claims (including, in particular, claims arising from fraud cases) that Beneficiary may have against End-Users or any other third parties in relation with these Services.

Branding

48. The Parties agree not to offer any service under any brand, including any trademark, trade name or company name, of the other Party unless the use of the brand(s) of the other Party is explicitly provided under the Contract. Such use of the brand will then be strictly limited to the service at stake.
49. Beneficiary shall offer telecom services to End Users under its own brand without any use of, or reference to Belgacom's brands.
50. Notwithstanding the foregoing, Parties acknowledge that, as provided in BROBA 2 ADSL and in BROBA 2 SDSL, the installation of equipment on the site of the relevant End Users who have subscribed to an offering of Beneficiary, may, when relevant under the terms and conditions

of BROBA 2 ADSL and in BROBA 2 SDSL, be realized by Belgacom personnel. Both Parties agree that Belgacom shall have no obligation to unbrand or rebrand its service technicians or trucks. Belgacom will act in accordance with its general standard of integrity that it has internally developed and enforced.

In any case, Belgacom will not make any publicity or remarks to the detriment of the Beneficiary or its image. Belgacom must in all circumstances stay neutral, in accordance with the technical nature of its intervention. Where Belgacom makes use of standard documents vis-à-vis users, it will submit these for prior approval by BIPT.

User Terms and Conditions

51. Beneficiary shall cause the terms and conditions governing Beneficiary's contractual relationships with the End-Users to be compliant with the rules and principles set out in the Contract and its Annexes. Notwithstanding the above, nothing in the present Reference Offer can be construed as creating or evidencing a contractual relationship of any kind between Belgacom and Beneficiary's Users or as providing to Belgacom any right to consult the contracts signed between Beneficiary and its Users.

52. Beneficiary shall bear all the consequences of the breach of the above obligation.

Coordination between the Parties

Single Points of Contact

53. Beneficiary and Belgacom will both appoint an individual as their respective single point of contact ("SPOC") who will act,

within its organization, as the other Party's contact person.

54. The SPOC of either Party will have full authority to act and decide on behalf of the respective Party on all technical and operational matters regarding the day-to-day management of the performance of their BROBA 2 and/or BROBA 2 SDSL Contracts. All the decisions taken by any working group constituted by the Parties during the performance of these BROBA 2 and/or BROBA 2 SDSL Contracts will need to be expressly and formally validated by the SPOC of either Party to be binding on such Party. This validation (or refusal of validation) has to be given at the latest within three working days. The absence of response in this delay will be escalated. Except as otherwise expressly provided by the relevant Party, each Party's SPOC will have no authority to modify the conditions described in the Contract, or to act outside the day-to-day management of the performance of the Services. Notwithstanding the foregoing the SPOC of both Parties will be allowed to modify, Planning and Operations Document of the related service, by written amendment to this Agreement Services.

55. Each Party will be authorized to replace its SPOC by notice sent to the other Party. Such notice will have immediate effect.

Working Group

56. The Parties will be free to set up any other working group in charge of discussing and agree on any technical or operational issue as the Parties may deem fit in the performance of the Services.

Liability

General rules

57. Taking into account the nature of the respective activities of the parties, the risks and potential profits associated with these activities and the consideration obtained by each Party from the Contract, Parties expressly agree that their respective liability shall be limited as follows.
58. If either Party is held liable to the other Party (including such other Party's employee(s) and contractor(s)) under the Contract that liability shall be limited to the following:
- if such liability results from any personal injury or death incurred as a direct result of the non-performance of the relevant Party's obligations under the Contract, then such liability shall be only subject to the limitation provided in article 59;
 - if such liability results from any conduct attributable to the relevant Party, which is, under Belgian law, characterized as being gross negligence (faute lourde – zware fout) or intentional negligence (dol – bedrog), then such liability shall be subject to no limitation, except as provided by law;
 - if such liability results from any material damage, other than those referred to above, arising out of or in any way connected with the performance by the relevant Party of the Services or the breach of such Party's obligations under these Terms and Conditions, then the total amount which can be recovered from such Party for all acts or omissions shall, in no event, exceed an aggregate amount equal to EUR 1,250,000 (one million two hundred fifty thousand euro), subject to the limitation provided in article 59.
59. Neither Party shall be liable for indirect damages (pure and consequential), including without limitation loss of profit, loss of revenue, loss of data, loss of use, loss of savings, loss of goodwill, interruption of business or claim by third parties.
60. In the event of a complaint by a Beneficiary's User, the liability of Belgacom may only be questioned by the Beneficiary if Belgacom, or a person Belgacom is responsible for, is at fault.
61. In addition, and notwithstanding the above, each party will indemnify the other Party against any claim or loss related to the illegal use, or the use for illegal purpose of the Bitstream Access Services by the End User of one or the other Party.

Force Majeure

62. Neither Party will be liable for any delay or failure to fulfil its obligations under the Contract arising from any event beyond its reasonable control, such as for instances but without limitation natural disasters and strikes (all such events being hereafter referred to as "Force Majeure").
63. The Party claiming Force Majeure shall as soon as possible send to the other Party a Notice of the Force Majeure. Such Notice shall contain adequate evidence of the occurrence and extent of the Force Majeure, as well as an estimate of the expected duration of the Force Majeure. As soon as practicable after receipt of such Notice, the Parties shall consult with each other in order to find an equitable solution to the problems and difficulties caused by the Force Majeure.
64. The Party claiming Force Majeure shall use all reasonable

endeavours to minimise the consequences of such Force Majeure, and to ensure, in as far as reasonably possible, the continuity of the services provided under the Contract and shall perform those of its obligations not affected by a Force Majeure. To the extent that a Party is prevented as a result of Force Majeure from providing one or several of the services or facilities to be provided under the Contract, the other Party shall be released to the equivalent extent from its obligations to make payment for such services or facilities or complying with its obligations in relation thereto.

65. Upon cessation of the effects of the Force Majeure, the Party initially affected by such Force Majeure shall promptly notify the other Party of such cessation.

Accidents at work and Safety Rules

66. Each Party hereby undertakes to provide insurance cover against accidents at work for its own employees in conformity with the applicable legal requirements. Each Party hereby renounces any possible claim against the other Party, and undertakes to procure that its insurer shall not pursue against the other Party, or against any third party for whose acts or omissions the other Party may be responsible, any claim relating to accidents at work.
67. Each Party shall comply with safety practices and procedures reasonably applicable when entering the premises and installations of the other Party in order to carry out work. Each Party undertakes to ensure that its personnel, while upon the premises and installations of the other Party, will respect any internal rules and codes of conduct therein applicable,

provided that such rules and/or codes shall have been made available to them in advance. Without prejudice to the provisions of the chapter relating to Liability, each Party shall indemnify and hold harmless the other Party for any and all damage, costs or expenses incurred as a result of any act or omission of a Party's personnel while upon the premises and installations of the other Party.

Operational Matters

Operational Matters and Network Management

68. The Bitstream Access Services provided under the Contract shall be implemented and provided by the Parties in accordance with the technical specifications set forth in the Annexes 2 and 2A "Technical Specifications" and the operational rules and procedures contained in the Annex 4 "Planning and Operations".
69. Both Parties shall cooperate to install and maintain reliable services. Both Parties shall exchange appropriate information as provided in the Annex 4 Planning and Operations (including, in particular, maintenance contact numbers, network information, information required to comply with law enforcement and other security agencies of the government and such other information as the Parties shall mutually agree) to achieve this desired reliability.
70. Each Party shall apply sound network management principles by invoking network management controls to ease the operation of their respective systems and to alleviate or to prevent congestion. Each Party shall ensure that the network management controls are applied

in such a way as to ensure that there is no discrimination in favour of that Party's own traffic.

Essential Requirements

71. The Parties shall ensure that the Essential Requirements, as defined and applicable under the regulatory framework, are adequately and sufficiently protected, in as far as the establishment, maintenance and operation of the services offered under the Contract are concerned.
72. It is acknowledged that the Contract and its Annexes and/or Appendixes (in particular, the Annexes BROBA 2 ADSL and BROBA 2 SDSL and the Annex 4 "Planning and Operations" of the relevant service) contain a number of specific principles and rules that have been developed to ensure the protection of the Essential Requirements. Furthermore, the Parties shall consult with each other in order to ensure that the Essential Requirements are protected in an adequate and sufficient manner.
73. It is a condition for the provision by Belgacom of Bitstream Access Service under this Document that Beneficiary's request is not detrimental to the operation of the telecommunications networks and telecommunications services in question or to their integrity or interoperability, and that the protection of service and internal data, network equipment, software and stored data, including personal data, confidential information and privacy can be sustained.
74. The conditions for and restrictions on use applying at any time appear from the Annexes 2 and 2A the "Technical specifications" Document.

75. Belgacom shall further be entitled to cause interruptions, disturbances or modifications of Belgacom's public network and services to the detriment of the supply of the services under the Contract in connection with measures that are deemed necessary for technical, maintenance and operating reasons taking into account the balance of the interests of both Parties or that are ordered by the regulatory authorities. Belgacom shall give in good faith Beneficiary the longest possible notice of interruptions, disturbances and modifications and state the reason for them.

Amendments and Revisions

General Principles

76. Except as otherwise provided in the Contract or its Annexes, any agreement departing from the Contract or its Annexes shall only be valid if duly agreed upon in writing by the respective representatives of the Parties.

Term, Termination and Suspension

Term

77. Beneficiary has the right to terminate one or more BROBA 2 and/or BROBA 2 SDSL contract as provided in the BROBA Reference Offer annexed to the Contract. Belgacom has the right to terminate one or more BROBA 2 and/or BROBA 2 SDSL contract on the grounds mentioned in Article 6octies, 1° of the Royal Decree of 22 June 1998 defining specifications on the conditions for the establishment and operation of public

telecommunications networks,
after approval by the BIPT.

78. Without prejudice to the above, the Beneficiary must request the termination of the BROBA 2 ADSL and/or BROBA 2 SDSL Contract when the telecom services are cancelled for any reason whatsoever on a specific loop. Said termination request shall automatically give rise to the deactivation of the BROBA 2 ADSL or BROBA 2 SDSL Service on the line without delay.
79. A BROBA 2 ADSL and/or BROBA 2 SDSL Contract shall automatically be terminated without prior notice to Beneficiary 1 upon the activation by Belgacom of another Service on the same line based on the valid migration request of either Belgacom retail or another Beneficiary 2 (see BRUO Annex K Migrations). Belgacom will further inform Beneficiary 1 of the new request without revealing the identity of the latter.

Suspension

80. In the event Beneficiary uses or allows the use of Services provided under the Contract in an illegal manner or for illegal purposes, or if Beneficiary by its action or omission causes, or could reasonably be expected to cause a damage to the working or the security of the telecommunication network of Belgacom, and Beneficiary fails to take appropriate measures in order to remedy to the situation within a period of thirty (30) days from the receipt of a Notice of Suspension sent by Belgacom, Belgacom will have the right to suspend the provision of some BROBA 2 ADSL and/or BROBA 2 SDSL Contracts or of the whole Bitstream Access Service. Notwithstanding the foregoing, Belgacom will have the right to take proactive actions in order to

protect the other xDSL lines prior to sending the above mentioned Notice in urgent cases (e.g.: if the resynchronization rate exceeds 50 resynchronization per day) where unstable lines disturb the transmission quality and link stability of other xDSL lines. Those actions could be a change in the line profile such as a reduction of the target bitrate, the lock of the xDSL port or the physical disconnection of the line. In that case, Belgacom will inform the BIPT and the parties involved about the suspension of the Services at the latest 24 hours after the suspension.

81. Belgacom will have the right to suspend Bitstream Access Services in the event that it is requested to do so by an order of a court or a competent authority. Belgacom will inform Beneficiary as soon as possible of the cause of such suspension.
82. In the event that Beneficiary fails to pay outstanding invoice for any amount due under the Contract for a period of 15 calendar days as from the Due Date of the relevant invoice, or fails to provide, renew, adapt or reconstitute the financial guarantee as provided in the chapter on Financial Guarantee here-above, Belgacom shall be entitled, after having duly informed the BIPT, to suspend the Services with immediate effect subject to a prior Notice of Suspension sent at least 7 calendar days before the end of the above mentioned delay of 15 calendar days. This provision does not apply when disputed amounts are at stake.

Consequences of Suspension

83. The provisions in this chapter on Suspension of the Services are without prejudice to any other right

or claim for compensation to which one of the Parties may be entitled to in the event of suspension of the Services.

Termination for Cause

84. Notwithstanding the provision on Dispute resolution procedure, in the event that either Party defaults in the payment of sums due for the Services offered under the Contract or is in default to provide a financial guarantee as provided in the relevant chapter here-above and such default is not substantially cured within thirty (30) calendar days after written Notice of Termination is given specifying the default, then the non-defaulting Party may by giving notice to the other Party and after having duly informed the BIPT, terminate all the Bitstream Access Services with immediate effect. This provision does not apply when disputed amounts are at stake.

85. In the event that either Party is declared bankrupt or enters into liquidation, then the other Party may terminate all the Bitstream Access Services, without any further legal or other procedures, by sending Notice of termination with immediate effect to the other Party.

Consequences of Termination

86. The provisions in this chapter on Termination of the Services are without prejudice to any other right or claim for compensation to which one of the Parties may be entitled to in the event of termination of the Services.

87. In the case of termination of the Services for any reason, Belgacom shall be entitled to payment for all Services performed prior to such termination in accordance with the conditions that were

applicable between the parties at the time of termination.

88. The provisions of the Contract which by their nature are determined to survive the termination of the Services (including, in particular but without limitation, the provisions on Confidentiality and Applicable Law and Jurisdiction), shall remain in full force and effect after the termination.

Confidentiality

Confidential Information

89. For the purpose of this Chapter, the term "Confidential Information" shall mean:

- information communicated by one Party (or from any of its Associated Companies) (the "Disclosing Party") to the other Party (or to its employees and advisors) (the "Receiving Party"), or obtained by the Receiving Party in connection with the performance of the Services, provided that such information is, at the time of its disclosure, reasonably designated "confidential" or with an equivalent term. If such information was disclosed orally, it shall constitute Confidential Information provided that the Disclosing Party informs the other Party at the time of such disclosure, that such information is confidential and that (i) a written notice containing a summary of the information disclosed orally and mentioning that such information is confidential, is issued by the Disclosing Party to the other within five Working Days from the date of disclosure, or (ii) such disclosure is recorded in minutes of a meeting that are designated, labelled or marked "confidential" or designated,

labelled or marked with an equivalent term.

90. For purposes of these General Terms and Conditions, "Confidential Information" does not include:
- a. information that is properly and lawfully in the public domain otherwise than by breach of the Contract or any other obligation of confidence;
 - b. information that was disclosed by a third party to the Receiving Party without restriction on disclosure or use, unless the Receiving Party knew or should reasonably have known that this information was acquired unlawfully or by a breach of contract or fiduciary relationship.

91. Except as specified in writing, by the Disclosing Party at the time of disclosure, Confidential Information shall continue to be deemed as such until the end of a period of three years after its initial communication under the Contract.

Non-Disclosure

92. The Receiving Party shall refrain from disclosing the Confidential Information to any third party and shall use the Confidential Information only for the performance of the Services offered in accordance with the Contract. In addition, the Receiving Party shall take any reasonable measures to ensure the confidentiality of this information. In any event, the Receiving Party shall use efforts at least commensurate with those that such Party uses for protecting the confidentiality of its own Confidential Information.
93. Notwithstanding the foregoing and without prejudice to the provisions regarding the Disclosure to Personnel, Advisors or Suppliers here-under, either

Party shall be allowed to disclose the Confidential Information to third parties provided it has obtained the prior written consent of the other Party. Such written consent will be given case-by-case upon a discretionary basis. Such written consent shall only be valid and enforceable for the specific information listed therein. The written consent to disclose Confidential Information shall identify the third party or parties to which the information can be disclosed and shall set forth the terms and conditions to which such disclosure is subject.

94. The Disclosing Party shall remain free to disclose to any third party Confidential Information disclosed to the Receiving Party.

Disclosure to Personnel, Advisors or Suppliers

95. A Receiving Party shall disclose the Confidential Information received from the other only to its directors, employees, suppliers, agents, advisors, contractors, sub-contractors, or resellers who have a need to know such information. Such Party shall ensure that such directors, employees, suppliers, agents, advisors, contractors, sub-contractors or resellers are bound by the obligations of confidentiality in respect of the Confidential Information that are set forth in the Contract
96. Notwithstanding anything to the contrary in the foregoing provisions, the Receiving Party shall not disclose or use the Confidential Information, with the aim of providing commercial advantage to business divisions of the Receiving Party, or business divisions of the Receiving Party's Associated Companies, which are engaged in activities competing with the other Party.

97. Either Party may disclose Confidential Information that they received from the other Party, to their suppliers or contractors provided and to the extent that such suppliers or contractors effectively require to have access to such information in order to supply the relevant goods and services. The Parties shall do whatever is necessary in order to impose on the suppliers or contractors which have obtained access to Confidential Information obligations to keep this information confidential, which are at least equivalent to the obligations imposed under the Contract.

98. Each Party shall be liable under the limitations provided in the Chapter relating to Liability here-above, for any unauthorized disclosure or use of the Confidential Information by its directors, employees, suppliers, agents, advisors or contractors. The Party responsible for an unauthorized disclosure or use of the Confidential Information shall, in any event, take any reasonable measures (including but not limited to court proceedings) to mitigate the damage resulting there-from.

Disclosure Required by Law

99. If the disclosure of Confidential Information to third parties is required by reason of legal, accounting or regulatory requirements beyond the control of the Receiving Party, the Receiving Party may disclose such information to the extent necessary to comply with such requirements. Without prejudice to the application of the foregoing, the Parties shall endeavour to ensure the confidential treatment of the Confidential Information by the third parties receiving such information as a result of such requirement.

100. Without limitation to the generality of the foregoing, either Party will have the right to disclose Confidential Information to the BIPT, whenever required by law, or deemed reasonably necessary in the context of any proceedings or discussions held in front or with the BIPT. If any such disclosure of Confidential Information is made, the Party communicating the information will ensure that the attention of the BIPT is properly drawn to the fact that the information is confidential and that the information needs to be kept confidential.

Dispute Resolution and Applicable Resolution

Dispute resolution procedure

101. The SPOC shall, on an ongoing basis, attempt to solve any dispute, controversy or claim between the Parties concerning the interpretation, application and implementation of the present General Terms and Conditions and/or the Contract and its Annexes (a "Dispute") through discussions held in good faith.

102. In the event that the Parties have been unable to solve any Dispute, then upon Notice of either Party, each of the Parties will appoint a designated senior business executive (other than their respective SPOC) whose task it will be to meet for the purpose of endeavouring to resolve the Dispute. Each Party shall ensure that their respective designated executive has sufficient authority or decision-making power concerning the matter at stake. The designated executives will meet as often as the Parties reasonably deem

necessary in order to gather and furnish to the other all information with respect to the matter in issue which the Parties believe to be appropriate in connection with its resolution. Such executives will discuss the Dispute and will negotiate in good faith in an effort to resolve the Dispute without the necessity of any formal proceeding relating thereto.

103. In the event the Parties fail to reach such a solution and/or settlement within fifteen (15) Working Days as from the receipt of the above Notice, they shall escalate the matter to a higher level within their respective organizations. Discussions at that level will be conducted as described in article 102. The Parties may, at any given escalation level, agree to extend the time limits described in this article and in article 102 when they consider it necessary in order to facilitate that an agreement be concluded on the subject-matter of the dispute.

104. Except in the cases of urgency, as determined in good faith by the Party calling the Dispute, no formal proceedings for the resolution of a Dispute may be started until the earlier to occur of (a) a good faith conclusion by the designated executives that amicable resolution through continued negotiation of the matter in issue does not appear likely or (b) the Parties have failed to reach an agreement on the Dispute within 15 Working Days of the escalation of the Dispute as described in article 102.

105. Without prejudice to the above and without prejudice to the rights of each Party in case of Dispute, each Party shall be entitled to call on the BIPT for a decision for disputes regarding the interpretation of the present General Terms and Conditions

and/or its Annexes. In consideration of the legal framework, the then relevant BROBA Reference Offer and the then relevant BIPT advice on the BROBA, BIPT will take a decision.

Applicable Law and Jurisdiction

106. The BROBA II Reference Offer and the contract and its Annexes shall be governed by Belgian law.

107. Without prejudice to article 106, any dispute concerning the validity or the interpretation of the BROBA II reference Offer and the Contract, or the performance of the Bitstream Access Services, or of subsequent contracts derived here-from shall be finally submitted to the Courts of Brussels, Belgium. The above is without prejudice to the right of each of the Parties to submit the Dispute to the BIPT with a view to reach conciliation or to submit the Dispute to the Competition Council.

Miscellaneous

General Principles

108. All the terms and conditions of this Agreement, including its Annexes and/or Appendixes, are agreed upon by the Parties without prejudice to the rights and obligations that either Party may derive from the applicable provisions of the regulatory framework. The fact that either Party has agreed to any provision in this Agreement will not be construed as a renunciation by such Party to invoke (i) any right that such Party may derive from any imperative provision of the applicable regulatory framework or (ii) any obligation that may be imposed to the other Party pursuant to any imperative provision of the applicable regulatory framework.

109. In the framework of the applicable Belgacom Reference Offer for Bitstream Access, should a conflict arise between the Main Body, and any or several Annexes, attachment or appendix to an Annex, the Main Body shall prevail, except for (a) Annex 1 - General Terms and Conditions, which will prevail over the Main Body unless otherwise specifically stated, (b) when otherwise agreed by the Parties, in writing or (c) when otherwise specifically stated in the Main Body or Annex, Attachment or Appendix. Should a conflict arise between Annex 1 - General Terms and Conditions and another Annex, attachment or an appendix to said other Annex, the Annex 1 - General Terms and Conditions shall prevail unless otherwise specifically stated. Should a conflict arise between an Annex and an attachment or an appendix to this Annex, the Annex shall prevail unless otherwise agreed by the Parties, in writing or otherwise specifically stated.

Notices – Address for Invoicing

110. Unless stated otherwise in this Agreement, any Notice under this Agreement will be sent to the respective SPOC of the Parties, in writing and by registered mail or by fax confirmed by registered mail to the following respective addresses:

To Beneficiary:

***Beneficiary Full name

[Address]

Fax: [Fax]

Attention: ***

To Belgacom:

Belgacom N.V./S.A.

27 Bd Albert II

B-1030 Brussels

Fax: [Fax]

Attention: ***

Notwithstanding the foregoing, Parties shall send to each other invoices and credit notes by ordinary mail to the following addresses:

To Beneficiary:

***Beneficiary Full name

[Billing Address]

Attention: ***

To Belgacom:

Belgacom N.V./S.A.

[Billing Address]

Attention: ***

No Assignment

111. Neither of the Parties is entitled to assign the Contract, in part or in its entirety, to any third party or to any other entity unless with the prior written approval of the other Party.

112. No approval will be required for an assignment of the Contract in case of transfer to a successor, to which a transfer has taken

place of, at least, the Assigning Party's activities covered by the Contract. In such a case, the assigning Party shall immediately give Notice to the other Party of any such assignment permitted to be made under the Contract without requesting the other Party's consent.

113. Without prejudice to the foregoing, no assignment shall be valid unless the assignee agrees in writing to be bound by the provisions of the Contract and its Annexes.

Waiver

114. A failure by either Belgacom or Beneficiary to insist on the performance of any term of the Contract or to exercise any right or privilege hereunder shall not be construed as a continuing or future waiver of such term, condition, right or privilege. No waiver shall be valid unless it is in writing and signed on behalf of the Party making the waiver.

Fraud

115. The Parties accept to cooperate to the best of their respective abilities in order to prevent and eliminate any kind of fraud which involves Services provided under the Contract. If any of the Parties suspects such kind of fraud, the Parties shall co-operate in order to identify the origin of the fraud and to use any appropriate means in order to eliminate and prevent such fraud as soon as possible. For the purposes of the application of the present provision, fraud shall mean any manipulation of a communications network, including by Beneficiary connected to the network of one of the Parties, in order to obtain one or more telecommunication services without paying the proper charge for it, or to support other criminal activities

(including, in particular, wiretapping, eavesdropping and gathering secret numbers).

116. It is explicitly acknowledged by the Parties that any cooperation in the context of the present provision will need to be in due compliance with the entire regulatory framework.

Independent Parties – Approvals

117. Each Party shall be responsible for obtaining and keeping in effect all approvals from, and rights granted by, competent authorities, other operators, and any other persons that may be required in connection with the performance of its obligations under the Contract. Each Party shall reasonably cooperate with the other Party in obtaining and maintaining any required approvals and rights for which other Party is responsible.
118. Each of the Parties is and shall remain at all times an independent contractor. Neither Party is authorized and neither of the Parties nor their employees, agents or representatives shall at any time attempt to act or act on behalf of the other Party to bind the other Party in any manner whatsoever to any obligations. Neither Party nor its employees, agents or representatives shall engage in any acts which may lead any person to believe that such Party is an employee, agent or representative of the other Party. Nothing in the Contract shall be deemed to constitute a partnership between the Parties.

BROBA II ADSL

Annex 2

**Technical specifications
of
BROBA over ATM**

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1. Scope

The purpose of this document is to describe the technical specifications of the BROBA [II ADSL](#) over ATM service.

Note that additional information is available in the Main Body of this offer.

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2. ATM NNI Tests for Belgacom Data Connectivity

2.1. General

2.1.1. Overview

1. The set of tests provided in this document has a sole purpose to test the ATM NNI interconnection for the following type of the Inter ATM Gateway Link:
 - E1 (2 Mbps)
 - E3 (34 Mbps)
 - STM1 (155 Mbps)

2.1.2. Planning: From ... to ...

2. Day 1: configuration checking and preparation of VBR VP connections
3. Day 2: VBR VP tests

2.1.3. Test locations

Belgacom
Address:
Telephone:

Beneficiary:
Address:
Telephone:

2.1.4. Contact persons for NNI tests

Operator	Belgacom	
name1		
Telephone	+32	
Fax	+32	
Email	@Belgacom.be	
name2		
Telephone	+32	
Fax	+32	
Email	@Belgacom.be	

2.2. ATM NNI TESTS on E1 (2 Mbps), E3 (34 Mbps) and STM1 (155 Mbps)

2.2.1. Test purpose

4. The following test scripts are testing the ATM transport service between the ATM network of Belgacom and the one of the Beneficiary.
5. The purpose of the tests is just to test the connectivity and to make sure that the ATM switch of Belgacom can interwork with the ATM equipment of the Beneficiary.

2.2.2. Test configuration

6. The figure here below depicts the setup that will be used for the tests to be worked out **for each access line** that must be brought into service.

Overview

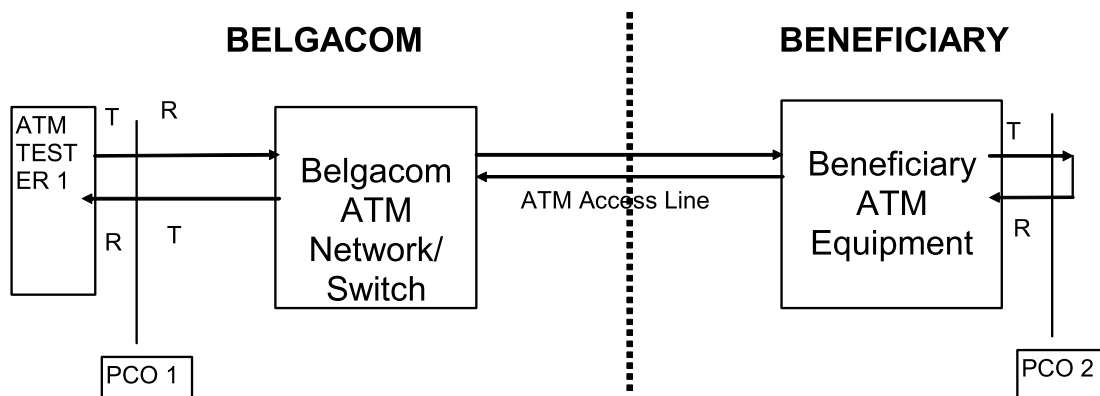


Fig. 1

ATM interfaces

7. The access lines are E1, E3 or STM1. The ATM mapping conforms to G.704/G.804/G.832 and I.432. Cell scrambling, HEC and idle cells are used as defined in I.432.
8. Interface at PCO 1 : STM1
9. Interface at PCO 2 : E1, E3 or STM1

2.2.2.1. Tests of Physical Connectivity

10. The following tests will be executed to test the physical level connectivity of the ATM access line

- a. Setup the physical connection
- b. Troubleshoot the physical connection if necessary
- c. Verify the link behavior in case of failure

Test	Description	Procedure	Verdict criteria	Pass	Comment
1a	Setup the physical connection	- Make the necessary connections between the 2 networks - Perform the necessary configuration on the devices at both sides - Verify that the link is active	Link is active = pass, go to step 1c. In case of fail, go to step 1b.		
1b	Troubleshoot the connection	- In case the link doesn't become active after correct connection and configuration, try to locate the failure in cooperation with the customer - Interrupt the link at the NTP. Put a loop at the NTP and verify that the Belgacom part is functioning properly. If not, repair until OK. - The customer is supposed to execute the same actions on its part.	Link becomes active = pass		
1c	Verify the link behavior in case of failure	- Disconnect the cable and/ or disable the port(s) of the link and verify that it becomes inactive - Reconnect the cable and/ or enable the port(s) of the link and verify that it becomes again active	Link does react correctly on failures = pass		

2.2.2.2. Tests of ATM interworking and link quality

11. For those tests, **ONE** ATM PVP will be configured on the ATM access line.
12. It is asked to the Beneficiary to loop the PVP on an interface on the same ATM equipment as the one on which the access line is connected to.
13. **Belgacom will use this PVP to send traffic and to compare it with the traffic which will come back.** This will allow Belgacom to make sure that both ATM switches can interwork and that the quality of the access line is acceptable before configuring real traffic on it.

14. The following Permanent Virtual Paths (PVP) will be used and tested out.

15. VPI allocation: VPI at PCO1 = VPI at PCO2 = VPI at access line port.

CoS	VPI	PCR (kbps)	CDVT (µs)	SCR (kbps)	MBS (cells)
VBR nrt	17	1024	804	1024	32

Test Procedure

Test	Procedure	Verdict criteria : Pass / Fail	Pass	Comment
1	- configure the PVP connection mentioned here above between PCO 1 and PCO 2. - The PVP will be policed according to the GCRA algorithm.	config accepted = pass otherwise fail		
2a	- configure ATM TESTER 1 to send traffic (CLP=0) at bit rates mentioned under PCR above, in continuous stream in the respective VPI. Use AAL1 payload. - configure ATM TESTER 1 to receive traffic in the respective VPI and count lost cells. - start sending traffic and continue for 1 hour	no lost cells = Pass otherwise fail		

2.2.2.3. Additional Test PVCs at Disposal of Beneficiary

16. Additionally to the tests that will be performed by Belgacom and described in the above paragraphs, Belgacom will configure 5 PVP connections on the access line and will loop them on an interface connected to a test switch. It is important to note that those PVP will **only** be provisioned during the tests of the **first access line**.

17. The PVP will be configured as described in the table here below and will be available for a duration of 20 working days. Policing will be made according to GCRA algorithm.

CoS	VPI	PCR	CDVT	SCR/MCR	MBS
CBR	17	1024	527	NA	32
VBR rt	18	1280	461	1280	32
VBR nrt	19	1536	530	512	32
VBR nrt	20	1728	470	864	32
UBR+	21	1920	420	480	32

18. Additional possibilities can be asked by the Beneficiary and will be charged €990 per half-day¹.
19. Additional possibilities, if asked for by the Beneficiary:
- AAL5 and AAL2 payload,
 - IP interconnectivity test on IP level between modem and BAS,
 - CBR testing.
- (Within 3 weeks following the receipts by Belgacom of a request from Beneficiary).

¹ Standard fee invoiced by Belcomlab

3. Technical Specifications of the Access Line

3.1. 2 Mbit/s

3.1.1. Introduction

20. This section of the Annex contains the technical specifications of the 2 Mbit/s Access Line of the Data Connectivity Offer. Basically, it's the intention of Belgacom and The Beneficiary to co-operate for the realisation of an end-to-end 2Mbit/s transparent access line between The Beneficiary equipment and Belgacom ATM Access Point. As the overall, end-to-end performance of this 2Mbit/s access line is well defined in the ETSI documents ETS 300418 and ETS 300247, this document only deals with the apportionment of these impairments between the Belgacom network and the Beneficiary's network connection.
21. The specifications of the 2 Mbps access line for the Data Connectivity (WDC) are based on a generic model as shown hereafter.

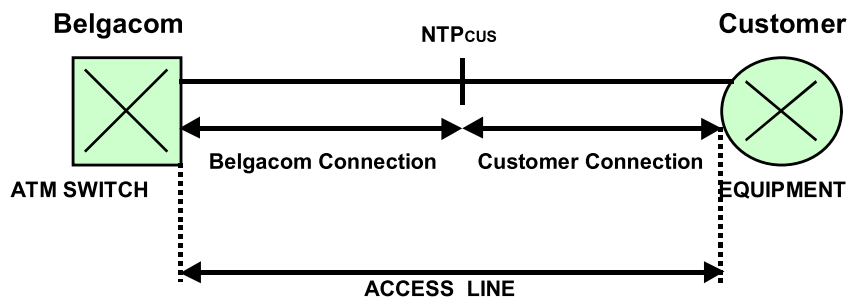


Fig. 2

22. The connection of Belgacom is presented to the Beneficiary's network connection via the Beneficiary's Network Termination Point (NTP_{cus}). This NTP_{cus} comprises all physical connections and their technical access specifications that form part of the Belgacom transmission network. In some cases the NTP is presented by means of an electrical equipment referred to as the Network Termination Unit (NTU). For the description of the 2 Mbit/s Access Line of the WDC service, the NTU is considered as being contained within the Belgacom connection.

3.1.2. Connection characteristics

3.1.2.1. Transfer rate

3.1.2.1.1. Access line timing

23. Provision of the circuit timing is the responsibility of Belgacom within the limits of 2048kbit/s $\pm$ 50 ppm as specified by ITU-T Recommendation G.703.

3.1.2.1.2. Information transfer rate

24. The Belgacom connection of WDC 2 Mbit/s access line is capable of transferring an information rate of 2048kbit/s $\pm$ 50 ppm in each direction.

3.1.2.2. Information transfer susceptibility

25. The Belgacom connection of WDC 2 Mbit/s access line is capable of transferring unrestricted digital information.

3.1.2.3. Structure

26. The Belgacom connection of WDC 2 Mbit/s access line shall not be structured by Belgacom; the full bit rate of 2048kbit/s shall be available to The Beneficiary for unrestricted digital information transfer.

3.1.2.4. Establishment of communication

27. Establishment or release of the Belgacom connection of WDC 2 Mbit/s access line shall not require any protocol exchange or other intervention at the NTPcus by the Beneficiary.

3.1.2.5. Symmetry

28. The Belgacom connection of WDC 2 Mbit/s access line shall be symmetrical, i.e. each direction of transmission shall have the same nominal characteristics, although the actual values shall be independent.

3.1.2.6. Connection configuration

29. The Belgacom connection configuration is point-to-point.

3.1.2.7. Network performance

3.1.2.7.1. Transmission delay

30. The one way delay through the Belgacom connection shall be less than $(5 + 0.01G)$ ms, where G is the geographical distance in kilometres.

3.1.2.7.2. Jitter

31. The maximum jitter at the output port of the NTPcus as well as the input jitter tolerance at the NTPcus shall be as specified in ITU-T Recommendation G.823.

3.1.2.7.3. Slip

32. Slip occurs at a point between two parts of a communication link that are operating at similar but not identical bit rates (plesiochronously); the Belgacom connection of the WDC 2 Mbit/s access line complies with ITU-T Recommendation G.822 which specifies controlled slip objectives.

3.1.2.7.4. Performance level

33. Basically, Belgacom and the Beneficiary have to co-operate in order to be able to guarantee the overall end-to-end error performance level of the WDC 2048kbit/s access line as specified in paragraph 5.1.7.4 of ETS 300 247. The method of apportionment for the end-to-end error impairments between The Beneficiary and Belgacom shall be based on the model mentioned in ITU-T Recommendation G.826.

3.1.2.8. Network interface presentation

3.1.2.8.1. Physical characteristics

34. The physical connection arrangements for the standard NTPcus of the Customer-sited WDC 2 Mbit/s access line (120 Ohms version of the G.703-interface) are provided by means of a RJ45 socket and with contact assignments as specified in the table below.

contact	network interface
1 & 2	transmit pair
3	shield reference point
4 & 5	receive pair
6	shield reference point
7	unused
8	unused

The transmit pair is the output from the Belgacom network connection to Belgacom's ATM switch or to the Customer's network connection.

The receive pair is the input from the ATM switch or the Customer's network connection to the Belgacom network connection.

35. At the NTPcus and with the agreement of the Beneficiary, two alternative means of connection may be provided as an option for the Customer-sited access line, i.e.:
- by means of a hardwired connection (120 Ohms version of the G.703-interface), by using insulation displacement connectors;
 - by means of two 1,6/5,6 coax-connectors (75 Ohms-version of the G.703-interface), by using one coaxial pair in each transmission direction.

36. The physical connection arrangements for the standard NTP_{cus} of the Belgacom-sited WDC 2 Mbit/s access line are provided by means of two 1,6/5,6 coax-connectors (75 Ohms-version of the G.703-interface), by using one coaxial pair in each transmission direction.

3.1.2.8.2. Electrical characteristics

37. The electrical characteristics of the NTP_{cus} of the 2 Mbit/s WDC access line are in accordance with paragraph 4.2 of ETS 300 418.

3.1.2.8.3. Safety

38. Regarding the safety, the NTP_{cus} complies with paragraph 4.3 of ETS 300 418.

3.1.2.8.4. Overvoltage protection

39. Regarding the overvoltage protection, the NTP_{cus} complies with paragraph 4.4 of ETS 300 418.

3.1.2.8.5. ElectroMagnetic Compatibility (EMC)

40. The network interface presentation fulfils to the EMC requirements which are imposed under the EMC Directive 89/336/EEC.

3.1.2.9. Terminal equipment

41. For connection to the NTP_{cus} of the WDC 2048kbit/s access line, the terminal of the Beneficiary has to be approved to CTR12.
42. At the NTP_{cus} the Beneficiary has to provide Belgacom with a grounding connection point. This grounding connection point should be easily accessible, located near the NTP_{cus}, and shall enable Belgacom to attach a 4 mm² (minimum section) ground cable with lug, bolt and washer. The characteristics of the grounding connection point provided by the Beneficiary must be conform to article 69 of the actual RGIE²; this grounding point shall have a resistance value not exceeding 30 Ohms.

² RGIE: Règlement Général des Installations Electriques

3.1.2.10. Definitions, Symbols and Abbreviations

3.1.2.10.1. Definitions

43. For the purpose of these technical specifications, the following definitions apply:
44. Background block error ratio
The ratio of errored blocks over all blocks within a specified measuring period, where neither are counted during unavailability periods nor during severely errored seconds.
45. Errored block
A block with one or more bit errors.
46. Errored second
A one-second period with one or more errored blocks.
47. Network Termination Point (NTP)
All physical connections which form part of the BELGACOM telecommunications network and which are necessary for access to and efficient communication through the Belgacom network connection.
48. Severely errored second
A one-second period which contains at least 30% errored blocks or at least one severely disturbed period.
49. Slip
One or more extra or missing consecutive unit intervals in the bit stream. Slip occurs at a point between two pieces of the communication link that are operating at similar but not identical bit rates (plesiochronously). If a piece of equipment is transmitting data at a rate X towards another piece of equipment which is operating at a rate Y, then depending on whether X is greater or less than Y, there will be either a loss of, or a gain of data at the received piece of equipment. The addition or loss of bits in a bit stream is referred to as slip.

3.1.2.10.2. Symbols and abbreviations

50. For the purpose of these technical specifications, the following abbreviations apply:

<u>CRC-4:</u>	Cyclic Redundancy Check-4 bit.
<u>CTR:</u>	Common Technical Regulations.
<u>DCE:</u>	Data Circuit-terminating Equipment.
<u>DTE:</u>	Data Terminal Equipment.
<u>ES:</u>	Errored Seconds.
<u>ITU:</u>	International Telecommunication Union.
<u>NTP</u>	Network Termination Point.
<u>ppm:</u>	Parts per million
<u>RGIE:</u>	Règlement Général des Installations Electriques.
<u>SES:</u>	Severely Errored Seconds.
<u>UI:</u>	Unit Interval.

3.2. 34 Mbit/s

3.2.1. Introduction

51. This section of the Annex contains the technical specifications of the 34Mbit/s Access Line of the Data Connectivity Offer. Basically, it's the intention of Belgacom and the Beneficiary to co-operate for the realisation of an end-to-end 34Mbit/s transparent access line between The Beneficiary equipment and Belgacom ATM Access Point. As the overall, end-to-end performance of this 34Mbit/s access line is well defined in the ETSI documents ETS 300418 and ETS 300247, this document only deals with the apportionment of these impairments between the Belgacom network and the Beneficiary's network connection.
52. The specifications of the 34 Mbit/s access line for the Data Connectivity (WDC) are based on a generic model as shown hereafter.

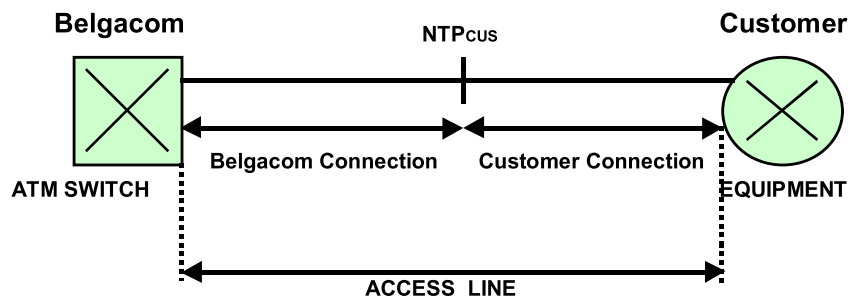


Fig. 3

53. The connection of Belgacom is presented to the Beneficiary's network connection via the Beneficiary's Network Termination Point (NTP_{CUS}). This NTP_{CUS} comprises all physical connections and their technical access specifications that form part of the BELGACOM transmission network. In some cases the NTP is presented by means of an electrical equipment referred to as the Network Termination Unit (NTU). For the description of the 34 Mbit/s Access Line of the WDC service, the NTU is considered as being contained within the Belgacom connection.

3.2.2. Connection characteristics

3.2.2.1. Transfer rate

3.2.2.1.1. access line timing

54. Provision of the circuit timing is the responsibility of Belgacom within the limits of 34,368kbit/s $\pm$ 20 ppm as specified by ITU-T Recommendation G.703.

3.2.2.1.2. information transfer rate

55. The Belgacom connection of WDC 34 Mbit/s access line is capable of transferring an information rate of 34,368kbit/s $\pm$ 20 in each direction.

3.2.2.2. Information transfer susceptance

56. The Belgacom connection of WDC 34 Mbit/s access line is capable of transferring unrestricted digital information.

3.2.2.3. Structure

57. The Belgacom connection of WDC 34 Mbit/s access line shall not be structured by BELGACOM; the full bit rate of 34,368kbit/s shall be available to The Beneficiary for unrestricted digital information transfer.

3.2.2.4. Establishment of communication

58. Establishment or release of the Belgacom connection of WDC 34 Mbit/s access line shall not require any protocol exchange or other intervention at the NTPcus by the Beneficiary.

3.2.2.5. Symmetry

59. The Belgacom connection of WDC 34 Mbit/s access line shall be symmetrical, i.e. each direction of transmission shall have the same nominal characteristics, although the actual values shall be independent.

3.2.2.6. Connection configuration

60. The Belgacom connection configuration is point-to-point.

3.2.3. Network performance

3.2.3.1. Transmission delay

61. The one way delay through the Belgacom connection shall be less than $(5 + 0.01G)$ ms, where G is the geographical distance in kilometers.

3.2.3.2. Jitter

62. The maximum jitter at the output port of the NTPcus as well as the input jitter tolerance at the NTPcus shall be as specified in ITU-T Recommendation G.823.

3.2.3.3. Performance level

63. Basically, Belgacom and the Beneficiary have to co-operate in order to be able to guarantee the overall end-to-end error performance level of the WDC 34 Mbit/s access line as specified in paragraph 5.1.7.4 of ETS 300 687. The method of apportionment for the end-to-end error impairments between The Beneficiary and Belgacom shall be based on the model mentioned in ITU-T Recommendation G.826.

3.2.4. Network interface presentation

3.2.4.1. Physical characteristics

64. The physical connection arrangements for the standard NTP_{cus} of the WDC 34 Mbit/s access line (75 Ohms version of the G.703-interface) shall consist of two 1.6/5.6 coax-connectors (one coaxial pair in each transmission direction) complying with IEC 169-13.

3.2.4.2. Electrical characteristics

65. The electrical characteristics of the NTP_{cus} of the 34 Mbit/s WDC access line are in accordance with ITU-T Recommendation G.703 (75 Ohms).

3.2.4.3. Safety

66. Regarding the safety, the NTP_{cus} complies with paragraph 4.3 of ETS 300 418.

3.2.4.4. Overvoltage protection

67. Regarding the overvoltage protection, the NTP_{cus} complies with paragraph 4.4 of ETS 300 418.

3.2.4.5. ElectroMagnetic Compatibility (EMC)

68. The network interface presentation fulfils to the EMC requirements which are imposed under the EMC Directive 89/336/EEC.

3.2.5. Terminal equipment

69. For connection to the NTP_{cus} of the WDC 34 Mbit/s access line, the terminal of the Beneficiary has to be in accordance with ETS 300 689, taking into account that:
- Belgacom is offering the transparent, unstructured leased line service;
 - The physical connection arrangements shall preferably consist of two 1,6/5,6 coax-connectors (one coaxial pair in each transmission direction) complying with IEC 169-13.
 - At the NTP_{cus} and with the agreement of the Beneficiary, the BNC connector may be provided as an option for the Customer-sited access line.
70. At the NTP_{cus} the Beneficiary has to provide Belgacom with a grounding connection point. This grounding connection point should be easily accessible,

located near the NTP_{CUS}, and shall enable Belgacom to attach a 4 mm² (minimum section) ground cable with lug, bolt and washer. The characteristics of the grounding connection point provided by the Beneficiary must be conform to article 69 of the actual RGIE³; this grounding point shall have a resistance value not exceeding 30 Ohms.

3.2.6. Definitions, Symbols and Abbreviations

3.2.6.1. Definitions

71. For the purpose of these technical specifications, the following definitions apply:
72. Background block error ratio
The ratio of errored blocks over all blocks within a specified measuring period, where neither are counted during unavailability periods nor during severely errored seconds.
73. Errored block
A block with one or more bit errors.
74. Errored second
A one-second period with one or more errored blocks.
75. Network Termination Point (NTP)
All physical connections which form part of the BELGACOM telecommunications network and which are necessary for access to and efficient communication through the Belgacom network connection.
76. Severely errored second
A one-second period which contains at least 30% errored blocks or at least one severely disturbed period.

3.2.6.2. Symbols and abbreviations

77. For the purpose of these technical specifications, the following abbreviations apply:

<u>CRC-4:</u>	Cyclic Redundancy Check-4 bit.
<u>CTR:</u>	Common Technical Regulations.
<u>DCE:</u>	Data Circuit-terminating Equipment.
<u>DTE:</u>	Data Terminal Equipment.
<u>ES:</u>	Errored Seconds.
<u>ITU:</u>	International Telecommunication Union.
<u>NTP:</u>	Network Termination Point.
<u>ppm:</u>	Parts per million
<u>RGIE:</u>	Règlement Général des Installations Electriques.
<u>SES:</u>	Severely Errored Seconds.

³ RGIE: Règlement Général des Installations Electriques

UI: Unit Interval.

3.3. STM-1

3.3.1. Introduction

78. This section contains the technical specifications of the STM-1 Access Line of the Data Connectivity. Basically, it's the intention of Belgacom and the Beneficiary to co-operate for the realisation of an end-to-end STM-1 transparent access line between Beneficiary equipment and Belgacom's ATM switch.
79. The specifications of the STM-1 (155 Mbit/s) access line for the Data Connectivity are based on a generic model as shown hereafter.

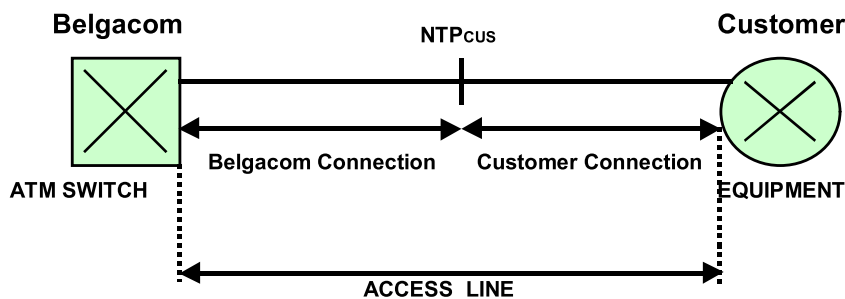


Fig. 4

80. The connection of Belgacom is presented to the Beneficiary's network connection via the Beneficiary's Network Termination Point (NTPcus). This NTPcus comprises all physical connections and their technical access specifications that form part of the BELGACOM transmission network. In some cases the NTP is presented by means of an electrical equipment referred to as the Network Termination Unit (NTU). For the description of the STM-1 (155 Mbit/s) Access Line of the Data Connectivity service, the NTU is considered as being contained within the Belgacom connection.

3.3.2. Available interface

81. The SDH STM-1 electrical interface complies with ITU-T specification G.707, G.783, G.703, G.957, G.825 and ETSI standards ETS 300 147, 300 232, DE/TM 01015
82. The STM-1 optical interface is also available. For Belgacom-sited access line, the physical connection arrangements shall exclusively consist of an Optoclip2 connector. For Customer-sited access line, Belgacom can deliver the line on other optical interfaces.

3.3.3. Mechanical/physical: External STM-1 electrical connector

83. The provision of the DDF is the Beneficiary's responsibility, the connectors are provided by Belgacom. The DDF has to be delivered with a panel with 2-times (transmission / reception) 2 holes for each link, one for the link connection, the other for the measurements. These connectors are H shaped CEI169-13 1.6/5.6 75 Ohm, with 25mm between axes. At both Belgacom's equipment and the Belgacom side of the Beneficiary distribution frame, the electrical cables will be equipped with 75 ohms coaxial connectors conform with standard 169-13 IEC-75-15/16 ohms-connector type 1,6/5,6, for Belgacom-sited access lines. For Customer-sited access line Belgacom can also deliver this on BNC connectors. For the distribution frame side, it will have the following properties:
- With contact of the socket (female) type,
 - Fixed connector (straight) for a panel mounting (bulkhead),
 - Maximum thickness of the panel is 3mm,
 - Latching system: to screw.
84. The jumpers with male sockets will be provided by the Beneficiary.

3.3.4. Electrical characteristics

85. The STM-1 electrical interface complies with the G.703 specification.
86. The jitter and wander on the signal presented at the input of the G.703 interface should be within the limits specified in G.825. The jitter and wander on the signal presented at the output of the G.703 interface should be within the limits specified in G.783.

3.3.5. Functional

87. The STM-1 interface complies with the G.707, G.783 specifications and ETS 300 147 standard.
88. ATM on STM1 is only defined for VC4.

3.3.5.1. Regenerator and Multiplex Section overhead

A1-A2	Frame alignment bytes are required
J0	Path Trace, if used, as defined in ETS DE/TM 01015-1-1 §7.1. The APId (Access Point Identifier) transmitted by J0, shall use the 15 byte format. The value of APId will be defined later.
B1	BIP-8 calculation is required
D1-D12	Not used
B2	BIP-24N calculation is required
K2	Used for MS-AIS and MS-FERF, renamed MS-RDI (Remote Defect Indication), detection
M1	MS-REI is required based on block calculation as defined G.707 Ap VII or not used
S1	Not used

89. All bits/bytes not mentioned here above have to be disregarded by the equipment. This means that the correct functioning may not depend on them.

4. VP Connectivity between Belgacom DSLAM and Beneficiary

90. The specific configuration described hereafter concern elements still under test. Some of the information is still subject to change after approval by the BIPT.

4.1. VP connectivity between DSLAM and OLO ATM switch

91. Following figure presents the Data Connectivity solution using VP connectivity between Belgacom DSLAM and Beneficiary ATM switch.

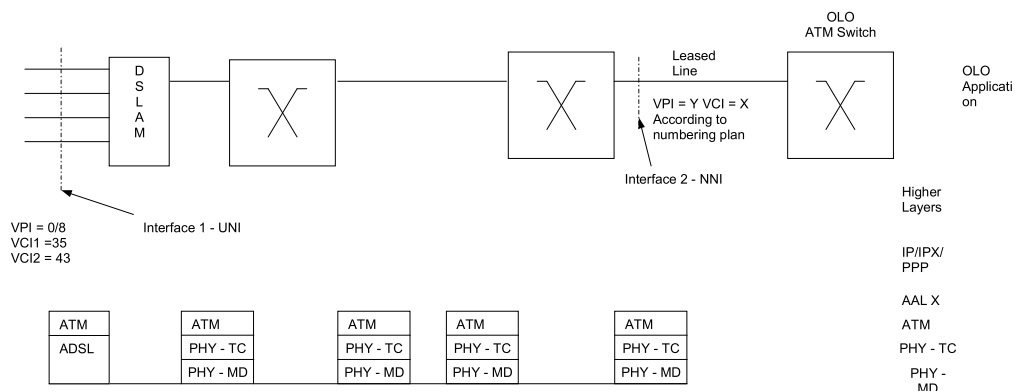


Fig. 5

General Description:

92. For Beneficiary, following connection numbering rules apply:
- VP connectivity is configured in each DSLAM for each connected Beneficiary.
 - DSLAM VC numbering per ADSL line (10 VC per line) is According to following table:

VPI range	0-4095
VCI rule	$(\text{port}-1)+32+(X-1)*2000$

93. In the above table
- X is the number the VC defined on the end user line (X= 1 to 10)
 - VPI range refers to range offered at interconnection point between Belgacom ATM switch and Beneficiary ATM switch
 - VCI range refers to VCI configured on the DSLAM network side and transparently transported up to the interconnection point
94. UNI/NNI interface are according to ITU-T I.361 Specification "B-ISDN ATM layer specification".

4.1.1. Interface 1 Specification – UNI

4.1.1.1. DSLAM Profiles Configuration

95. VP/VC configuration

According to Alcatel documentation only a restricted range of VCI values can be used at DSLAM client side

96. The values chosen are:

VCI Values:

- VCI1 = 35 (if one VC per line)
- VCI2 = 36 (for the second VC on the same line)
- VCI3 = 37 (for the third VC on the same line)
- VCI4 = 38 (for the forth VC on the same line)
- VCI5 to VC10 numbering depends on the technical situation.

97. The traffic descriptor applied on the connection will be those defined by the operator.

98. The CoS of a VC on the DSLAM has to be of the same type, or lower, than the VP or VC requested in the ATM network : VBR rt VP or VC (ATM) can content CBR or VBR rt VC or lower (DSLAM) and VBR nrt VP or VC (ATM) can only content UBR+ or VBR nrt VC (DSLAM).

99. The CDVT values used by the DSLAM for the CBR traffic descriptor are conforming to table :

UNI		
Peak information rate kbit/s	PCR (cell/s)	CDVT µs
256	604	1516
320	755	1252
384	906	1076
448	1057	950
512	1208	856
576	1359	782
640	1510	724
704	1661	676
768	1812	636
832	1963	602
896	2114	573
960	2265	548
1024	2416	526
1088	2567	506
1152	2717	489
1216	2868	474
1280	3019	460
1344	3170	447

1408	3321	436
1472	3472	425
1536	3623	416
1600	3774	407
1664	3925	399
1728	4076	391
1792	4227	384
1856	4378	378
1920	4529	372
1984	4680	366
2048	4831	361
2112	4982	355
2176	5133	351
2240	5284	346
2304	5434	342

The above-mentioned CDVT values are not definitive, nor fixed in their pre-definition, but can still be reviewed punctually as a result of a motivated request⁴ of a Beneficiary.

In some cases⁵ Beneficiary can change the CDVT values. Belgacom has to consider the motivated request from the Beneficiary and can the refuse to implement the requested CDVT values in virtue of a motivation exclusively based on technical problems as well as when these modifications have damaging consequences on the network integrity. In this case, Belgacom has to propose an alternative solution acceptable for the Beneficiary and for information for the BIPT. Belgacom has to answer to the Beneficiary's questions within a delay of 10 working days with a copy to the BIPT.

4.1.2. Interface 2 Specification – NNI

100. VP is configured in ATM Switch with following parameters:

4.1.2.1. Configure ATM VPC Path – Guidelines

101. ATM Parameters:

- Endpoint A = VPI value
- Endpoint B = VPI value
- VP Application = PVP
- Connection Type = pt to pt symmetrical
- Service Category = CBR, rt-VBR, nrt-VBR, UBR+
- Alarm Surveillance = Enable/Disable (on OLO request)
- Sustained Info rate (kbps) = SCR
- Peak Info Rate (kbps) = PCR

102. ATM Traffic

- Service Category = CBR, rt-VBR, nrt-VBR, UBR+
- Traffic Descriptor = PIR_0+1/SIR_0 for nrt-VBR
- Traffic Descriptor = PIR_0+1 ; MIR_0+1 for UBR +

⁴ With the exception of the CBR context

⁵ With the exception of the CBR context

- Traffic Descriptor = PIR_0+1/SIR_0+1 for rt-VBR
- Traffic Descriptor = PIR_0+1 for CBR
- Traffic Policing = Tag on SIR_0, discard on PIR_0+1, discard on SIR_0+1
- PIR_0+1 = see Product Definition
- MBS_0 = MBS_0+1 = 32
- SIR_0 = see Product Definition
- SIR_0+1 = see Product Definition

103. VPi / VCi numbering range:

- VP Switching

E3 VPI: 1 -4095 all range is available

STM1 VPI: 1 -4095 all range is available

- VC Switching

E3 VPI range: 0-255 (the max number of VPI could be restricted to 16 on some type of cards)

VCi range: 32-1023. Max. number of connections on a E3 port = 2045 - (2 * number of VPI used in VC switching)

STM1 VPI range: 0-255

VCi range: 32-8191. Max. number of connections on a STM1 port = 4092 - (2 * number of VPI used in VC switching)

104. For different bit rates following table gives the correct CDVT values.

CDVT for Nrt-VBR, UBR:

PCR (Kbit/s)	PCR (c/s)	CDVT(μs)	BtB cells E3	BtB cells STM1
256	604	3288	3	2
320	755	2625	3	2
384	906	2184	3	2
448	1057	1868	3	2
512	1208	1632	3	2
576	1359	1448	3	2
640	1510	1300	3	2
704	1661	1180	3	2
768	1812	1080	3	2
832	1963	995	3	2
896	2114	922	3	2
960	2265	859	3	2
1024	2416	804	3	2
1088	2567	770	3	2
1152	2717	730	3	2
1216	2868	680	3	2
1280	3019	640	3	2
1344	3170	620	3	2
1408	3321	580	3	2
1472	3472	560	3	2
1536	3623	530	3	2

1600	3774	510	3	2
1664	3925	500	3	2
1728	4076	470	3	2
1792	4227	450	3	2
1856	4378	440	3	2
1920	4529	420	3	2
1984	4680	410	3	2
2048	4831	405	3	2
2000	4717	400	3	2
3000	7076	260	3	2
4000	9434	250	3	3
5000	11793	250	4	4
6000	14151	250	5	4
7000	16510	250	6	5
8000	18868	250	7	5
9000	21227	250	8	6
10000	23585	250	9	7
11000	25944	250	10	7
12000	28302	250	11	8
13000	30661	250	13	9
14000	33019	250	15	10
15000	35378	250	16	10
16000	37736	250	18	11
17000	40095	250	21	12
18000	42453	250	23	13
19000	44812	250	26	13
20000	47170	250	29	14
21000	49529	250	33	15
22000	51887	250	37	16
23000	54246	250	43	17
24000	56604	250	49	17
25000	58963	250	57	18
26000	61321	250	66	19
27000	63680	250	79	20
28000	66038	250	95	21
29000	68397	250	118	22
30000	70755	250	154	23
31000	73114	250	213	24
32000	75472	250	334	24
33000	77831	250	718	25
34000	80189	250	na	26

105. The above-mentioned CDVT values are not definitive, nor fixed in their pre-definition, but can still be reviewed punctually as a result of a motivated request⁶ of a Beneficiary.

106. In some cases⁷ Beneficiary can change the CDVT values. Belgacom has to consider the motivated request from the Beneficiary and can the refuse to

⁶ With the exception of the CBR context

⁷ With the exception of the CBR context

implement the requested CDVT values in virtue of a motivation exclusively based on technical problems as well as when these modifications have damaging consequences on the network integrity. In this case, Belgacom has to propose an alternative solution acceptable for the Beneficiary and for information for the BIPT. Belgacom has to answer to the Beneficiary's questions within a delay of 10 working days with a copy to the BIPT.

CDVT for CBR and rt-VBR connections

CDVT for CBR & rt-VBR				
PCR (Kbit/s) or PIR (Kbit/s)	PCR (c/s)	CDVT(□s)	BtB cells E3	BtB cells STM1
256	604	1520	1	1
320	755	1255	1	1
384	906	1079	1	1
448	1057	953	2	2
512	1208	858	2	2
576	1359	784	2	2
640	1510	726	2	2
704	1661	677	2	2
768	1812	637	2	2
832	1963	603	2	2
896	2114	574	2	2
960	2265	549	2	2
1024	2416	527	2	2
1088	2567	507	2	2
1152	2717	490	2	2
1216	2868	475	2	2
1280	3019	461	2	2
1344	3170	448	2	2
1408	3321	437	2	2
1472	3472	426	2	2
1536	3623	417	2	2
1600	3774	408	2	2
1664	3925	400	2	2
1728	4076	392	2	2
1792	4227	385	2	2
1856	4378	379	2	2
1920	4529	372	2	2
1984	4680	367	2	2
2048	4831	361	2	2
2000	4717	365	2	2
3000	7076	309	3	3
4000	9434	281	4	3
5000	11793	264	4	4
6000	14151	252	5	4
7000	16510	244	6	5
8000	18868	238	6	5
9000	21227	234	7	6

10000	23585	230	8	6
11000	25944	227	9	7
12000	28302	224	10	7
13000	30661	222	12	8
14000	33019	220	13	8
15000	35378	218	14	9
16000	37736	217	16	10
17000	40095	216	18	10
18000	42453	215	20	11
19000	44812	214	22	11
20000	47170	213	25	12
21000	49529	212	28	12
22000	51887	211	32	13
23000	54246	211	36	14
24000	56604	210	41	14
25000	58963	209	47	15
26000	61321	209	55	16
27000	63680	208	65	16
28000	66038	208	79	17
29000	68397	208	99	18
30000	70755	207	127	18
31000	73114	207	176	19
32000	75472	206	275	20
33000	77831	206	592	20
34000	80189	206	NA	21
All higher	Rates:	206		

107. The above-mentioned CDVT values are not definitive, nor fixed in their pre-definition, but can still be reviewed punctually as a result of a motivated request⁸ of a Beneficiary.
108. In some cases⁹ Beneficiary can change the CDVT values. Belgacom has to consider the motivated request from the Beneficiary and can the refuse to implement the requested CDVT values in virtue of a motivation exclusively based on technical problems as well as when these modifications have damaging consequences on the network integrity. In this case, Belgacom has to propose an alternative solution acceptable for the Beneficiary and for information for the BIPT. Belgacom has to answer to the Beneficiary's questions within a delay of 10 working days with a copy to the BIPT.
109. The CDVT values specified by Belgacom have been determined in the framework of a European ATM pilot project to which Belgacom participated actively together with 16 other European telecom operators.
110. Even if those values are not strictly speaking exactly the same as the ones that can be calculated from the ITU-T I.371 specification, they are very close to it.

⁸ With the exception of the CBR context

⁹ With the exception of the CBR context

4.2. Appendix – SDH interface

This chapter describes SDH interface.

4.2.1. SDH card functions and features

- 111. STM1 cards transport cells between the switching fabric and the STM1 network.
- 112. STM1 cards are installed in Low Speed or Dual Peripheral shelves. The cards provide a single-port UNI/NNI interface at a transmission rate of 155.52 Mb/s. STM1 cards support 4096 PVP connections on each port. There are two versions for each STM1 card; see tables below for a list of the cards. STM1-1 cards have 4 k cell buffering capacity STM1-2 cards have 32 k cell buffering capacity.
- 113. The Alcatel 7470 system supports automatic protection switching or 1+1 redundancy STM1 cards. For information about slot configuration for STM1 see Alcatel documentation.

4.2.2. STM1 card

- 114. The Alcatel 7470 system supports STM1 Electrical cards. These cards are designed for short-range applications using 75 ohm coaxial cables of up to 136 m (450 ft) in length. The back of each card provides a single electrical interface. You use a single-port BNC MAU, which has one transmit and one receive connector, to connect the electrical interface to the ATM network.
- 115. Belgacom ATM Switch supports STM1 electrical card type 1 and type 2.

4.2.3. SDH card types

- 116. Next table lists the part numbers of the SDH cards.

Table: SDH card part numbers

Card type	Buffer capacity	Part number
STM1-1 Electrical	4 k	90-2305-44
STM1-2 Electrical	32 k	90-4909-24

4.2.4. SDH card connectors

- 117. The BNC connection is through a BNC MAU that connects to the back of the card.

4.2.5. SDH card specifications of the STM1 electrical card of the Alcatel 7470 switch

118. Following table lists the specifications for SDH cards.

Table: Specifications for SDH cards

Specification	Description
STM1 Electrical interface	The specification is SDH Criteria for Electrical Interface, standard I.432.
Maximum range: Electrical	120 m (432 ft)
Free run accuracy	The card has a free run accuracy of 20 c/m 4.7 cpm (Stratum 3).
Storage temperature	-40C to 70C (-40F to 158F)
Operating temperature	5C to 40C (41F to 104F)
Relative humidity	5% to 85% non-condensing

5. Characteristics of Cabling - Transmission properties of the access network

5.1. Generalities

- 119. A subscriber loop consists of sections of twisted pairs cables of different gauges. All the sections are buried and connected together by means of electrical joints, called splices, directly placed in the ground or sometimes in a manhole.
- 120. In the ideal situation, the Access Network has a star configuration with the feeder cable bundles going from the main distribution frame to the street cabinet. From the street cabinet, via distribution cables and drop wires, the wire pairs are terminated at the NTP (Network Termination Point) in the individual customer sites. The reality shows that cable arrangements leads sometimes to a meshed structure in the feeding network.
- 121. Each telecom cable consists of a number of copper conductors grouped in quads; these quads can be arranged in bundles or in layers, depending on the type of cable.

5.2. Physical characteristics of the cables

- 122. A conductor can be isolated by a layer of paper (in the old generation cables) or synthetic material, usually polyethylene.
- 123. Most of the conductors have a 0.5 mm or 0.6 mm diameter; distant customers however needs to be connected via conductors of 0.8 and 1.0 mm; 2000 pairs cables going out of the central office are sometimes made of 0.4 mm conductors.
- 124. In paper insulated cables, the conductors are surrounded by a lead sheath, generally protected by armouring and polyethylene sheath.
- 125. In plastic insulated cables used in the distribution network, the conductors are surrounded by a polyethylene sheath.
- 126. In plastic insulated cables used in the feeding network, the conductors are surrounded by an aluminium screen, a polyethylene internal sheath, an armouring and a polyethylene external sheath.
- 127. The plastic cables are in the majority of the cases longitudinally waterproof.

5.3. Electrical characteristics of the cables

128. The table below gives some typical characteristics of the access network cables [figures given by the cable manufacturers or by measurements in the field]

Diameter	LR	KC	A800	A40.000	A150.000	A300.000
0.4 mm	275	55	2.0	7.5	11.5	14.5
0.5 mm	180	50-55	1.3	6	9	11
0.6 mm	123	38.5-46	1.0	4	6	8
0.8 mm	69	38.5	0.7	2.5	4	5.5

LR = Loop Resistance in ohm/km

KC = average Kilometric Capacity in nF/km (it depends on the type of cable)

A800 = Attenuation measured at 800 Hz in dB/km

A40.000 = Attenuation measured at 40.000 Hz in dB/km

A150.000 = Attenuation measured at 150.000 Hz in dB/km

A300.000 = Attenuation measured at 300.000 Hz in dB/km

NB: the attenuation values are conditional. The reader must note that these figures are given for cable. A loop is made of several pieces of cables and then additional attenuation and reflections due to the splices and the different cable gauges will occur.

129. The insulation resistance between the 'a' and 'b' wires of a pair (without terminal equipment) or between wire and earth is supposed to be at least 750 kohms.

BROBA II SDSL

Annex 2

**Technical specifications
of
Broba over ATM**

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Introduction

1. This document describes the technical specifications of BROBA II SDSL [over ATM](#). Note that additional information is available in the Main Body of this offer.
2. All information and descriptions included in this document are related to SDSL in VC switching mode. For [Broba over ATM in](#) VP switching mode [and Broba over Ethernet](#), reference is made to the Belgacom Reference Offer for Bitstream Access - BROBA II ADSL Annexes 2 "Technical Specifications of BROBA over ATM" and 2A "Technical Specifications of BROBA over Ethernet".

1. Tables of potential profiles Beneficiaries can choose from:

1.1. Broba II SDSL VC switching mode: parameters

Bit rate
192 Kbps
384 Kbps
640 Kbps
832 Kbps
1024 Kbps
1216 Kbps
1472 Kbps
1664 Kbps
2048 Kbps
2304 Kbps

1.2. DSLAM – ATM backbone

Traffic descriptor	DSLAM	ATM backbone	ATM Bitrate	
ATM01	CBR	CBR	64	64
ATM02	CBR	CBR	128	128
ATM03	CBR	CBR	192	192
ATM04	CBR	CBR	256	256
ATM05	CBR	CBR	384	384
ATM06	CBR	CBR	512	512
ATM07	CBR	CBR	1023	1023
ATM08	CBR	CBR	1536	1536
ATM09	CBR	CBR	1984	1984
ATM10	UBR	VBR-nrt	256	1023
ATM11	UBR	VBR-nrt	512	1023
ATM12	UBR	VBR-nrt	512	2047
ATM13	UBR	VBR-nrt	64	64
ATM14	UBR	VBR-nrt	128	128

1.3. Customer defined

3. In addition to the ATM profiles defined used for the products defined in 1.2, the Beneficiary can use the ATM profiles defined in a common pool of 100 ATM Profiles. The profiles in the common pool will be added after agreement of all concerned Beneficiaries and Belgacom.
4. The CoS of a VC on the DSLAM has to be of the same type, or lower, than the VC requested in the ATM network : VBR rt VC (ATM) can content VBR rt VC or lower (DSLAM) and VBR nrt VC (ATM) can only content UBR+ or VBR nrt VC (DSLAM).

BROBA II ADSL & SDSL

Annex 2A

Technical Specifications of BROBA over Ethernet (with Shared VLAN or Dedicated VLAN)

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o. SCOPE

The purpose of this document is to describe the technical specifications of the BROBA over Ethernet service “with shared Vlan” and “ with dedicated Vlan”.

The BROBA over Ethernet is defined as a service with shared VLANs.

1. ABBREVIATIONS

	Description
AAL	ATM Adaptation Layer
ARP	Address Resolution Protocol
ASC	ATM Service Class
ATM	Asynchronous Transfer Mode
BROBA over ATM	The <i>existing</i> BROBA service, supported by the Belgacom ATM backbone.
BROBA over Eth	The <i>future-new</i> additional BROBA service, supported by the Belgacom Ethernet backbone.
DHCP	Dynamic Host Configuration Protocol
DS	Downstream
GE	Gigabit Ethernet
GE_NT	Gigabit Ethernet Network Termination
GUI	Guided User Interface
IWF	Interworking Function
IPoE	Internet Protocol over Ethernet
LACP	Link Aggregation Control Protocol
LAG	Link Aggregation
LAN	Local Access Network
LEX	Local Exchange
MAC@	MAC address
MTU	Maximum Transmission Unit
OAL	<u>O</u> LO (Ethernet) <u>A</u> ccess <u>L</u> ine
OLO	Other Licensed Operator
p-bit	Priority bit
PoP	Point of Presence
PPP	Point to Point Protocol
PPPoA	Point to Point Protocol over ATM
PPPoE	Point to Point Protocol over Ethernet
PVC	Permanent Virtual Circuit
QoS	Quality of Service
UNI	User Network Interface
US	Upstream
U2U	User to User (communication)
VC	Virtual Circuit

VDSL2	Very High Speed Digital Subscriber Line 2 (= Ethernet Based, while VDSL1 is ATM based)
VP	Virtual Path
VLAN	Virtual LAN. ~~It may refer to a n this document, “shared VLAN” or to exclusively refers to a “dedicated shared VLAN”.~~
VLL	Virtual Leased Line
WBA VDSL2	Wholesale Broadband Access VDSL2. ~~In t may refer his document, “WBA VDSL2” exclusively refers to the service with shared VLANs or with dedicated VLAN’s.~~

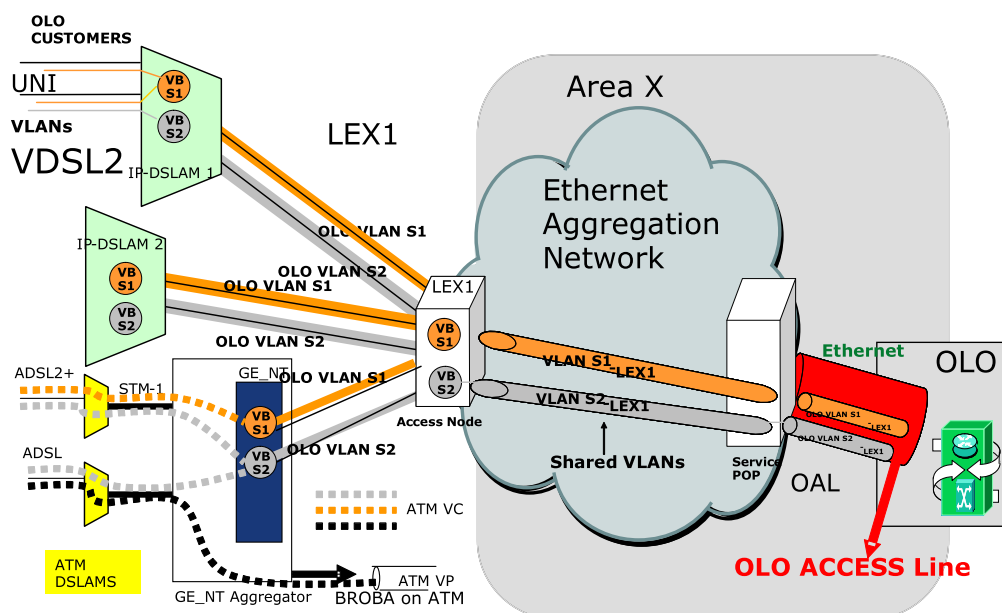
2. OVERALL NETWORK ARCHITECTURE FOR “SHARED VLAN”

2.1 END-TO-END VIEW

2.1.1 Introduction

The BROBA over ATM service offers ATM VC connections on DSL lines, groomed into ATM VP connections (“VP switching mode”) in the Belgacom ATM network, or carried in the Belgacom ATM network as ATM VC connections (“VC switching mode”). The new “BROBA over Ethernet” service only converts the ATM VP connections into an Ethernet service at the side of the OLO.

This service allows an Operator to groom ATM DSL traffic BROBA over Ethernet together with WBA VDSL2 traffic in shared VLANs, one per OLO and per LEX and per p-bit (p=0, p=1, p=3, p=5). The wording “shared” has here a double meaning: shared amongst different users and shared amongst ATM DSL & WBA VDSL2 users, see [figuregraph 1](#).



FigureGraph 1: end to end overview

In the following sections we walk from left (xDSL side) to right (Ethernet OAL) through [Graph-Figure 1](#).

2.1.2 (Subtended) ATM DSLAM

The **BROBA over ETHERNET** users are connected through ATM DSL (ADSL, ADSL2 Reach Extended, ADSL2+ or SDSL) lines to Belgacom ATM DSLAMs.

The ATM VC connections carried by the DSL line can be groomed:

- by shared VLANs (orange & gray dotted lines in [FigureGraph 1](#)),
- by ATM VP connections as in the BROBA over ATM offer (black dotted line in [FigureGraph 1](#)).

On the same ATM DSL line, a mix of two services (~~some ATM VC's groomed by shared VLANs and some ATM VC's groomed by ATM VP~~) is also possible: Broba VP switched, Broba VC switched, Broba over Ethernet with shared Vlan (this service), Broba over Ethernet with dedicated Vlan (see further)

2.1.3 Ethernet Aggregator:

The connectivity in the Ethernet aggregator has following aspects:

- The ATM VC between the LT and the forwarding port on the GE_NT card.
- The forwarding port on the GE_NT card, which is a converter function dedicated to 1 ATM VC and 1 VLAN. The VLAN is connected to more forwarding ports, while it is shared.
- The VLAN at Ethernet side of the GE_NT card.
- QoS (ATM Qos $\Leftrightarrow$ Ethernet p-bit).
- Relation Qos $\Leftrightarrow$ forwarding port converter function.

The ATM VC

The subtended ATM DSLAM NT is connected via a STM-1 link to the LT of a "GE_NT Aggregator", which is an ATM VC cross-connect, equipped with ATM LTs at access side and a GE_NT card and more ATM LTs at network side.

Each ATM VC from the BROBA over ETHERNET user

- is VC cross-connected to 1 forwarding port on the GE_NT card, forwarding the data in the VC connection to a VLAN, shared by more users,

or

- is VC cross-connected to a BROBA over ATM VP connection on an ATM LT to the ATM backbone network.

The forwarding port

The forwarding port is the termination of the ATM VC on the GE_NT card and has following characteristics:

- A 1 to 1 relation to each ATM VC.
- A protocol converter function :
 - PPP aware bridge: supports PPPoA and PPPoE.
 - Residential Bridge: supports IPoE.
- VLAN at Ethernet side: one VLAN supports multiple forwarding ports with the same protocol converter function.

VLANs at Ethernet side

Four VLANs per OLO are preconfigured in each GE-NT card, conforming to the WBA VDSL2 with shared VLANs service, which is characterized by p-bit:

- P=0 : best effort
- P=1 : low priority
- P=3 : medium priority
- P=5 : highest priority

QoS

The ATM QoS (ATM Transfer Capability) in the subtended DSLAM, the GE_NT aggregator and the VLAN will be the same and linked to the Ethernet p-bit service in a fixed manner (see Table 1 bellow).

Relation QoS $\Leftrightarrow$ forwarding port converter function

Following relation is fixed:

- To limit the number of combinations,
- Because PPP is mostly used for Fast Internet Access, using UBR/Po.

ATM QoS in subtended DSLAM	ATM QoS in aggregator	p-bit in VLAN	Forwarding port converter function
CBR	CBR	P5	Residential bridge
VBR-rt	VBR-rt	P3	Residential bridge
VBR-nrt	VBR-nrt	P1	Residential bridge
UBR	UBR	P0	PPP-aware bridge

Table 1: Fixed relation between QoS and protocol converter function

2.2 AGGREGATION NETWORK

The BROBA over ETHERNET service shares the aggregation network defined in the documents WBA VDSL2 – Annex 2 – Technical specifications, sections 2.2 “Aggregation Network structure”, 2.3. “Aggregation Areas” and 2.4. “VLAN characteristics”.

Most important characteristics:

- Max 4 bridges (p0, p1, p3, p5) in the Ethernet node in the LEX, for both “WBA” and for “BROBA over Ethernet”.
- VLAN connectivity per bridge, up to an OAL, ordered by the OLO.

Belgacom connects the bridges in the “access nodes” (see [Graph-Figure 1](#)) to corresponding bridges in the GE_NT aggregator via VLANs, for the BROBA over Ethernet service.

The traffic in those VLANs will be shaped in downstream direction to preconfigured bandwidths, in order to protect the service on the STM-1 links (150Mbps) situated further in downstream direction, between the Ethernet Aggregator and the subtended DSLAMs:

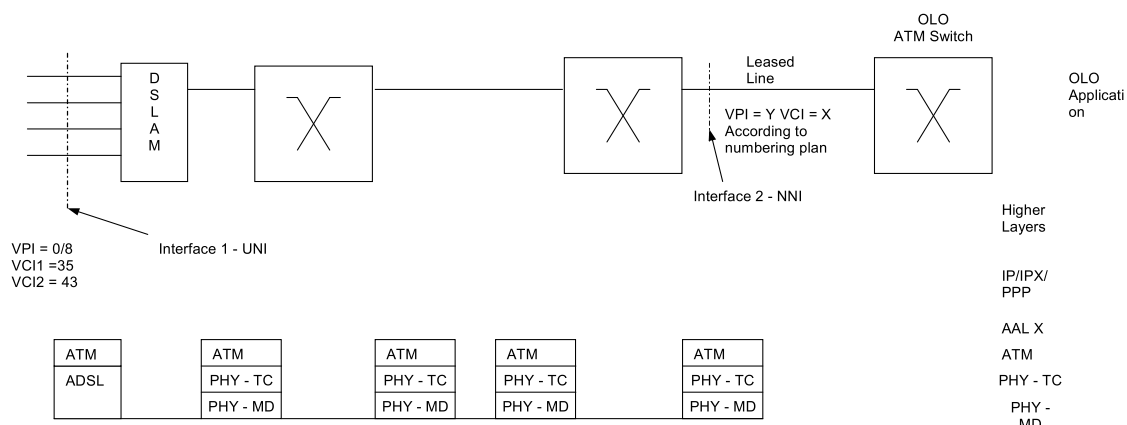
- P0 VLAN: shaped to 30Mbps per GE_NT aggregator.
- P1 VLAN: shaped to ~~20Mbps~~ 40Mbps per GE_NT aggregator.
- P3 or P5 VLAN: shaped to ~~10Mbps~~ 20Mbps per GE_NT aggregator.

2.3 PROTOCOL ARCHITECTURE

2.3.1 BROBA over ATM

BROBA over ATM is defined as a transparent ATM VC end to end, carried in an ATM VP up to the OLO access line ATM.

All AAL are possible: AAL X.



Graph-Figure 2: BROBA over ATM protocol stack

2.3.2 BROBA over Ethernet

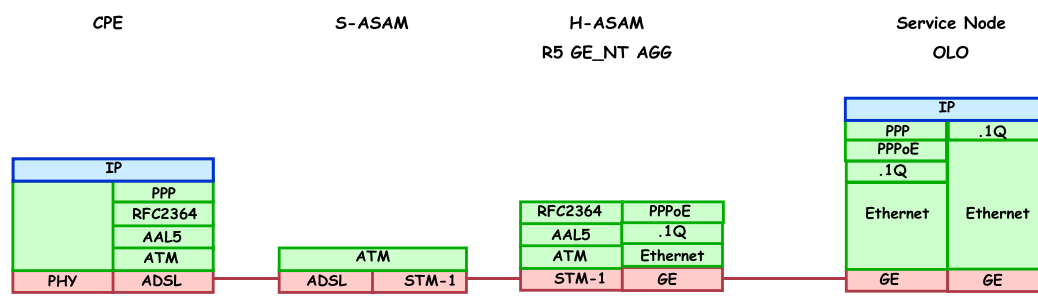
BROBA over Ethernet is an Ethernet service. The protocol architecture applied in a specific ATM VC depends on the protocol converter function of the forwarding port.

PPP-aware bridge

The “PPP-aware bridge” mode on the GE_NT allows for PPPoE and PPPoA protocol stacks at DSL side, with an automatic detection and line id addition.

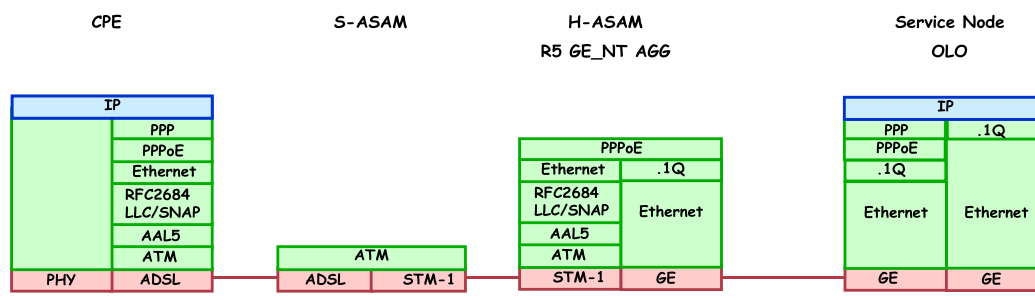
It does not offer a transparent Ethernet service, but a PPP service =>

- The PPP session from the CPE (PPPoA or PPPoE) is terminated on the GE_NT and the GE_NT starts a new PPPoE session (always PPPoE) with the upstream router at the OLO BAS.
- Rigorous compatibility is required with :
 - PPP client in CPE or Computer (case of PPP pass through in modem),
 - PPP server in OLO BAS.
- MAC address is the MAC address of the GE_NT card => all PPP sessions related to a same R5 GENT aggregator have the SAME MAC address @ OLO BAS.
- The session can only be started by the customer PPP client, not by the PPP server in the OLO-BAS.
- Session time out: after 300sec without traffic, the PPP function in the GE_NT closes the session.
- Limitation of number of PPP sessions: 1 in case of PPPoA, 1 PPP session per MAC address in case of PPPoE.



Graph

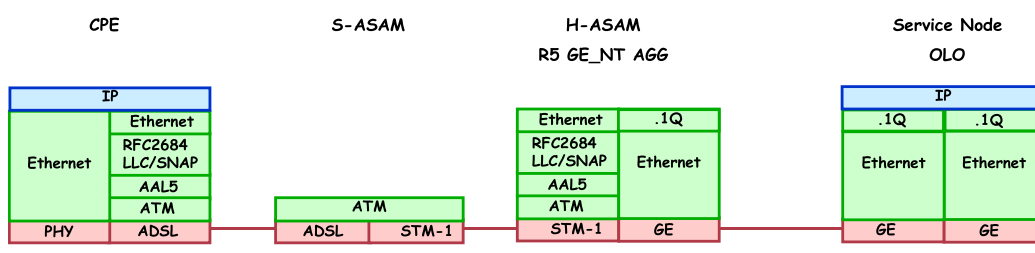
Figure 3: BROBA over Ethernet (with PPPoA) protocol stack



Graph-Figure 4: BROBA over Ethernet (with PPPoE) protocol stack

Residential Bridge

The “Residential Bridge” mode on the GE_NT allows for IPoEoA, with an automatic detection and line id addition: this is transparent, just as was ATM, but now at Ethernet level.



Graph-Figure 5: BROBA over Ethernet (with IPoE) protocol stack

- Line identification will be added for DHCP (Option 82).
- The session must be setup by the user CPE, in order to allow the bridge to learn the source MAC address. Sessions initiated via the network are not allowed by the Residential Bridge (would cause broadcast to all customers).
- Meaning of Forwarding mode: “Residential Bridge”:
 - Upstream MAC learning
 - Downstream forwarding to the correct forwarding port (ATM VC) based on learned MAC addresses. The MAC address is kept learned until it is flushed (timer actually on 900sec)
 - Client (user) server ~~behavior~~behaviour.
 - Discard of downstream broadcast and multicast.
 - Discard of downstream unknown Destination MAC addresses.
 - Discard of upstream multicast
 - Forwarding of upstream broadcast to the VLAN, connected to the forwarding port, only (not to other users).
 - Limitation of # MAC addresses.

2.3.3 Limitations to protocol stacks

While BROBA over ATM is transparent for higher layer protocols, BROBA over Ethernet is NOT.

The limitation in protocol stack makes that all other protocol stacks (than listed above) are not supported, e.g. following ATM applications:

- IP/AAL5 RFC2684 routed/ATM (IPOA),
- Circuit Emulation/AAL1/ATM,
- Voice on ATM/AAL2/ATM (used in UMTS),
- Signalling/SSCOP/AAL5/ATM (used in UMTS),
- Frame Relay/AAL5/ATM,
- OAM/ATM: use of OAM cells is not possible anymore.

3. OVERALL NETWORK ARCHITECTURE FOR “DEDICATED VLAN”

3.1 END-TO-END VIEW

3.1.1 Architecture

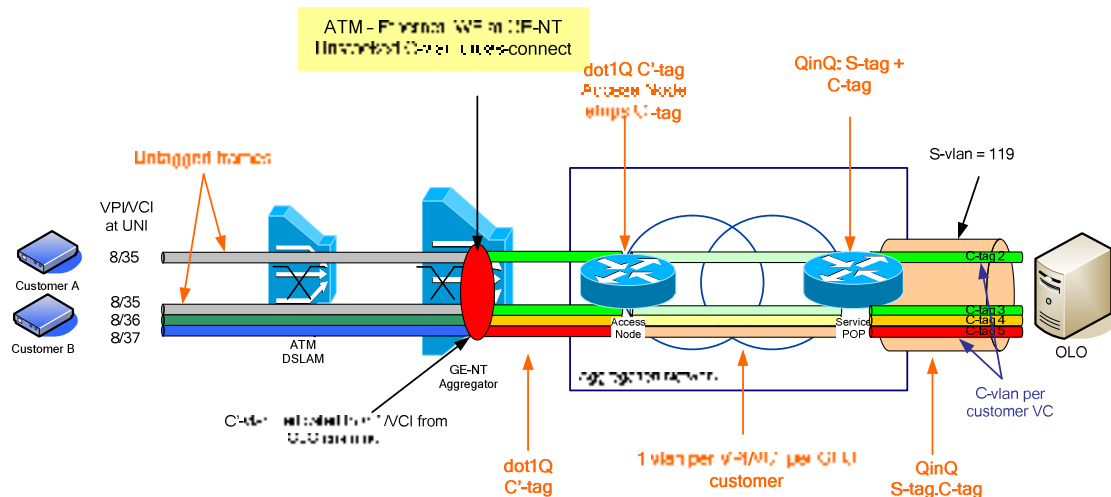


Figure 1: E2E Architecture

Upstream:

In the GE-NT aggregator each ATM VC is mapped to a unique C'-tag. At the ingress of the Aggregation network (Access Node), the C'-tag is removed. The traffic of each VPI/VCI is mapped within a VLL. At the egress interface of the Aggregation network (Service POP), a C-tag per VPI/VCI and an S-tag per GE-NT is added. This implies that the OLO receives S/C tagged frames at the OAL.

Downstream:

At the OLO service node S/C-tagged frames are sent. At the ingress of the Aggregation network (Service POP), the S/C tags are removed. At the egress of the Aggregation network (Access Node), a dedicated C'-tag is added. In the GE-NT each C'-VLAN is mapped to 1 ATM VPI/VCI at UNI.

3.1.2 Encapsulation

Protocol stack - IPoE

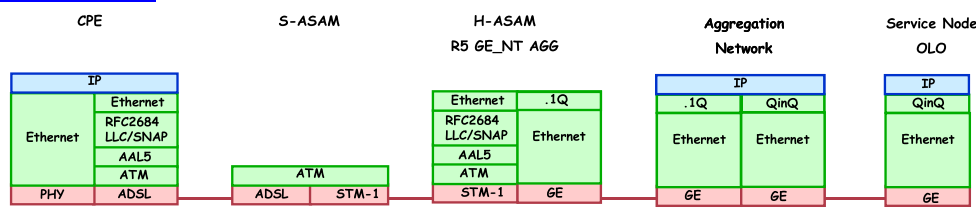


Figure 2: Protocol Stack

Limitations to protocol stacks:

See chapter [Error! Reference source not found.](#)

3.1.3 Quality of Service

3.1.3.1 Layer 2 QoS

3.1.3.1.1 Layer 2 QoS upstream

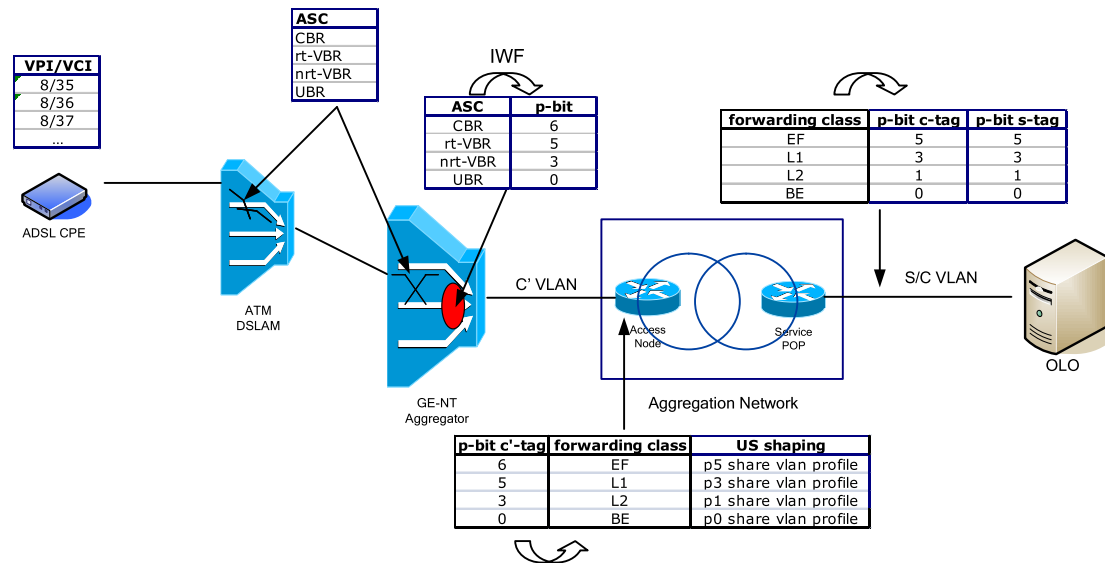


Figure 3: Layer 2 QoS upstream Un-stacked C-VLAN with S-VLAN at OAL

Each VPI/VCI from the OLO receives a dedicated C-vlan. On top of this it receives at the OAL an S-tag. The p-bit of both S- and C-tag corresponds with the ATM Service Category of the VPI/VCI on the UNI. See table below.

ATM Service Category	p-bit Ss- and Ce-vlan @ OAL
UBR	0
Nrt-VBR	1
Rt-VBR	3
CBR	5

Example:
User A

UNI		OAL	
VPI/VCI@UNI	ATM profile	Ce-tag + pbit	S-tag + pbit
8/35	Nrt-VBR-2048 512	2+ p1	119 + p1

User B

	UNI	OAL	
VPI/VCI@UNI	ATM profile	c-tag + pbit	s-tag + pbit
8/35	UBR 128 0	3 + p0	119 + p0
8/36	Rt VBR 2048 512	4 + p3	119 + p3
8/37	CBR 64	5 + p5	119 + p5

An example for the upstream shaping of VLAN profiles of users A & B could be:

VLAN profiles	Up speed p0	Up speed p1	Up speed p3	Up speed p5
User A – 119/2	0	2048	0	0
User B – 119/3	128	0	0	0
User B – 119/4	0	0	512	0
User B – 119/5	0	0	0	64

3.1.3.1.2 Layer 2 QoS downstream

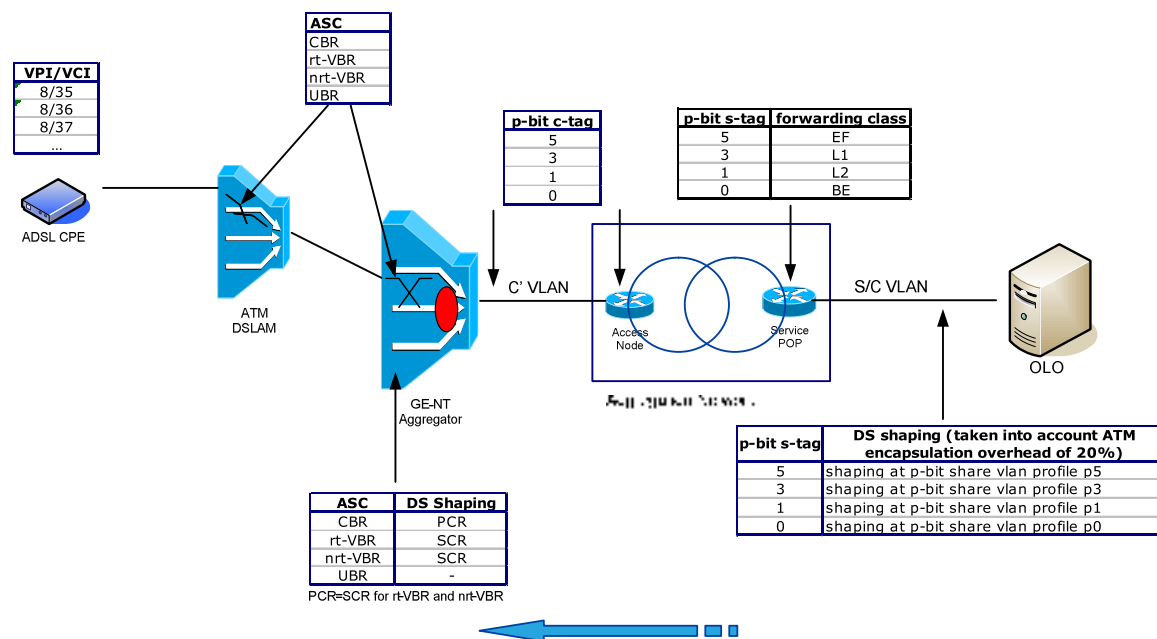


Figure 4: Layer 2 QoS downstream Un-stacked C-vlan with S-vlan at OAL

Example:

UNI				OAL	
User	VP/VC	ATM profile		C-tag + pbit	S-tag + p bit
		upstream	down		
A	8/35	NrtVBR_512_256	nrtVBR_8192_2048	2 + p1	119 + p1
B	8/35	UBR_2048_512	UBR_2048_512	3 + p0	119 + p0
B	8/36	Rt-VBR 512_256	Rt-VBR 512_256	4 + p3	119 + p3
B	8/37	CBR_64	CBR_64	5 + p5	119 + p5

Example of shaping downstream per p bit

	S/C-tag	p-bit	reference (kbps)	taken into account ATM overhead (kbps)
user A	119/2	1	8192	6554
user B	119/3	0	2048	1638
	119/4	3	512	410
	119/5	5	64	51

Note: per S/C-tag the shaping should take into account the ATM overhead inserted by the IWF in the GE-NT (circa 20%)

3.1.3.2 Layer 3 QoS

3.1.3.2.1 Layer 3 QoS upstream

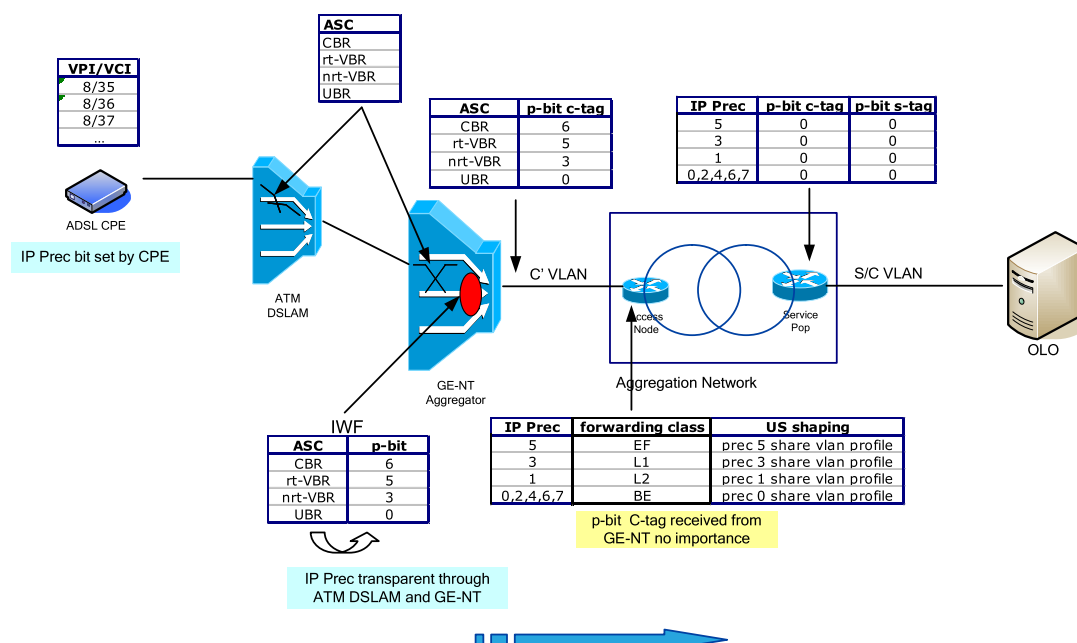


Figure 5: Layer 3 QoS upstream Un-stacked Ce-VLAN with Ss-VLAN at OAL

Each VPI/VCI from the OLO receives a dedicated C-VLAN. At the OAL on top of the C-tag an S-tag is added. Both S- and C-tag have a p-bit of '0'.

The Vlan (corresponding to each VC) can bear different Precedence type of traffic as for instance:

UNI				OAL	
User	VP/VC	ATM profile			S/C-tag + p bit
		upstream	down	precedence	
A	8/35	NrtVBR-512_256	nrtVBR_8192_2048	0	119/2 + p0
				3	119/2 + p0
B	8/35	UBR_2048_512	UBR_2048_512	1	119/3 + p0
				3	119/3 + p0
B	8/36	Rt-VBR 512_256	Rt-VBR 512_256	3	119/4 + p0
				5	119/4 + p0

Example of Vlan upstream share (based on example here above)

User	vlan	precedence	kbps
A	119/2	0	512
		3	64
B	119/3	1	2048
		3	64
B	119/4	3	256
		5	64

3.1.3.2.2 Layer 3 QoS downstream

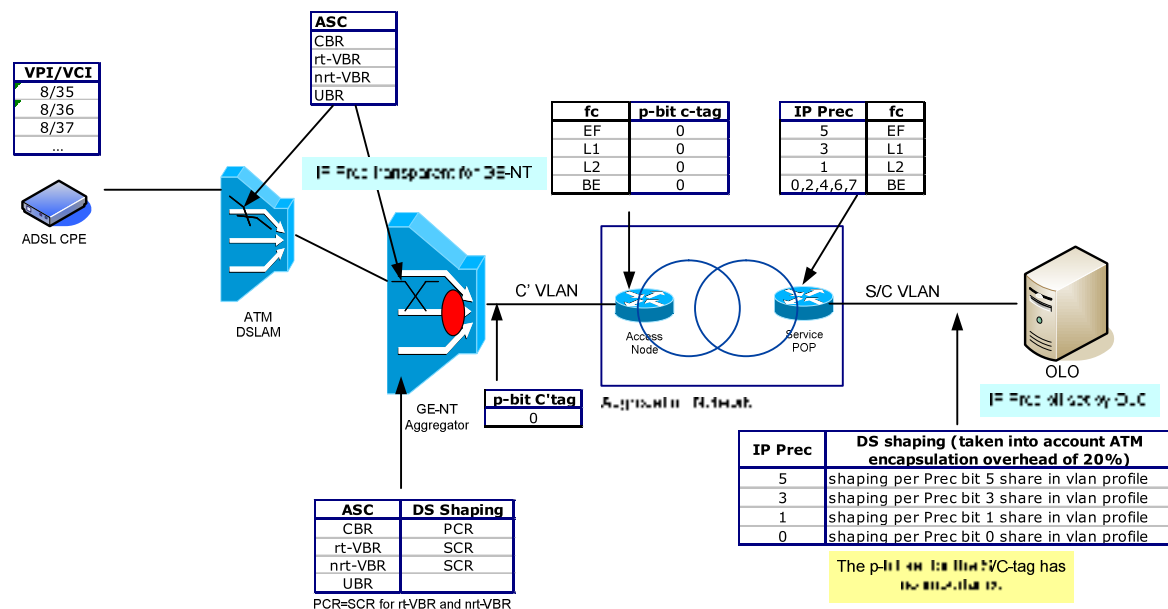


Figure 6: Layer 3 QOS downstream Un-stacked C-VLAN with S-VLAN at OAL

User	VP/VC	ATM profile		OAL	
		upstream	down	precedence	S/C-tag + p bit
A	8/35	NrtVBR 512 256	nrtVBR 8192 2048	0	119/2+ p0
-	-	-	-	3	119/2+ p0
B	8/35	UBR 2048 512	UBR 2048 512	1	119/3 + p0
-	-	-	-	3	119/3 + p0
B	8/36	RtVBR 512 256	RtVBR 512 256	3	119/4 + p0
-	-	-	-	5	119/4 + p0

Example of shaping profile per IP precedence bit at OAL:

User	S/C vlan	precedence	kbps
A	119/2	0	8192
-	119/2	3	64
B	119/3	1	2048
-	119/3	3	64
B	119/4	3	512
-	119/4	5	64

Example of shaping per S/C-tag at OLO:

User	S/C vlan	Reference (kbps)	taking overhead into account (kbps)
A	119/2	8192	6553
-	-	-	-
B	119/3	2048	1638
-	119/4	512	409

This type of QoS handling allows to use different precedence bits for marking the traffic in one VC upstream or in one Vlan downstream.

3.2 (SUBTENDED) ATM DSLAM

The BROBA over ETHERNET users are connected through ATM DSL (ADSL, ADSL2 Reach Extended, ADSL2+ or SDSL) lines to Belgacom ATM DSLAMs.

On the same ATM DSL line, a mix of services is possible:

Broba VP switched, Broba VC switched, Broba over Ethernet "shared Vlan", Broba over Ethernet "dedicated Vlan (this service).

3.3 GE-NT AGGREGATOR

The subtended ATM DSLAM NT is connected via a STM-1 link to the LT of a "GE-NT Aggregator".

3.3.1 Forwarding Mechanism

On the GE-NT, the un-stacked C-VLAN cross-connect model is used. This means that each ATM VC is mapped to a unique C'-TAG by the GE-NT.

The main advantage is the transparency for any kind of protocol over Ethernet in the access network and the clear segregation of customer traffic.

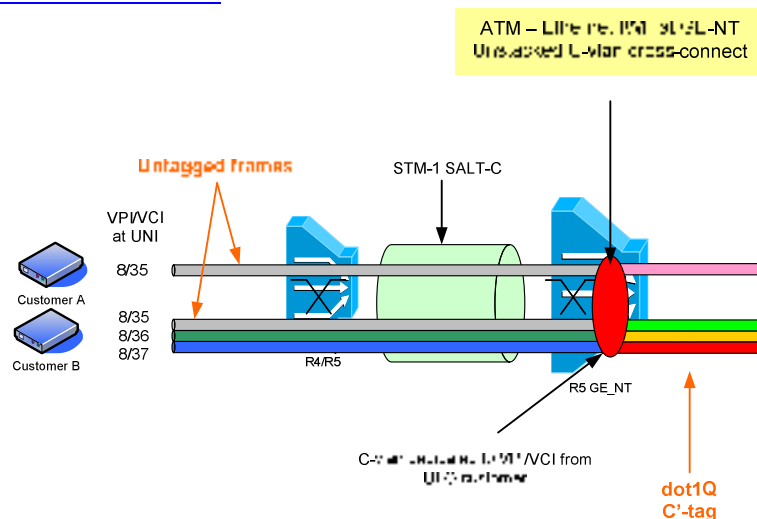


Figure 7: GE-NT unstacked C-vlan model

Each ATM VC from the BROBA over ETHERNET user is VC cross-connected to 1 forwarding port on the GE-NT card, forwarding the data in the VC connection to the C-vlan crossconnect.

The forwarding port is the termination of the ATM VC on the GE-NT card and has following characteristics:

- 1 to 1 relation to each ATM VC
- ATM/Ethernet Interworking Function

3.3.2 Quality of Service

3.3.2.1 ATM

The ATM traffic descriptor of the cross-connections configured on the GE-NT is aligned with the traffic descriptor of the end user cross connections on the subtended ASAM.

However, due to downstream shaping at SCR for nrt-VBR and rt-VBR of the PVC, the SCR will be aligned with the PCR for nrt-VBR and rt-VBR.

Example:

ATM profile	S-ASAM	GE-NT AGG
Up (ASC / PCR / SCR)	Nrt-VBR / 2048 / 512	Nrt-VBR / 2048 / 512
Dn (ASC / PCR / SCR)	Nrt-VBR / 2048 / 512	Nrt-VBR / 2048 / 2048

Policing/Shaping:

➤ Upstream:

Policing in upstream performed on LT subtended DSLAM on PVC level according to the traffic descriptor. Implicitly, there is rate limitation to the DSL synchronisation rate.

➤ Downstream:

Traffic coming from the interworking function on GE-NT is shaped at SCR according to the traffic descriptor associated with the PVC.

3.3.2.2 Ethernet QoS

Classification & Marking:

➤ Upstream:

P-bit marking at GE-NT is performed according the default ASC to P-bit mapping table defined at system level:

ASC	P-bit
CBR	6
rt-VBR	5
nrt-VBR	3
UBR	0

It is not possible to classify based upon DSCP.

➤ Downstream:

Frames arriving downstream to the GE-NT are assumed to be correctly marked.

Mapping & Queuing:

The GE-NT supports 4 queues, one per traffic class. Following P-bit to queue mapping is implemented on the GE-NT. The latter is not configurable.

802.1p value	Traffic Class
111	High
110	
101	Medium
100	
011	Low
010	
001	Lowest
000	

Scheduling:

Priority Scheduling (not configurable):

- High traffic class traffic gets scheduled first (Strict Priority)
- Medium traffic class is scheduled next (Strict Priority)
- Packets from Low and Lowest traffic class compete for BW in fair manner (WFQ with hard-coded weights of respectively 10 and 1).

3.4 AGGREGATION NETWORK

The BROBA over Ethernet service “dedicated VLAN” is deployed in the aggregation network defined in the documents WBA VDSL2 – Annex 2 – Technical specifications, sections 2.2 “Aggregation Network structure”, 2.3. “Aggregation Areas”

The **dedicated VLAN** ends on 1 OLO Access Line, connected to a Service PoP of the Area to whom the end-user line belongs.

- No “inter Area” dedicated VLAN is possible.
- No rerouting to any other OAL is foreseen.
- The same OAL may be used for “shared” and for “dedicated VLAN” services.

At the OAL, Belgacom will deliver the VLAN S/C –tagged.

3.4. UNI

Unless specified otherwise, the section 4 equally refers to the two types of service: with shared or with dedicated VLANs.

3.4.1 PHYSICAL TRANSPORT (LAYER 0)

With and without voice products

- “With voice” means: data service offered in combination with a Belgacom PSTN/ISDN line.
- “Without voice” means: data service offered without combination with a Belgacom PSTN/ISDN line.

3.4.2 NTP & SPLITTERS

Same as for BROBA over ATM.

3.4.3 DSL PROFILES AT UNI (LAYER 1)

The ADSL & ADSL2+ line profiles are the same as in BROBA over ATM.

3.4.4 ATM PROFILES AT UNI (LAYER 2)

The ATM profiles are the same as in BROBA over ATM.

The ATM Transfer Capabilities (CBR, VBR-rt, VBR-nrt, and UBR) are valid.

VPI/VCI allocation: same as in BROBA over ATM.

Number of VCs: max 4 VCs.

E2E ATM OAM (I.610): not supported

CLP bit: not supported in downstream, can be set in upstream.

Policing/Shaping

➤Upstream:

- ~~Policing in upstream performed on LT subtended DSLAM on PVC level according to the traffic descriptor. Implicitly, there is rate limitation to the ADSL synchronisation rate.~~
- ~~No policing is applied to UBR PVCs. In case of VC with ATM transport capability different from UBR, the modem must perform upstream shaping per VC.~~

➤Downstream:

- ~~Traffic coming from the interworking function on GE_NT is shaped to PCR.~~

3.5.5 AAL (ATM ADAPTATION LAYER)

AAL 5 only.

RFC 2684 bridged mode & PPPoE.

RFC2364 in case of PPPoA. . (Shared VLAN only AND for po/UBR)

3.6.6 ETHERNET

Native Ethernet only. MTU size: the maximum length of the Data – Field is 1500 octets.

“Shared VLAN”:

MAC address needs to be **unique** within a bridge (VLAN at OAL); Two VCs on the same Bridge (= same p-bit) will be allowed => MAC address uniqueness within the same bridge is an important requirement for the CPE, which shall have different MAC addresses on different VC's!!

"Dedicated VLAN":

Because no MAC learning is applied in the Belgacom network, MAC address uniqueness is not required (at least not for the BGC network, maybe for the OLO network).

3.74.7 SECURITY

4.7.1 Shared VLAN

No user-to-user communication

- Frames received from a user will always be sent towards the network and never to another user.

Prevention of Broadcast storm

- Downstream:
 - All broadcast frames are dropped including specific control protocol e.g. ARP Request
 - Ethernet frames with unknown destination MAC@ are dropped and not flooded as within a standard L2 bridge.

Limit number of MAC@ per PVC (Residential Bridge): max 4

MAC anti-spoofing (Residential Bridge)

It prevents duplicate MAC addresses within the same VLAN during a certain session. Traffic of the duplicate MAC address is blocked. No alarm is generated. Bridge port of the end user is blocked. The MAC anti spoofing feature can not be disabled. The duplicate MAC is removed after ageing timer. It is not possible to clear the duplicate MAC. There is no duplicate MAC alarm generated.

4.7.2 Dedicated VLAN

No security measures are applied in the Belgacom network: the OLO is responsible for the security of its network (eg number of MAC addresses, MAC learning aspects, control frames, multi- and broadcast,...).

4.5. MODEM

4.15.1 REQUIRED MODEM

The OLO user can keep on using the BROBA over ATM modems, as far as this supports the UNI specifications, especially the protocol stack.

For Residential bridge only

MAC address issue: the OLO shall be well aware of the MAC address uniqueness requirement per Bridge.

E.g.: ATM modems having all the same MAC address for Internet => not allowed.

E.g.: ATM modems having same MAC address for VoIP VC *and* Internet => not allowed to connect VoIP and Internet on same bridge (will happen if OLO orders same ATM QoS for both services).

4.25.2 ATM PINGS

Interworking between I.610 F5 loopback end to end to IEEE 802.1ag (CFM) is not supported by GE_NT.

4.35.3 CPE NON COMPLIANCE (NON EXHAUSTIVE)

Following CPEs are not compatible with the GE_NT implementation:

- All modems configured to use ATM OAM (ATM OAM is not supported),
- USB modem with PC equipped with the operating system “Windows 98” or “Windows Millennium”.

5.6. OLO ACCESS LINE

The OLO access Line (OAL) is the OAL defined in the document WBA VDSL2 – Annex 2 – Technical specifications, section 9, “OLO Access line”.

6.1 “SHARED VLAN”

A VLAN @ OAL may carry a mix of WBA VDSL2 and of BROBA over Ethernet traffic.

The following bandwidths and granularities are applicable for WBA VDSL2 and BROBA over Ethernet defined for WBA VDSL2 stay valid.

<u>Offered VLAN Bandwidth (Mbps)</u>	<u>P=0</u>	<u>P=1</u>	<u>P=3</u>	<u>P=5</u>
<u>2</u>	Y	Y	Y	Y
<u>4</u>	Y	Y	Y	Y
<u>6</u>	Y	Y	Y	Y
<u>8</u>	Y	Y	Y	Y
<u>10</u>	Y	Y	Y	Y
<u>12</u>	Y	Y	Y	Y
<u>14</u>	Y	Y	Y	Y
<u>16</u>	Y	Y	Y	Y
<u>18</u>	Y	Y	Y	Y
<u>20</u>	Y	Y	Y	Y
<u>30</u>	Y	Y	Y	Y
<u>40</u>	Y	Y	Y	Y
<u>50</u>	Y	Y	Y	Y
<u>60</u>	Y	Y	Y	Y
<u>70</u>	Y	Y	Y	Y
<u>80</u>	Y	Y	Y	Y
<u>90</u>	Y	Y	Y	Y
<u>100</u>	Y	Y	Y	Y
<u>120</u>	Y	Y	Y	N
<u>140</u>	Y	Y	Y	N
<u>160</u>	Y	Y	Y	N
<u>180</u>	Y	Y	Y	N
<u>200</u>	Y	Y	Y	N
<u>220</u>	Y	Y	Y	N
<u>240</u>	Y	Y	Y	N
<u>260</u>	Y	Y	Y	N
<u>280</u>	Y	Y	Y	N
<u>300</u>	Y	Y	Y	N
<u>320</u>	Y	Y	N	N
<u>340</u>	Y	Y	N	N
<u>360</u>	Y	Y	N	N
<u>380</u>	Y	Y	N	N
<u>400</u>	Y	Y	N	N
<u>420</u>	Y	Y	N	N
<u>440</u>	Y	Y	N	N
<u>460</u>	Y	Y	N	N
<u>480</u>	Y	Y	N	N
<u>500</u>	Y	Y	N	N
<u>600</u>	Y	N	N	N

700	Y	N	N	N
800	Y	N	N	N
900	Y	N	N	N
1gig	Y	N	N	N

5.4.6.1.1 Line Identification

In case of BROBA over ATM, the customer line identity is sufficiently identified by the VP identity (VPi + ATM Access Line id) and the VCI, but not so in the “shared VLAN” model of “BROBA over Ethernet”! We need a Line identification similar as in WBA VDSL2, but the format is different.

Agent Circuit ID

- Format:
The PPPoE discovery procedure is lined up with the DHCP session set-up (in option 82) regarding the format of the “agent circuit id”:

“<Access-Node-Identifier> ATM <rack>/<shelf>/<slot>/<Port>:<VPI>.<VCI>”

Example: “Co2STR00001 atm 3/2/03/01:10.333”

Naming convention of “Access-Node-Identifier” for R5 GENT AGG:

C(1) & <BCT>(5) & <subnet number>(3) & <DSLAM number> (2)

- Difference with ISAM VDSL2 “Agent Circuit Id” in WBA VDSL2:
 - The name of the DSLAM will be the Ethernet Aggregator (see graph 1) .
 - “Eth” => “ATM”.
 - Instead of VLAN you will have VPI/VCI. The VPI/VCI will be the one configured on STM-1 port of the SALT-C so identical to the VPI/VCI on the subtended DSLAM.
- Auto generated : yes in upstream and removed in downstream.
- Unique: yes. The information in the resp. Fields of the agent circuit id are of little importance for the OLO, but the whole Agent Circuit ID forms a unique key to identify 1 specific ATM VC on any ATM dsl line (i.e. 2 VC connections on the same ATM DSL line will have different Agent Circuit ids) (at least the VCI field will be different e.g.: Co2STR00001 atm 3/2/03/01:10.2333) .

6.2 “DEDICATED VLAN”

6.2.1 VLAN id range

Per OAL, the S-VLAN id is unique per OAL and allocated by Belgacom per decreasing order in the range [119, 110], for all dedicated VLANs.

The C-VLAN id is unique per S-VLAN-id and allocated “first free” in the range [2,4094] .

The next free C-tag on a fixed sequence of S-tags is taken, descending from 119, 118, 117,... 110:

S=119 C=2,3,...4094 ,which allows 4093 dedicated VLANs or VCs, then go to

S=118 C=2,3,...4094 which allows another 4093,...

S=117 C=2,3,...4094

...

S=110 C=2,3,...4094

6.2.2 Line identification

The customer is identified via the S+C-tag.

6.2.3 VLAN profile (QOS)

Qos: The OLO shall associate 1 VLAN profile to every VLAN at OAL, similar as in WBA VDSL2 dedicated VLAN.

Each OLO can negotiate 10 VLAN profiles with Belgacom, exclusively for BROBA over Ethernet "dedicated VLAN".

One "VLAN profile" has following attributes:

- Layer 2 (p-bit) or Layer 3 QoS (precedence or DSCP); applicable for both upstream and downstream
- Maximum Upstream bandwidth per p-bit (bandwidth p0, bandwidth p1, bandwidth p3, bandwidth p5)
- Maximum Downstream bandwidth per p-bit (bandwidth p0, bandwidth p1, bandwidth p3, bandwidth p5)

The attributes of a VLAN profile are identical for all xDSL end-users using this profile.

The 4 qos classes applicable to an Ethernet packet are the same as for "Shared VLAN" service:

- P=0: best effort.
- P=1: low priority.
- P=3: medium priority.
- P=5: highest priority.

The upstream and downstream Ethernet flows are policed following the VLAN profiles.

The service offers primarily a layer 2 Qos (p-bit based), but also allows layer 3 qos. Following table shows the baseline of the equivalence:

<u>Equivalence of Layer 2 qos / Layer 3 qos</u>		
	<u>Layer 2 qos (p-bits)</u>	<u>Layer 3 qos (precedence bits)</u>
<u>Best effort</u>	<u>0</u>	<u>0</u>
<u>Low priority</u>	<u>1</u>	<u>1</u>
<u>Medium priority</u>	<u>3</u>	<u>3</u>
<u>Highest priority</u>	<u>5</u>	<u>5</u>

The VLAN profile is policing all Ethernet packets of the dedicated VLAN.

It is the responsibility of the OLO to underbook, match or overbook the instantaneous available physical bandwidth on the xDSL line (upstream and downstream). It is recommended not to overbook higher Qos bandwidths (P5,P3,P1).

Shaping at OLO network in downstream direction towards the Olo customer, shall take into account:

- ☐ The ordered VLAN profile of the VLAN.
- ☐ The downstream shaping of ATM traffic on the ATM VC in the GE-NT aggregator, taking into account the ATM overhead of about 20% !
- ☐ The physical bandwidth of the DSL line.

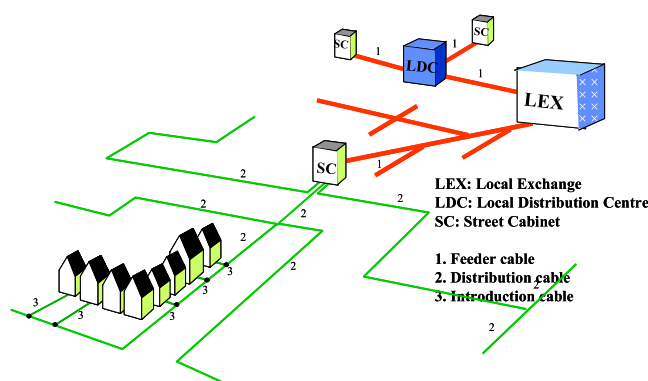
Shaping at the Olo customer CPE in upstream direction, shall take into account:

- ☐ Policing on ATM VC:
 - CBR: on PCR
 - Rt-VBR: on PCR/SCR/MBS following VBR1
 - Nrt-VBR: on PCR/SCR/MBS following VBR3
 - UBR: no policing

6.7. CHARACTERISTICS OF CABLING - TRANSMISSION PROPERTIES OF THE ACCESS NETWORK

6.17.1 GENERALITIES

1. A subscriber loop consists of sections of twisted pairs cables of different gauges. All the sections are buried and connected together by means of electrical joints, called splices, directly placed in the ground or sometimes in a manhole.



2. In the ideal situation, the Access Network has a star configuration with the feeder cable bundles going from the main distribution frame to the street cabinet. From the street cabinet, via distribution cables and drop wires, the wire pairs are terminated at the NTP (Network Termination Point) in the individual customer sites. The reality shows that cable arrangements leads sometimes to a meshed structure in the feeding network.
3. Each telecom cable consists of a number of copper conductors grouped in quads; these quads can be arranged in bundles or in layers, depending on the type of cable.

6.27.2 PHYSICAL CHARACTERISTICS OF THE CABLES

4. A conductor can be isolated by a layer of paper (in the old generation cables) or synthetic material, usually polyethylene.
5. Most of the conductors have a 0.5 mm or 0.6 mm diameter; distant customers however needs to be connected via conductors of 0.8 and 1.0 mm; 2000 pairs cables going out of the central office are sometimes made of 0.4 mm conductors.
6. In paper insulated cables, the conductors are surrounded by a lead sheath, generally protected by armouring and polyethylene sheath.
7. In plastic insulated cables used in the distribution network, the conductors are surrounded by a polyethylene sheath.
8. In plastic insulated cables used in the feeding network, the conductors are surrounded by an aluminium screen, a polyethylene internal sheath, an armouring and a polyethylene external sheath.
9. The plastic cables are in the majority of the cases longitudinally waterproof.

6-37.3 ELECTRICAL CHARACTERISTICS OF THE CABLES

10. The table below gives some typical characteristics of the access network cables [figures given by the cable manufacturers or by measurements in the field]

Diameter	LR	KC	A800	A40.000	A150.000	A300.000
0.4 mm	275	55	2.0	7.5	11.5	14.5
0.5 mm	180	50-55	1.3	6	9	11
0.6 mm	123	38.5-46	1.0	4	6	8
0.8 mm	69	38.5	0.7	2.5	4	5.5

LR = Loop Resistance in ohm/km

KC = average Kilometric Capacity in nF/km (it depends on the type of cable)

A800 = Attenuation measured at 800 Hz in dB/km

A40.000 = Attenuation measured at 40.000 Hz in dB/km

A150.000 = Attenuation measured at 150.000 Hz in dB/km

A300.000 = Attenuation measured at 300.000 Hz in dB/km

NB: the attenuation values are conditional. The reader must note that these figures are given for cable. A loop is made of several pieces of cables and then additional attenuation and reflections due to the splices and the different cable gauges will occur.

11. The insulation resistance between the 'a' and 'b' wires of a pair (without terminal equipment) or between wire and earth is supposed to be at least 750 kohms.

◆◆◆◆◆ End of document ◆◆◆◆◆

BROBA II ADSL & SDSL

Annex 3

Exchange of Information

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1. Introduction

1. This Annex describes the exchange of information between Belgacom and the Beneficiary in the context of the Broba II ADSL [& SDSL](#) offers.
2. The content of this annex is subject to modification, especially when changes occur at process level. More information is available in [the Appendixes 4: Planning and Operations \(separate documents for ADSL and for SDSL\)](#).

2. Required information by both parties

2.1. Information to be provided by Belgacom to any interested party

- MTS installation guide
- JAVA classes of MTS
- DTDs files
- XML Content manual
- Example of XML files for each DTD
- Rejection codes
- Offer names
- Encryption keys
- Certificate and software for the encryption and signature
- [E-mail address for ordering](#)
- Excel file for the repair
- [Belgacom SPOC for the Broba II ADSL & SDSL](#)
- [Technical Belgacom contact for the synchronization in setting up VP's and/or VC's and/or Vlan's](#)
- FUT manager
- Login & password for inquiry web tool
- Belgacom SPOC for the XML back-up procedure
- On demand, Belgacom will provide
 - The list of MDF (LEXs, LDCs, KVDs), Local Buildings, ATM Access Points and Service PoPs with their addresses and, if any, the Lambert coordinates, the maps with the geographical coverage, the names and zip codes of the municipalities, the local nets covered by the MDFs with repartition, the streets with the ranges of house numbers, the link between the MDF and the numbering plan PQ, detailed repartition of the LDCs where the copper cables can be extended to the MDF_LEX and those where it is not possible.
 - The repartition of ATM Access Points per Access Area and the link between each LEX (LDC, KVD, if any) with its first ATM Access Point.
 - The repartition of Service PoPs and LEX (LDC, KVD, if any) per Service Area.
 - For each LEX, information on the existence of GE_NT Aggregator.
 - For each LEX (LDC, KVD, if any), information of the existence of DSLAMs with their type and, if there is no DSLAM, the installation planning until end of the year.

- For each LEX (LDC, KVD, if any), information of the existence of ADSL2+ enabled DSLAMs and, when applicable, the installation planning.
- The list of KVD's where Belgacom will not be able to deliver ADSL2+ on the depending loops.
- The information on the number of free pairs per LEX (LDC, KVD, if any), the average length of the pairs and the presence of disturbing equipment, if any.
- The information on cables in service.
- Information concerning the methodology used by Belgacom for the pair selection in the framework of a Bitstream access.
- Before the signature of a contract, Belgacom will provide the Beneficiary with this information :
 - Update of the previously communicated information, if relevant;
 - Refinement of the geographical coverage;
 - Result of pair selections made by other Beneficiaries and Belgacom (anonymous information);
 - Possibly, answer to precise questions of the Beneficiary if he finds it convenient;
- After the effective signature of a contract, Belgacom will provide the Beneficiary with this information:
 - The results of the pair quality tests for specific cases (with mention of the name of the end user) have to be provided by Belgacom after signature of the contract.
 - Belgacom will provide the Beneficiary with detailed information on DSLAM
 - * In case of migrations and for the concerned Lex (LDC, KVD, if any)
 - * In case of motivated and reasonable operational requests from the Beneficiary.

2.2. Information to be provided by the Beneficiary to Belgacom

- Phone number and person to contact in case of repair problems
- Beneficiary SPOC for the Broba II ADSL & SDSL
- Technical Beneficiary contact for the synchronization in setting up VP's, VCs and/or Vlan's
- E-mail address for communication of VP and/or Vlan configuration
- E-mail address for the ordering (test and production if separate)
- List with contact people
- Encryption keys
- Beneficiary SPOC for the XML back-up procedure
- Forecasts of the end-user line quantities, as described in annex 4 – Planning and Operation.

3. Processes

3.1. FUT

3. After the contract signature, Belgacom recommends the Beneficiary to follow a Friendly User Test in order to let the Beneficiary get acquainted with the processes and systems used for ordering the services in this offer. The Friendly User Test is mandatory.
4. Belgacom provides support to guide the Beneficiary through the electronic ordering process with its first orders. A Belgacom FUT manager will coordinate a number of tests, including testing the exchange of messages through the electronic messaging interface and bringing into service a limited number of Beneficiary Friendly Users.
5. Each of the Parties will need to agree on the date of successful completion of the Friendly User Testing Phase. The FUT phase should cover at least a period of 10 working days.
6. For BROBA over ATM, the FUT Phase is executed at one ATM Access Point, linked to at maximum two LEX's (LDC, KVD, if any): one local, one zonal or interzonal. The number of 'Friendly' End Users (to be provided by the Beneficiary) is set at 24 per Beneficiary.
7. For BROBA over Ethernet, the FUT Phase is executed at one Service PoP, linked to at maximum two LEX's. The number of 'Friendly' End Users (to be provided by the Beneficiary) is set at 24 per Beneficiary.

3.2. Ordering Access Line¹

8. Before the Beneficiary can submit an order for the activation of ADSL or SDSL on a specific End User line, an Access Line¹ needs to be in service in the relevant Access Area².
9. The Beneficiary contacts the Belgacom SPOC to order an Access Line¹. Belgacom does make a test to verify the feasibility of the installation. In case it is not feasible, Belgacom communicates the cost and timing for implementation.
10. Belgacom will confirm the receipt of every firm order. When the installation of the Access Line¹ is complete, Belgacom will confirm it to the Beneficiary.

3.3. Ordering Bandwidth

3.3.1. In VP switching mode or with Shared Vlan's

11. Before the Beneficiary can submit an order for the activation of ADSL-ADSL or SDSL on a specific End User line, Virtual Paths³ needs to be in service

¹ For BROBA over ATM: Access Line. For BROBA over Ethernet: OLO Access Line.

² For BROBA over ATM: Access Area. For BROBA over Ethernet: Service Area.

between each DSLAM⁴ located in the Lex (LDC, KVD, if any) from which the End User depends and the Belgacom ATM Access Point⁵ to which the Beneficiary is connected.

3.3.1.3.3.1.1. Bandwidth Allocation

12. Once the Access Line¹ is in place, the Beneficiary will be able to order bandwidth between each DSLAM⁶ located in the LEX (LDC, KVD, if any) in which the Beneficiary wants to connect End Users and the Belgacom ATM Access Point⁵ to which the Beneficiary is connected.
13. The communication process between the Beneficiary and Belgacom is based on SMTP Mail for the transfer, an ACK/NACK protocol and a message file in attachment with a predefined format.
14. The Beneficiary prepares the file in the predefined XML format, signs it, encrypts it, attaches it to a mail and sends it to the mailbox of Belgacom. The e-mail address for Broba II ADSL & SDSL is llu.car@belgacom.be.
15. When the VP³ is created by Belgacom, the Beneficiary will receive an electronic message (done message) with all the necessary information in order to configure the related VP³ at his side of the network.

3.3.2.3.3.1.2. Capacity Change

16. The Beneficiary can request, within the limits of the VP³ specifications mentioned in this offer:
 - For an upgrade of the total bandwidth he ordered between a specific DSLAM located in a Lex (LDC, KVD, if any) and the ATM Access Point⁵ to which he is connected;
 - For a modification of the bandwidth's allocation amongst the different VPs³ within a specific Lex (LDC, KVD, if any).
17. Firm orders of bandwidth modification shall be done through the use of an XML order as described in the XML content description documents available on the NWS secured site. Orders are sent via the secured electronic messaging system. There is one request per XML order.
18. When the VP³ has been modified by Belgacom, the Beneficiary will receive an electronic message (done message) with all the necessary information in order to make the modification of the related VP³ at his side of the network.

3.3.2. In VC switching mode or with Dedicated Vlan's

3.3.2.1. General

³ For BROBA over ATM: Virtual Path. For BROBA over Ethernet: VLAN.

⁴ Only applicable to the DSLAMs listed on the Operator Personal Page of the NWS secured website.

⁵ For BROBA over ATM: ATM Access Point. For BROBA over Ethernet: Service PoP.

⁶ Only applicable to the DSLAMs listed on the Operator Personal Page of the NWS secured website.

19. There is no pre-provisioning of the VC's or of the dedicated Vlan's. The creation of each VC or of each dedicated Vlan is included in the process of provisioning of a Broba II end-user line in VC switching or with dedicated Vlan's.
20. Belgacom configures each VC or dedicated VLAN at the moment of the implementation of the corresponding end-user line, following specifications of the ATM profile of the VC or following the VLAN profile of the dedicated Vlan provided by the Customer in the end-user line ordering. The Customer is responsible for the choice and definition of each ATM profile or VLAN profile.
21. When Belgacom has created the VC's or the dedicated Vlan's, the Beneficiary is provided with all the necessary information in order to configure the related VC's or dedicated Vlan's at his side of the network.

3.3.2.2. Capacity Change

22. The Beneficiary can request, within the limits of the VC or dedicated Vlan specifications mentioned in this offer, a modification of the ATM profile of the VC's or of the Vlan profile of the dedicated Vlan's of a specific Broba II end-user line.
23. The Beneficiary will complete and send an order form to the Belgacom SPOC. The order form will contain the LEX (LDC, KVD, if any) references and capacity per VC or per dedicated Vlan. Orders for all Lex's (LDC, KVD, if any) need to be included in the same order form. Capacity orders by the Beneficiary are targeted at a maximum recurrence of 10 working days.
24. Firm orders of VC's or of dedicated Vlan profile modification shall be done through the use of an XML order as described in the Broba II XML content description document available on the Customer's personal page on the CWS secured site. Orders will be considered as valid only when they are properly completed. In case data is missing or is not correct, the order will be rejected. In the latter case, Belgacom will indicate the reasons of rejection on the reject. Orders are sent via the secured electronic messaging system, as described in Appendix B of the Annex 4 "Planning and Operations" document and in the corresponding Broba II XML Content Description document. There is one request per XML order.
25. When Belgacom has modified a VC or a dedicated Vlan, the Beneficiary is provided with all the necessary information in order to make the modification of the related VC or dedicated Vlan at his side of the network.

3.4. Ordering ADSL on a specific End User line

- ~~19.~~26. Once the Access Line¹ and the VP's³ are in place, the Beneficiary will be able to send orders to Belgacom to activate ADSL or SDSL on a specific End User Line.
- ~~20.~~27. The communication process between the Beneficiary and Belgacom is based on SMTP Mail for the transfer, an ACK/NACK protocol and a message file in attachment with a predefined format.

21.28. The Beneficiary prepares the file in the predefined XML format, signs it, encrypts it, attaches it to a mail and sends it to the mailbox of Belgacom. The e-mail address for Broba II ADSL or SDSL is llu.car@belgacom.be.

22.29. Belgacom will communicate the technical details to the Beneficiary when the ADSL or SDSL has been activated on the line. The Beneficiary will receive an electronic message (done message) when the implementation has been completed.

3.5. Repair

23.30. For Broba lines with voice service, Belgacom will be responsible for the repair of the PSTN/ISDN Belgacom Services offered to the End User. The Beneficiary is responsible for the repair of the Broba II ADSL and SDSL Service for which he has the control and is responsible to filter all non-network related problems.

24.31. For fault reporting, the Beneficiary will contact Belgacom by e-mail. The e-mail address to be used by the Beneficiary is llu.car@belgacom.be. After having performed a first diagnostic, the Beneficiary will send an excel file with the description of the problem to this address.

Phone number: 0800/91 480
Fax number: 02/512 78 96

25.32. Belgacom could possibly contact the Beneficiary for the repair (e.g. in case a disconnection of the End User is needed; need of additional information to perform the repair).

26.33. Belgacom will give feedback to the Beneficiary during the repair. The result of the repair activities will be reported by Belgacom to the Beneficiary immediately upon repair.

27.34. Escalation procedure: reference is made to the escalation template Broba II ADSL SDSL 2007.
Escalation Template.

	Customer Service	Product Management	Account Management	Repair management	Complaint Handling	Billing
Level 1	Administrators	Product Manager	Account Manager	Repair Dpt e-mail	Complaints Dpt e-mail	Billing & Collecting Dpt
Level 2	CS Back-end Manager	Product Line Manager	Account Line Manager	Repair Dpt Phone Number	Quality Team Meeting	Billing & Collecting Manager
Level 3	CS Director	LLU Director	Sales Director	Technical Center Manager	Senior Committee	Billing & Collecting Director

3.6. Inquiries

28.35. The Beneficiary can obtain through the LLU Inquiry tool the confirmation whether the requested service as described in this offer is available. The inquiry tool is available on the public Internet and is accessible through a login and password. The inquiry tool is fully separated from the ordering process.

29.36. The Beneficiary can also request a check of an individual End User line prior to the request for activation. This request is called an "XML inquiry". The exchange of information between Belgacom and the beneficiary is described in the Annex 4, section 7.

4. Points of contact

See escalation procedure on the Broba II web site.

BROBA II ADSL & SDSL

Annex 4

Planning and Operations

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1. Introduction

1. This annex describes the Planning and Operations principles, related to the provisioning and repair of the Broba II ADSL [or SDSL](#) Service.
2. Both parties will use at any time their best efforts to ensure an adequate level of service provisioning both between the Parties and towards the End Users concerned.
3. In the event that difficulties or problems arise in respect of Planning and Operations, the Parties will perform all necessary co-operation and consultation with a view to developing appropriate and workable solutions.
4. All relevant technical documentation, order forms, forecasting forms if any can be retrieved at the secured part of the website for this offer.

2. Acronyms

ACK	Acknowledged
ADSL	Asymmetric Digital Subscriber Line
BGC	Belgacom
CA	Certification Authority
CSD	Customer Support Desk
DC	Data Connectivity
DES	Data Encryption Standard
FUT	Friendly User Testing
ISDN	Integrated Service Digital Network
LEX	Local Exchange
LS	Loop Service
LSD	Loop Service Deactivation
LSR	Loop Service Request
MDF	Main Distribution Frame
MIME	Multipurpose Internet Mail Extensions
NACK	Not Acknowledged
PSTN	Public Switched Telecommunications Network
P-Bit	Priority Bit
QoS	Quality of Service
SDSL	Symetric Digital Subscriber Line
SOR	Statement Of Requirements
SPOC	Single Point Of Contact
VLAN	~~(Shared)~~ Virtual Local Area Network
VP	Virtual Path

3. Exchange of information

5. This chapter includes some communication guidelines in order to ensure a good interchange of information and to define an effective communication channel that focuses on both improving the comprehension and execution of the processes.

3.1. Single Point Of contact

6. Both Parties will appoint a member of its staff as Single Point Of Contact for Broba II ADSL or SDSL. This person, referred to as "SPOC", will be in charge of all matters regarding the day-to-day management of the performance of this offer. In particular, all forecasts and firm orders must be submitted by registered mail to the SPOC of Belgacom, unless noticed otherwise.

3.2. Preliminary Exchange of Information for the initial setting up

7. Without prejudice to what is stated above, it is recommended that the Beneficiary provides a Statement Of Requirements (SOR) to Belgacom as early as possible in any discussions between The Beneficiary and Belgacom. The SOR is sent by registered mail to the SPOC of Belgacom. After the receipt of the SOR, Belgacom shall notify to the Beneficiary its observations, if any, concerning the SOR. In particular, when appropriate, Belgacom may request additional information to complete the information contained in the SOR but Beneficiary may address a motivated request to BIPT to get the permission not to give certain information asked by Belgacom. For more information on the SOR, reference is made to Appendix A of this document.

3.3. Implementation Committee

8. The Implementation Committee is a meeting between both parties to supervise, discuss and examine at a general level technical and operational application of this offer, in particular, the implementation of the respective obligations of the Parties, as described in this offer.
9. The Implementation Committee will meet at least on a quarterly basis. Each Party will be entitled to call additional meetings within reasonable notice, as may be necessary. Each Party will be represented at the Implementation Committee by its SPOC accompanied by any staff as deemed necessary by the relevant Party.
10. In addition to the Implementation Committee, the Parties will be allowed to request for the set-up of any other bilateral working group in charge of discussing and agreeing on any technical or operational issues, including more specialized members on the specific topic.

4. Transport over ATM backbone

4.1. Ordering Access Line

4.1.1. General

11. Before the Beneficiary can submit an order for the activation of [Broba II ADSL or SDSL over ATM](#) on a specific End User line, an Access Line needs to be in service in the relevant Access Area.
12. Firm orders of Access Line, between a BGC ATM Access Point and Beneficiary's equipment, shall be done through the use of the specific templates provided in [Appendix E](#) of this document. Templates will be considered as valid only when they are properly completed. In case data is missing or is not correct, the template will be rejected. In the latter case, Belgacom will indicate the reasons of rejection on the template. All firm orders will be submitted by fax to the SPOC of Belgacom for BROBA II.
13. Irrespective of the terms and conditions stated below, Belgacom reserves the right to reject orders if the volumes requested by the Beneficiary are not in line with reasonable market demands. In the event of such a rejection, Belgacom will provide the Beneficiary with the reasons for the rejection and the Parties will need to enter into a good faith discussion for finding a solution to deal with the difficulty that has arisen.

4.1.2. Ordering procedure

14. The Beneficiary can order its Access Line through a firm order. A firm order consists of the requested Access Line, per type of service ([Appendix E](#)). Together with the firm order, the Beneficiary includes the date when he wants the Access Line to be ready.
15. The Beneficiary is notified that in very exceptional situations, the theoretic delays may be escalated :
 - In case of periods of large demands at once that could not be foreseen,
 - In an emergency situation (i.e., exceptional cases of *force majeure*),
 - In situations of lightning and any other natural disasters that causes damage to the Belgacom network.
16. When the installation of the Access Line is complete, Belgacom will confirm it to the Beneficiary.

4.2. Ordering Bandwidth in VP switching mode

4.2.1. Bandwidth Allocation

4.2.1.1. General

17. The Beneficiary will order bandwidth between each DSLAM¹ sited in a LEX/LDC in which the Beneficiary wants to connect End Users and the Belgacom ATM Access Point to which the Beneficiary is connected. Belgacom does the set-up and the configuration of the VP's, between the DSLAM's from which the End Users depend and the Beneficiary equipment, on behalf of the Beneficiary.
18. Firm orders of bandwidth per DSLAM shall be done through the use of an XML order² as described in the XML content description documents available on the CWS secured site. Orders will be considered as valid only when they are properly completed. In case data is missing or is not correct, the order will be rejected. In the latter case, Belgacom will indicate the reasons of rejection on the reject. Orders are sent via the secured electronic messaging system, as described in appendix C of this document and in the corresponding XML content description documents. There is one request per XML order. XML with encrypted XML files is the standard procedure.
19. Irrespective of the terms and conditions stated below, Belgacom reserves the right to reject orders if the volumes requested by the Beneficiary are not in line with reasonable market demands. In the event of such a rejection, Belgacom will provide the Beneficiary with the reasons for the rejection and the Parties will need to enter into a good faith discussion for finding a solution to deal with the difficulty that has arisen.

4.2.1.2. Prerequisites

20. An access line with sufficient available capacity has to be implemented between a Belgacom ATM Access Point and the Beneficiary equipment.

4.2.1.3. Ordering procedure

21. The Beneficiary can order a VP through a firm order. A firm order consists of the requested VP with its associated parameters (bandwidth, PCR, SCR, QoS, VP Type³, ..)".
22. The Beneficiary is notified that in very exceptional situations, the theoretic delays may be escalated:

¹ Only applicable to the DSLAMs listed on the Operator Personal Page of the CWS secured website.

² However, a back-up plan has been defined in case of problems. Firm orders of bandwidth per LEX shall be done through the use of the specific templates provided in Appendix E of this document. All firm orders will be submitted by fax to the SPOC of Belgacom for BROBA II. An electronic version of the filled order template will also be send to the SPOC of Belgacom.

³ Each beneficiary must choose the VP type of each of its VP within a set of 12 values predefined by Belgacom. The values predefined by Belgacom have no intrinsic meaning.

- In case of periods of large demands at once that could not be foreseen,
 - In an emergency situation (i.e., exceptional cases of "*Force Majeure*").
23. When the Beneficiary sends an order to activate the ADSL on an End User line, Belgacom will provide the Beneficiary with all the necessary information in order to configure the related VP at the Beneficiary's side of the network, when the validate XML is sent back to the OLO.
24. The Beneficiary is requested to deliver Belgacom with a technical Beneficiary contact for the synchronization in setting up VP's. The Beneficiary will need to communicate Belgacom the Virtual Path identifier (Vpi) at his side of the network.

4.2.2. Capacity Change

4.2.2.1. General

25. The Beneficiary can request, within the limits of the VP specifications mentioned in this offer (VP type and VP minimum dimensioning),
- For an upgrade of the total bandwidth he ordered between a specific DSLAM located in a LEX/LDC and the ATM Access Point to which he is connected
 - For a downgrade of the total bandwidth he ordered between a specific DSLAM located in a LEX/LDC and the ATM Access Point to which he is connected
 - For a modification of the bandwidth's allocation amongst the different VPs within a specific LEX/LDC.
26. Firm orders of bandwidth modification shall be done through the use of an XML order as described in the XML content description documents available on the CWS secured site. Orders will be considered as valid only when they are properly completed. In case data is missing or is not correct, the order will be rejected. In the latter case, Belgacom will indicate the reasons of rejection on the reject. Orders are sent via the secured electronic messaging system, as described in appendix C of this document and in the corresponding XML content description documents. There is one request per XML order.
27. Belgacom reserves the right to reject orders if the volumes requested by the Beneficiary are not in line with reasonable market demands. In the event of such a rejection, Belgacom will provide the Beneficiary with the reasons for the rejection and the Parties will need to enter into a good faith discussion for finding a solution to deal with the difficulty that has arisen.

4.2.2.2. Prerequisites

28. The order is relative to an existing VP and must contain its correct identification (cfr all informations specified in the XML content description document for VP ordering).

4.2.2.3. Ordering procedure

29. The Beneficiary can ask to modify the existing parameters of its VPs through a firm XML order. A firm order consists of the requested VPs' parameters per LEX/LDC, per VP.
30. The Beneficiary is notified that in very exceptional situations, the theoretic delays may be escalated:
- In case of periods of large demands at once that could not be foreseen,
 - In an emergency situation (i.e., exceptional cases of *force majeure*).
31. When a VP is modified by Belgacom, the Beneficiary will be provided with all the necessary information in order to configure the related VP at his side of the network.

4.2.3. Capacity Cancellation

4.2.3.1. General

32. The beneficiary can request the cancellation of an existing VP.
33. Firm orders of bandwidth cancellation shall be done through the use of an XML order as described in the XML content description documents available on the CWS secured site. Orders will be considered as valid only when they are properly completed. In case data is missing or is not correct, the order will be rejected. In the latter case, Belgacom will indicate the reasons of rejection on the reject. Orders are sent via the secured electronic messaging system, as described in appendix C of this document and in the corresponding XML content description documents. There is one request per XML order.
34. Belgacom reserves the right to reject orders if the volumes requested by the Beneficiary are not in line with reasonable market demands. In the event of such a rejection, Belgacom will provide the Beneficiary with the reasons for the rejection and the Parties will need to enter into a good faith discussion for finding a solution to deal with the difficulty that has arisen.

4.2.3.2. Prerequisites

35. The order is relative to an existing VP and must contain its correct identification.
36. The VP for which the cancellation is requested must be free of Vc's.

4.2.3.3. Ordering procedure

37. The Beneficiary can ask the cancellation of its VPs through a firm XML order. A firm order consists of the requested VPs' parameters per LEX, per VP.
38. The Beneficiary is notified that in very exceptional situations, the theoretic delays may be escalated:

- In case of periods of large demands at once that could not be foreseen,
- In an emergency situation (i.e. exceptional cases of *force majeure*).

4.3. Ordering Bandwidth in VC switching mode

39. The creation of VCs is included in the process to order Broba II SDSL on a specific End User line. Belgacom does the set-up and the configuration of the VC, between the DSLAM sited in a LEX/LDC from which the End User depends and the Beneficiary equipment, on behalf of the Beneficiary. The relevant DSLAM is located in a LEX or LDC or any other relevant point where Belgacom has installed DSLAMs.

40. These VCs can be of the following type:

- CBR
- UBR

41. Maximum 4 VCs per connection

42. For more information, see Annex 2 Technical Specifications – Tables of profiles

43. The provision of SDSL on an existing End User line also requires the installation by the Beneficiary of a router at the End User side. The access to the Broba II SDSL Service at the End User site will be at the Belgacom Network Termination Point (NTP).

44. For information, the router used by the End User must be conforming to the applicable standardization and its interoperability with the DSLAM must have been demonstrated. Belgacom will participate together with the Beneficiary in the solving of interworking issues.

45. For the sake of clarity, the Belgacom SDSL network is currently based on the high density DSLAM Onestream ASAM. The STU-C supports SDSL modems based on the standard ITU-T G.991.2 and conformable with Belgacom UNI.

46. The handshake protocol, based on ITU G.994.1, determines the operation mode.

47. The Beneficiary is requested to deliver Belgacom with a technical Beneficiary contact for the synchronization in setting up the VC's. The Beneficiary will need to communicate to Belgacom the VPI/VCI at his side of the network.

5. Transport over Ethernet backbone

5.1. Ordering OLO Access Line

5.1.1. General

~~39.48.~~ Before the Customer can submit an order for the activation of ~~Wholesale Broadband Access VDSL2 Broba II ADSL or SDSL over Ethernet~~ on a specific End User line, an Ethernet OLO Access Line needs to be in service in the relevant Service Area.

~~40.49.~~ Firm orders of OLO Access Line, between a BGC Service PoP and ~~Customer's Beneficiary's~~ equipment, shall be done through the use of the specific templates provided in ~~Appendix C-E~~ of this document. Templates will be considered as valid only when they are properly completed. In case data is missing or is not correct, the template will be rejected. In the latter case, Belgacom will indicate the reasons of rejection on the template. All firm orders will be submitted by fax to the SPOC of Belgacom for ~~Wholesale Broadband Access VDSL2- Broba II.~~

~~41.50.~~ Irrespective of the terms and conditions stated below, Belgacom reserves the right to reject orders if the volumes requested by the ~~Customer Beneficiary~~ are not in line with reasonable market demands. In the event of such a rejection, Belgacom will provide the ~~Customer Beneficiary~~ with the reasons for the rejection and the Parties will need to enter into a good faith discussion for finding a solution to deal with the difficulty that has arisen.

5.1.2. Ordering procedure

~~42.51.~~ The ~~Customer Beneficiary~~ can order its OLO Access Line through a firm order. A firm order consists of the requested OLO Access Line, per type of service (~~Appendix CE~~). Together with the firm order, the ~~Customer Beneficiary~~ includes the date when he wants the OLO Access Line to be ready.

~~43.52.~~ Delays for the provisioning of these OLO Access lines take into account the fact that, when public infrastructure works have to be realized, several actions and several actors can extend the time needed for provisioning of the access lines. Examples of interventions can be:

- Studies
- Creation of implementation plan
- Requests to Public Authorities for authorization to realize works on the Public Infrastructure (often 2 months or more)
- Realization of the works

~~44.53.~~ In the event that difficulties or problems arise in this respect, the Parties will use all necessary co-operation and consultation with a view to developing appropriate and workable solutions subject to agreement between the Parties.

~~45.54.~~ The ~~Customer Beneficiary~~ is notified that in very exceptional situations, the theoretic delays may be escalated :

- In case of periods of large demands at once that could not be foreseen,
- In an emergency situation (i.e., exceptional cases of *force majeure*),
- In situations of lightning and any other natural disasters that causes damage to the Belgacom network.

46.55. When the installation of the OLO Access Line is complete, Belgacom will confirm it to the CustomerBeneficiary.

5.2. Ordering Bandwidth (with shared VLAN's)

5.2.1. Bandwidth Allocation

5.2.1.1. General

47-56. The Customer-Beneficiary will order bandwidth between each LEX in which the Customer-Beneficiary wants to connect End Users and the Belgacom Service PoP to which the Customer-Beneficiary is connected. Belgacom does the set-up and the configuration of the VLAN's, between the LEX's from which the End Users depend and the Customer-Beneficiary equipment, on behalf of the Customer-Beneficiary.

48-57. Firm orders of bandwidth per LEX shall be done through the use of an XML order as described in the WBA-Broba II ADSL & SDSL VDSL2 XML content description documents available on the Customer's personal page on the CWS secured site. Orders will be considered as valid only when they are properly completed. In case data is missing or is not correct, the order will be rejected. In the latter case, Belgacom will indicate the reasons of rejection on the reject. Orders are sent via the secured electronic messaging system, as described in Appendix B-C of this document and in the corresponding WBA-Broba II ADSL & SDSL VDSL2 XML content description documents. There is one request per XML order. XML with encrypted XML files is the standard procedure.

49-58. Irrespective of the terms and conditions stated below, Belgacom reserves the right to reject orders if the volumes requested by the Customer-Beneficiary are not in line with reasonable market demands. In the event of such a rejection, Belgacom will provide the Customer with the reasons for the rejection and the Parties will need to enter into a good faith discussion for finding a solution to deal with the difficulty that has arisen.

5.2.1.2. Prerequisites

50-59. An OLO Access Line with sufficient available capacity has to be implemented between a Belgacom Service PoP and the Customer equipment.

5.2.1.3. Ordering procedure

51-60. The Customer can order a VLAN through a firm order. A firm order consists of the requested VLAN with its associated parameters (bandwidth, Service, Service PoP, OAL, ...).

52-61. The Customer is notified that in very exceptional situations, the theoretic delays may be escalated:

- In case of periods of large demands at once that could not be foreseen,
- In an emergency situation (i.e., exceptional cases of "Force Majeure").

53.62. When the Customer sends an order to activate the [Wholesale Broadband Access VDSL2 Broba II ADSL or SDSL](#) on an End User line, Belgacom will provide the Customer with all the necessary information in order to configure the related VLAN at the Customer's side of the network, when the validate XML is sent back to the OLO.

54.63. The Customer is requested to deliver Belgacom with a technical Customer contact for the synchronization in setting up VLAN's.

5.2.2. Capacity Change

5.2.2.1. General

55.64. The Customer can request, within the limits of the VLAN specifications mentioned in this offer (Allowed VLAN Bandwidth in function of the Service),

- For an upgrade of the Bandwidth of each VLAN he ordered between specific LEX and the Service PoP to which he is connected
- For a downgrade of the Bandwidth of each VLAN he ordered between specific LEX and the Service PoP to which he is connected

56.65. Firm orders of bandwidth modification shall be done through the use of an XML order as described in the [WBA Broba II ADSL & SDSL VDSL2](#) XML content description document available on the Customer's personal page on the CWS secured site. Orders will be considered as valid only when they are properly completed. In case data is missing or is not correct, the order will be rejected. In the latter case, Belgacom will indicate the reasons of rejection on the reject. Orders are sent via the secured electronic messaging system, as described in Appendix [B-C](#) of this document and in the corresponding [WBA Broba II ADSL & SDSL VDSL2](#) XML Content Description document. There is one request per XML order.

57.66. Belgacom reserves the right to reject orders if the volumes requested by the Customer are not in line with reasonable market demands. In the event of such a rejection, Belgacom will provide the Customer with the reasons for the rejection and the Parties will need to enter into a good faith discussion for finding a solution to deal with the difficulty that has arisen.

5.2.2.2. Prerequisites

58.67. The order is relative to an existing VLAN and must contain its correct identification (cfr all informations specified in the [WBA Broba II ADSL & SDSL VDSL2](#) XML content description document for VLAN ordering).

5.2.2.3. Ordering procedure

59.68. The Customer can ask to modify the existing parameters of its VLAN's through a firm XML order. A firm order consists of the requested VLAN's parameters per LEX, per VLAN.

60.69. The Customer is notified that in very exceptional situations, the theoretic delays may be escalated:

- In case of periods of large demands at once that could not be foreseen,
- In an emergency situation (i.e., exceptional cases of *force majeure*).

61.70. When a VLAN is modified by Belgacom, the Customer will be provided with all the necessary information in order to configure the related VLAN at his side of the network.

5.2.3. Capacity Cancellation

5.2.3.1. General

62.71. The Customer can request the cancellation of an existing VLAN.

63.72. Firm orders of bandwidth cancellation shall be done through the use of an XML order as described in the [WBA-VDSL2 Broba II ADSL & SDSL](#) XML content description document available on the CWS secured site. Orders will be considered as valid only when they are properly completed. In case data is missing or is not correct, the order will be rejected. In the latter case, Belgacom will indicate the reasons of rejection on the reject. Orders are sent via the secured electronic messaging system, as described in Appendix [B-C](#) of this document and in the corresponding [WBA-Broba II ADSL & SDSL-VDSL2](#) XML content description document. There is one request per XML order.

64.73. Belgacom reserves the right to reject orders if the volumes requested by the Customer are not in line with reasonable market demands. In the event of such a rejection, Belgacom will provide the Customer with the reasons for the rejection and the Parties will need to enter into a good faith discussion for finding a solution to deal with the difficulty that has arisen.

5.2.3.2. Prerequisites

65.74. The order is relative to an existing VLAN and must contain its correct identification.

66.75. A customer may only cancel a VLAN in a specific LEX once the service quality of this VLAN is not offered anymore on any End User of this Customer in this LEX.

5.2.3.3. Ordering procedure

67.76. The Customer can ask the cancellation of its VLAN through a firm XML order. A firm order consists of the requested VLAN's parameters per LEX.

68.77. The Customer is notified that in very exceptional situations, the theoretic delays may be escalated:

- In case of periods of large demands at once that could not be foreseen,
- In an emergency situation (i.e. exceptional cases of *force majeure*).

5.3. Ordering Bandwidth (with dedicated VLAN's)

5.3.1. General

78. There is no pre-provisioning of the dedicated VLANs. The creation of each dedicated VLAN is included in the process of provisioning of the corresponding VC.

79. Belgacom configures each dedicated VLAN at the moment of the implementation of the corresponding VC, following specifications of the VLAN profile given by the Customer in the VC ordering. The Beneficiary is responsible for the choice and definition of each VLAN profile.

5.3.2. Modification of dedicated VLAN profile

80. The Beneficiary can request a change of the dedicated VLAN profile of a specific Broba II ADSL or SDSL with dedicated VLAN line.

81. Firm orders of dedicated VLAN profile modification shall be done through the use of an XML order as described in the Broba II ADSL or SDSL XML content description document available on the Beneficiary's personal page on the CWS secured site. Orders will be considered as valid only when they are properly completed. In case data is missing or is not correct, the order will be rejected. In the latter case, Belgacom will indicate the reasons of rejection on the reject. Orders are sent via the secured electronic messaging system, as described in Appendix C of this document and in the corresponding Broba II ADSL or SDSL XML Content Description document. There is one request per XML order.

82. Belgacom reserves the right to reject orders if the volumes requested by the Beneficiary are not in line with reasonable market demands. In the event of such a rejection, Belgacom will provide the Beneficiary with the reasons for the rejection and the Parties will need to enter into a good faith discussion for finding a solution to deal with the difficulty that has arisen.

83. Prerequisite: the order is relative to an existing Broba II ADSL or SDSL with dedicated VLAN line and must contain its correct identification (cfr all informations specified in the Broba II ADSL or SDSL XML content description document).

84. The Beneficiary is notified that in very exceptional situations, the theoretic delays may be escalated:

- In case of periods of large demands at once that could not be foreseen,
- In an emergency situation (i.e., exceptional cases of *force majeure*).

85. When a dedicated VLAN profile is modified by Belgacom, the Beneficiary will be provided with all the necessary information in order to configure the related dedicated VLAN at his side of the network.

6. Inquiries

- | [69:86.](#) The Beneficiary can obtain through the LLU Inquiry Tool the confirmation whether the requested service as described in this offer is available. The inquiry tool is available on the public Internet and is accessible through a login and password. Multiple login's are possible. The inquiry tool is fully separated from the ordering process. This includes that the inquiry results on the website does not deliver an option to order the activation of ADSL on a End User line.
- | [70:87.](#) By input of the End User's dial number and the requested service, the LLU Inquiry Tool will return information on the availability of the service. For Broba without voice lines, the Beneficiary will provide the correct address information.
- | [71:88.](#) An utilisation manual of the LLU Inquiry Tool is available on the Belgacom Wholesale Personal Page (Regulatory Information/BROBA) describing the functionalities of this tool, the input needed and providing all needed explanations to interpret correctly its output.
- | [72:89.](#) The Beneficiary can also request a check of an individual End User line prior to the request for activation. This request is called an "XML inquiry". The exchange of information between Belgacom and the Beneficiary follows the rules defined in the Section 7 of this document.

7. Ordering ADSL or SDSL on a specific End User line

7.1. General

- 73.90. All exchange of information, with the exception of the inquiry, between Belgacom and the Beneficiary will be done through an electronic system. More details are described in Appendix C.
- 74.91. The communication process between the Beneficiary and Belgacom is based on SMTP Mail for the transfer, an ACK/NACK protocol and a message file in attachment with a predefined format.
- 75.92. The messages that are exchanged between the Beneficiary and Belgacom are encrypted and signed by the sender. Each message contains one order form in attachment that is coded in XML.
- 76.93. Only Beneficiaries who have signed the "Agreement for the provisioning of Bitstream Access in the local loops of Belgacom" will obtain the encryption keys in order to sign and encrypt the message. This will enable the Beneficiary to test the messaging system.
- 77.94. The Beneficiary prepares the file in the predefined XML format, signs it, encrypts it, attaches it to a mail and sends it to the mailbox of Belgacom. The e-mail address for BROBA II is WDC@belgacom.be.
- 78.95. The order forms for the messages described below will be available in XML format. The Beneficiary will receive the XML templates for the Broba II ~~ADSL~~ Service. To facilitate the Beneficiary to dimension its systems, the XML templates are delivered with DTD files, that describe the nature of the data fields (length, type, ...). The details and overview of the valid values that need to be included in the electronic XML templates are described in the Broba II ADSL & SDSL XML Content Manual. The XML data files and the XML content manual will be available through the secured part of the Broba II ~~ADSL~~-website and through the SPOC if necessary.
- 79.96. Electronic messages will be exchanged between Belgacom and the Beneficiary to manage the orders.
- 80.97. XML with encrypted XML files is the standard procedure. However, a back-up plan has been defined in case of problems. More information on the back-up procedure is available in Appendix D.

7.2. Definitions

7.2.1. Type of Messages

- Acknowledge Message
- Order Message: message to initiate the creation of a new order
- Action Message: message to ask for a precise action on an existing order
- Answer Message: message sent to give an answer to an Order Message or Action Message

7.2.2. Acknowledge Messages

81.98. For any message exchanged between Belgacom and The Beneficiary, an acknowledge message (ACK/NACK) is sent to confirm

- The message has been received
- The message has been decrypted
- The signature has been successfully validated.

82.99. NACK is sent if decryption or signature check does fail. NACK will contain the reason of rejection.

83.100. If no ACK nor NACK message is received by the sender, the sender is supposed to send again the message. The order is not further processed by Belgacom.

84.101. If an ACK is received by the Beneficiary, this does not automatically mean that the order will be provisioned. The order could still be rejected.

7.2.3. Order Messages

85.102. An Order can be:

INITIATED BY THE BENEFICIARY

- PROVIDE NEW: the activation of a complete new Broba II ADSL or SDSL Service
- CEASE: the deactivation of a Broba II ADSL or SDSL Service
- CONVERT – cease part and provide part: conversion of his own existing BROBA II ADSL or SDSL product or another type of product towards a (another) BROBA II ADSL or SDSL product
- PROVIDE CHANGE OWNER: transfer of ownership of an existing xDSL belonging to another Beneficiary (Belgacom end-user customer included) with or without conversion of the existing product

- CHANGE: Modification of the existing BROBA II ADSL or SDSL product.
 - ~~For BROBA over ATM:~~ (add/remove/delete VC – change line profile – change ATM Profile – change switching mode – change Vlan profile).
 - ~~For BROBA over Ethernet: (add/delete Service).~~

INITIATED BY BELGACOM DUE TO AN ACTION OF ANOTHER BENEFICIARY OR FROM THE END-USER CUSTOMER ON HIS VOICE SERVICE

- CEASE CHANGE OWNER: launched as a consequence of a validated PROVIDE CHANGE OWNER of another Beneficiary, or an action of the end-user-customer of Belgacom
- MOVE – cease part and provide part: launched as a consequence of a MOVE of the voice of the end-user-customer; the BROBA II ADSL or SDSL product will be moved along if technical possible.
- CONVERT – cease part and provide part: launched as a consequence of
 - Change of technology of the voice of the end-user-customer from PSTN to ISDN and vice versa
 - A cease or an export of the voice; the BROBA II ADSL with voice will be converted into a BROBA II ADSL without voice
 - A new connection or an import of the voice; the BROBA II ADSL without voice will be converted into a BROBA II ADSL with voice
- CEASE (for technical reasons): launched as a consequence of an action on the voice part - e.g. move/conversion of the voice – while the BROBA II ADSL or SDSL product can not be re-established in the new situation due to technical reasons

7.2.4. Action Messages

86.103. An Action Message can be:

INITIATED BY THE BENEFICIARY

- AMEND: this message can be sent by the Beneficiary to change the Due Date of an existing order
- CANCEL: this message can be sent by The Beneficiary to cancel an existing order.

INITIATED BY BELGACOM

- HOLD: this message can be sent by Belgacom to inform The Beneficiary that Belgacom will not perform the service at Due Date. due to technical reasons; due to absence of the end-user-customer; a new Due Date is communicated to The Beneficiary in this message

87.104. These action messages apply only on pending orders sent by the Beneficiary to Belgacom.

7.2.5. Answer Messages

88.105. An Answer Message can be:

- REJECT: after the ACK was sent by Belgacom for a certain message, this message may however show some problems that will prevent Belgacom to treat the request correctly:
 - The message contents (file attachment) does not respect predefined format
 - The message does not contain predefined values
 - The message does not respect precedence rules
 - The message refers to a non existing order
 - The new order does not pass through administrative validations: pending order, unknown or non activated Directory Number, non PSTN/ISDN-BA installation, bad payer, ...
 - The new order does not pass through technical validations: no pair available, distribution pairs absent, ...

The rejection message contains at least one, if possible more, rejection codes to inform the Beneficiary of all reasons for rejection so that sender can send again the message and minimise the retry cycle. If rejected, the order does not exist anymore. If The Beneficiary wants to retry, he will have to issue again the same demand, but through a new order.

- VALIDATE: this message confirms that the order will be executed on the given due date; Belgacom will provide the Beneficiary with all the necessary technical information in order to configure the related VP at the Beneficiary's side of the network; the message includes the circuit-id.
- DONE: this message confirms the execution of the order, the field intervention for service activation is completed.
- FAIL: this message is sent when it is not possible for Belgacom to succeed in providing the service with existing infrastructure; the order has not been executed. The message contains the appropriate codes to inform The Beneficiary about the reason(s) for failing. After this message the order is considered as not existent and is removed out of the ordering system.
- CANCELLED – AMENDED: those messages confirm the action messages, CANCEL and AMEND

7.3. Description of specific ordering procedures

89.106. A working day for order purposes is considered as being from: 8h00 - 16h30, excluding Saturday, Sunday, Belgian and Belgacom holidays.

90.107. The timers mentioned in the other parts of the Contract and used in the order provisioning process are expressed in working days at the first working day after an acknowledgement has been sent. The number of days of delay starts at the first day after the day the timer limit was passed.

7.4. Small Network Adaptations

108. Beneficiary has the possibility to indicate 'SNA not allowed' when ordering. If 'SNA not allowed' is flagged when ordering, Belgacom will send a reject of the order should the need for a SNA be established at any point in the provisioning phase.

109. In case the order is not flagged 'SNA not allowed', the process is as follows:

91. In case of Small Network Adaptations:

a. If a Small Network Adaptation need is detected during the order validation,

Belgacom will notify this into the XML VALIDATE message by communication in the remark type SmallNetworkAdaptations the word "NEEDED".

b. If a SNA need is detected during provisioning,

Belgacom will create a HOLD message where a new appointment date will be proposed and with in the remark type SmallNetworkAdaptations the word "NEEDED".

In both cases, the Beneficiary can then contact its End User for further negotiations.

The Beneficiary will be enabled till the day before the Due Date (DD-1) to cancel its request. If there is no cancellation, the SNA will be considered as accepted by the Beneficiary and realized as such.

~~This type of communication will at first be done on a case-by-case basis. Belgacom will inform the Beneficiary in good faith, as soon as possible, of modifications of the current ordering procedures relating to these Small Network Adaptations.~~

8. Forecasting of orders

Forecasting of orders shall be done by the procedure as described in Appendix B.

9. Fault Reporting and Repair

92.110. This section describes the responsibilities of Belgacom and The Beneficiary in fault reporting and repair.

93.111. For Broba II ADSL, Reach Extended ADSL2 and ADSL2+: Belgacom will be responsible for the repair of the PSTN/ISDN Belgacom Services offered to the End User.

94.112. The Beneficiary is responsible for the repair of the Broba II ADSL Service for which he has the control and is responsible to filter all non-network related problems.

9.1. Points of Entry for Complaint

95.113. In case of repair, two points of contact between the Beneficiary and Belgacom have been identified according to the type of problem:

- e-tool for repair tickets
- The National Call Center (also referred to as NCC) for the reporting of
 - i. In BROBA over ATM: faults at VP level and Access Line level,
 - ii. In BROBA over Ethernet: faults at VLAN level and OLO Access Line level.
- The address "080093122@belgacom.be" for the reporting of faults at End User level.

9.2. Fault Reporting on Broba II ADSL or SDSL

96.114. It is always the Beneficiary that

- 1) Reports faults in the Broba II ADSL or SDSL Access;
- 2) Receives own End Users' fault reports before reporting faults to Belgacom. Belgacom will not take calls directly coming from End Users of the Beneficiary Broba II ADSL or SDSL Access;
- 3) Handles own End Users' fault reports before reporting faults to Belgacom.

97.115. It is the Beneficiary's responsibility to check that there is sufficient ground to assume that the fault is with Belgacom.

98.116. The Beneficiary has to execute a synchro test via the e-tool before filing a repair ticket. If e-tool is not available, repair ticket can be introduced without synchro-test. In this case, lack of synchro-test can not be cause of wrongful repair request.

9.3. Beneficiary's liabilities in connection with fault reporting

99.117. For fault reporting, the Beneficiary will contact Belgacom by e-mail or via the web. The e-mail address to be used by the Beneficiary is 080093122@belgacom.be. The Beneficiary will send an excel file with the description of the problem to this address.

Phone number: 0800/93 122
Fax number: 02/512 78 95

100.118. The Beneficiary will test the concerned faulty equipment before sending the excel file to Belgacom to ensure that the fault is attributable to Belgacom. The Beneficiary is responsible for transmitting all necessary information requested by Belgacom. Beneficiary will therefore transmit to Belgacom an excel file with information related to the problem. In the following cases the trouble ticket creation will be rejected:

- Information in the Excel sheet is incomplete
- More than one ticket is sent in the e-mail

119. ~~The Beneficiary will possibly communicate to Belgacom:~~ The following information is required for a fault report. The Beneficiary is responsible for transmitting all necessary information requested by Belgacom. The Beneficiary will therefore transmit to Belgacom at least the following information:

~~101.~~

- Circuit ID that was provided in the Broba II provisioning process;
- fault reporting information that includes the problem description and all relevant technical details;
- contact point and phone number of the Beneficiary.
- Measurements from equipment on the Beneficiary's side that can help in solving the fault (if available).
- Contact point and phone number of the End User during office hours (in case an intervention is required at the End User side).
- Hours of availability of End User (in case an intervention is required at the End User side).

102.120. It is always the Beneficiary that receives own End Users' fault reports regarding the Broba II ADSL or SDSL Access Services before reporting faults to Belgacom. In case Belgacom receives fault reports regarding the Broba II ADSL or SDSL Service, Belgacom will refer the End User to the Company with whom he has signed an agreement.

103.121. When the Beneficiary receives a fault from one of his End Users for Broba II ADSL or SDSL, the Beneficiary performs a first diagnostic.

- In case the issue does not require a Belgacom intervention, the Beneficiary manages the issue and contacts the End User once the issue is solved and closed.
- On the opposite, if the issue requires a Belgacom intervention (typically for network issues), the Beneficiary continues the issue resolution process with Belgacom.

104.122. Important note: The Beneficiary must clearly specify to the End User that the PC and modem must be left "on" in order to let the possibility to Belgacom to perform all the actions required to identify and fix the issue.

9.4. Belgacom's liability in connection with fault reporting

~~105.123.~~ Belgacom starts the fault localization and performs repair activities during working hours.

~~106.124.~~ The Beneficiary recognizes that:

- if necessary, the Beneficiary is required to disconnect the terminal equipment at the End User site upon Belgacom's request to carry out its proper measurements;
- Belgacom can request to the Beneficiary a timeframe for disconnecting the Broba II ADSL or SDSL Service at the MDF to the Beneficiary colocation facilities so as to be able to carry out the necessary measurements. Refusal from The Beneficiary to do so will imply that Belgacom is not in a position to verify the lines and can be considered as wrongful repair request;
- The Beneficiary's repair request must relate to the type of service for which the Broba II ADSL or SDSL Service has been ordered;
- During the repair process the Beneficiary may submit additional information in respect of a specific repair request, cancel a repair request or change a repair request on the same end-user BROBA II ADSL or SDSL access.

~~107.125.~~ Belgacom reports the result of the repair activities to the Beneficiary immediately upon repair;

~~108.126.~~ Any follow-up feedback requested by the Beneficiary, either during the repair period, after additional tests and rejection or acceptance of the repair action, or once the fault is fixed, will be taken care of through the repair team for Broba II ~~ADSL~~;

~~109.127.~~ In any case of planned maintenance and repair that can affect the Broba II ADSL Service, Belgacom shall inform the Beneficiary.

~~110.128.~~ In case the Beneficiary contacts Belgacom by phone about an ongoing repair action, Belgacom will inform the Beneficiary of the current repair status.

9.5. Special conditions in connection with Repair

~~111.129.~~ When the End User connects equipment (on its side) that is not compliant with the requirements set out in the Main Body or equipment that causes disturbances for Belgacom and/or for other Beneficiaries in the cables, Belgacom is entitled to disconnect the Broba II ADSL or SDSL Service after prior notification of the Beneficiary, following the RTTE directive.

~~112.130.~~ In fault situations where the responsibility for the fault cannot immediately be placed, and where Belgacom makes co-coordinated efforts with one or more Beneficiaries, settlement is made or arranged after conclusion of the Repair. Service interruptions due to modifications and maintenance are not included in the SLA and Improved SLA on service availability, at the condition that it is done on a non-discriminatory basis and for the normal management of the network.

~~113.131.~~ If Belgacom repair services conclude that a complaint is related to a low performance of a line with unstable synchro (profile out of range according to the deployment curve), the Belgacom repair team starts the "fallback profile" process. This process can be further explained to the Beneficiaries during dedicated Technical meetings.

9.6. Repair Request and Feedback

For BROBA over ATM: VP and access line level

~~114.132.~~ The Beneficiary's requests for Repair at VP level and Access Line level will be answered by the NCC. Communication in repair will be through phone. The NCC representatives will however not accept direct calls from the End User.

~~115.133.~~ Any follow-up feedback given to the Beneficiary, either during the repair period, after additional tests and rejection or acceptance of the repair action, or once the trouble is fixed, will be through CSD, again insuring continuity and consistency.

For BROBA over Ethernet: VLAN and OLO Access Line level

~~116.134.~~ The ~~Beneficiary~~Customer's requests for Repair at VLAN level and OLO Access Line level will be answered by the NCC. Communication in repair will be through phone. The NCC representatives will however not accept direct calls from the End User.

~~117.135.~~ Any follow-up feedback given to the ~~Customer~~Beneficiary, either during the repair period, after additional tests and rejection or acceptance of the repair action, or once the trouble is fixed, will be through CSD, again insuring continuity and consistency.

End User level

~~118.136.~~ The Beneficiary's requests for Repair at End User level (DSLAM level) will be answered by "080093122@belgacom.be". Communication in repair will be through e-mail. No direct calls from the End User will be accepted.

~~119.137.~~ The Beneficiary has to provide the circuit ID that was provided in the End User line provisioning process. The Beneficiary repair request must relate to the type of service for which this line has been ordered. If the reported problem does not match the service ordered by the Beneficiary as documented, the repair request will be rejected. During the repair process the Beneficiary may also submit additional information for a specific complaint, cancel a complaint or change a complaint.

~~120.138.~~ It may during repair appear necessary for the Belgacom representative to contact the End User. The Beneficiary will therefore transmit to Belgacom the contact point of the End User and his phone number together with the repair request. In case contact with the End User is necessary for repair and the Beneficiary failed to give this information, the repair request may be rejected.

- | ~~121.139.~~ Any follow-up feedback given to the Beneficiary, either during the repair period, after additional tests and rejection or acceptance of the repair action, or once the trouble is fixed, will be through "080093122@belgacom.be", again insuring continuity and consistency.
- | ~~122.140.~~ The escalation procedure document for the repair can be found on the Broba II web site.

9.7. Wrongful repair request

- | ~~123.141.~~ In case of a repair request where the fault was not caused by Belgacom and Belgacom has performed work for that repair request, useless costs are made by Belgacom. To encourage the Beneficiary to perform a check first on the loop and on the connected equipment, Belgacom will bill an incentive fee to the Beneficiary. There will be an indication of the trouble ticket reference and the cause of the wrongful repair.

10. Phases in the provisioning of the Broba II ADSL or SDSL Service

~~124.142.~~ The way of provisioning the Broba II ADSL or SDSL Service to the Beneficiary will evolve according to the following 2 successive Phases: Friendly User Testing Phase and Full Commercial Phase

10.1. Friendly User Testing Phase

~~125.143.~~ During the Friendly User Testing phase, later referred to as FUT, Belgacom will introduce and support the Beneficiary to get acquainted with the processes and systems in scope of the Broba II ADSL or SDSL Service.

~~126.144.~~ Each of the Parties will have to agree on the date of successful completion of the Friendly User Testing Phase. The FUT phase should cover a period of 10 working days.

~~127.145.~~ For BROBA over ATM, the FUT Phase is executed at one ATM Access Point, linked to at maximum two LEX's: one local, one zonal or interzonal. The number of 'friendly user' End Users (to be provided by the Beneficiary) is set at 24 per Beneficiary.

~~128.146.~~ For BROBA over Ethernet, the FUT Phase is executed at one Service PoP, linked to at maximum two LEX's. The number of 'Friendly' End Users (to be provided by the Beneficiary) is set at 24 per Beneficiary.

10.2. Full Commercial Phase

~~129.147.~~ The Full Commercial Phase will entirely be based on Beneficiary's forecasts for the Broba II ADSL or SDSL Service - provided the Beneficiary follows and respects the forecasting rules applicable between the Parties - and on the firm orders transmitted by The Beneficiary. Firm orders given by the Beneficiary must be reasonable and progressive in order to avoid that the order intake services of Belgacom are overloaded by large amounts of initial orders.

Appendix A: Statement of requirements, template for the Beneficiary

1. General

~~130.148.~~ This appendix includes a non-exhaustive list of items that should be included in the Statements of Requirements (SOR). This template is only a guideline. It is the freedom of both parties to discuss the content of the SOR.

2. Basic information

2.1. Registered name and address of Customer

Customer name :
Address :
Postal code and city :
Country :
Telephone number :
Fax number :
VAT registration number:
Trade register (*) :

2.2. Confidentiality agreement

~~131.149.~~ The Parties can choose to sign a confidentiality agreement as part of the SOR. The statements included in this agreement are to be determined by the parties

2.3. Key Contacts list

3. Key project dates

	Date required by Beneficiary	Indicative dates from Belgacom
Requested date to start Friendly User Test		
Requested bringing into service date of BROBA II ordering		

4. BROBA II Products and Services Customer wishes to obtain from Belgacom

[132:150.](#) Please indicate what services you wish to obtain from Belgacom in scope of Broba II ADSL or SDSL.

(SD = Service Description)

Name	Interest
Broba II ADSL with Voice on PSTN	Yes/no
Broba II ADSL with Voice on ISDN	Yes/no
Broba II ADSL with Voice on PSTN with Telecom Installation	Yes/no
Broba II ADSL with Voice on ISDN with Telecom Installation	Yes/no
Broba II ADSL without Voice	Yes/no
Broba II SDSL with Telecom Installation	Yes/no
Small Network Adaptations	Yes/no

Appendix B: Description of the Forecasting Process

1. General Principles

1.1. ADSL

~~133.~~151. This chapter describes the forecast process. The forecasts are mandatory to guarantee to respond to orders placed during the provisioning period and to respect the repair timers. This is needed to help Belgacom to plan a reasonable capacity to fulfil ~~Beneficiary~~customer's demand.

~~134.~~152. Beneficiaries are guaranteed that Belgacom will set-up the necessary resources for the period concerned to meet its market needs, independent of the needs of other Beneficiaries. In addition, the forecast entitles the Beneficiary to the conditions for delays determined in the Service Level Agreement.

~~135.~~153. For the orders exceeding the forecasts no guarantee will be offered and they will be carried out, as soon as possible, according to the remaining capacity available. If the forecasted volumes cannot be installed, Beneficiary will be informed within 30 working days and parties will cooperate to find the most acceptable solution.

1.2. SDSL

~~154.~~ Subject to evolution of the request for this product, the forecast is not mandatory. However, if a Beneficiary wishes to transmit them and to help Belgacom to plan a reasonable capacity to fulfill Beneficiary's demand, the following process and format will be to follow.

2. Submission of forecasts by the Beneficiary

~~136.~~155. The Beneficiary shall submit on a monthly basis to Belgacom a rolling forecast for the service concerned, at the requested level of detail. Forecasted volumes will be provided by month.

~~137.~~156. Forecasts must be sent to the SPOC of Belgacom as indicated in this offer. The submission of the forecasts will be done not later than one month prior the start of first forecasted period in time. Forecasting shall be done through the use of the templates provided by Belgacom. These templates will only be considered as valid when they are properly completed. In case data is missing or is not correct, the forecast will be rejected (within 5 working days following its reception). In the latter case, the reasons of rejection will be indicated on the template by Belgacom.

~~138.~~157. For the three first series of forecasts submitted by the Beneficiary, both Parties will enter into good faith discussions about the submitted forecasts and the feasibility to implement the forecasts concerned.

3. Processing of Forecasts

139-158. The forecasting system in scope of this offer is split in 2 parts to cover the specific needs of the divisions "Planning & Field Operations" & "Customer Operations" of Belgacom. Both parts consist on rolling forecasts of validated orders (new lines, change owner & convert included), with monthly submissions.

- The first part, spread over one year, must be established by sub-area/area and ventilated by product (BROBA II ADSL, ~~BROBA II~~ Reach Extended ADSL2, ~~and~~ ADSL2+, ~~and~~ SDSL each of them with and without ~~voicecustomer visit, if applicable for the product-wov~~). The months 1 to 6 are binding. The months 7 to 12 are indicative. ~~After a 4 month learning curve following the start of the new NTP process, a split per installation type (with or without customer visit) instead of per product type (with or without voice) will be required.~~
- The second part, spread over 6 months, must be established by telephone zone, by product (BROBA II ADSL, ~~BROBA II~~ Reach Extended ADSL2, ~~and~~ ADSL2+ ~~and~~ SDSL, without split with or without ~~voicecustomer visit~~. This part of the forecasts is indicative, except for ADSL2+ for which the forecast is binding.
- The forecasted volumes are the number of orders defined by the following actions: PROVIDE NEW and PROVIDE CHANGE OWNER, and for which a VALIDATE message will be sent by Belgacom in the forecasted month. The orders defined by the action PROVIDE CONVERT are indicated in a dedicated table.

	Geographic name	Telephone zone
Sub-area 1.1	"West" Vlaanderen	050, 051, 056, 057, 058, 059
Sub-area 1.2	"Oost" Vlaanderen	09, 052, 053, 054, 055
Sub-area 2.1	"Antwerpen"	03, 015
Sub-area 2.2	"Vlaams-Brabant" & Limburg	011, 012, 013, 014, 016, 089
Area 3	Brussels	02
Area 4	Hainaut & Brabant wallon	010, 060, 064, 065, 067, 068, 069, 071, 081
Area 5	Liège, Namur & Luxembourg	04, 019, 061, 063, 080, 082, 083, 084, 085, 086, 087

Deviations between successive forecasts

140-159. The volumes forecasted at month M will be compared with the volumes forecasted at month M-1. For each forecasted month common to the 2 successive forecasts, the maximum deviation between the successive forecasts of this month at month M and at month M-1 will be – 30 % to + 30 % (or 10 lines for "Planning & Field Operations" and 50 lines for "Customer Operations") .

141.160. The table below shows the allowed deviations between 5 months of 2 successive forecasts (the 6 last months must be filled in only for the "Customer Operations" forecast and are indicative).). The same deviation of 30 % is applicable for month 2 till month 5.

<u>142.1</u>							Indicative					
Month	1	2	3	4	5	6	7	8	9	10	11	12
Month 0	A ₀	B ₀	C ₀	D ₀	E ₀	F ₀	G ₀	H ₀	I ₀	...	...	...
Month 1	B ₁	C ₁	D ₁	E ₁	F ₁	G ₁	H ₁	I ₁	...	...	...	...
Month 2	C ₂	D ₂	E ₂	F ₂	G ₂	H ₂	I ₂	...	...	...	...	...

- B₁ between B₀ – 30 % and B₀ + 30 %
- C₁ between C₀ – 30 % and C₀ + 30 %
- D₁ between D₀ – 30 % and D₀ + 30 %
- E₁ between E₀ – 30 % and E₀ + 30 %
- F₁ between F₀ – 30 % and F₀ + 30 %
- G₁ new entry value (reference for subsequent deviation)

143.162. If the Beneficiary submits forecasts which are higher than the effective number of orders placed, the difference between forecasted volumes and effective orders will be used as reference to lower the volume for which the SLA will be applicable in the subsequent month. Moreover, in case of repeated over forecasting, Belgacom reserves the right to invoice the Beneficiary in proportion to the estimated unused operational resources.

Appendix C: Setting up of the electronic messaging system

144.163. For any changes which may have a significant impact on the system (new types of messages or new exchange process), Beneficiaries shall be notified at least 6 months in advance with a high level description of the impact and with a structure of the documentation. Belgacom will provide detailed impact and documentation 3 months prior start of the modifications.

145.164. For smaller changes, Beneficiaries shall be notified at least 3 months in advance with a high level description of the impact and with a structure of the documentation. Belgacom will provide detailed impact and documentation 1 month prior start of the modifications.

146.165. The BIPT will be informed in any case.

147.166. Concerning the periods of notice, the BIPT can allow exceptions

4. Provisioning of order templates

148.167. The order form XML templates are provided in advance to The Beneficiary.

5. Provisioning of encryption keys

149.168. Only Beneficiaries who have signed this offer will obtain the encryption keys in order to sign and encrypt the message. As soon as The Beneficiary and Belgacom reach an agreement on the start date for Broba II ADSL ordering, the Belgacom encryption keys will be provided to the Beneficiary but it is the responsibility of the Beneficiary to get its own certificate from a Certification Authority and to provide it to Belgacom. All messages that are sent to the WDC e-mail address before the start date for Broba II ADSL ordering for that Beneficiary will be ignored.

150.169. Belgacom advises the Beneficiary to use one of the following Certification Authorities, recognized in Belgium :

- PersonalSign 3 Pro™ Certificate
(http://www.globalsign.net/digital_certificate/personalsign/index.cfm)
- Certipost E-Trust Primary CA for Normalised certificates
(http://www.certipost.be/en/article.php3?id_article=26)

6. General Concept of the electronic messaging system

151.170. The communication process for the Broba II ADSL Service between The Beneficiary and Belgacom is based on SMTP Mail for the transfer, a simple Ack-Nack protocol and attachment files with a predefined XML format.

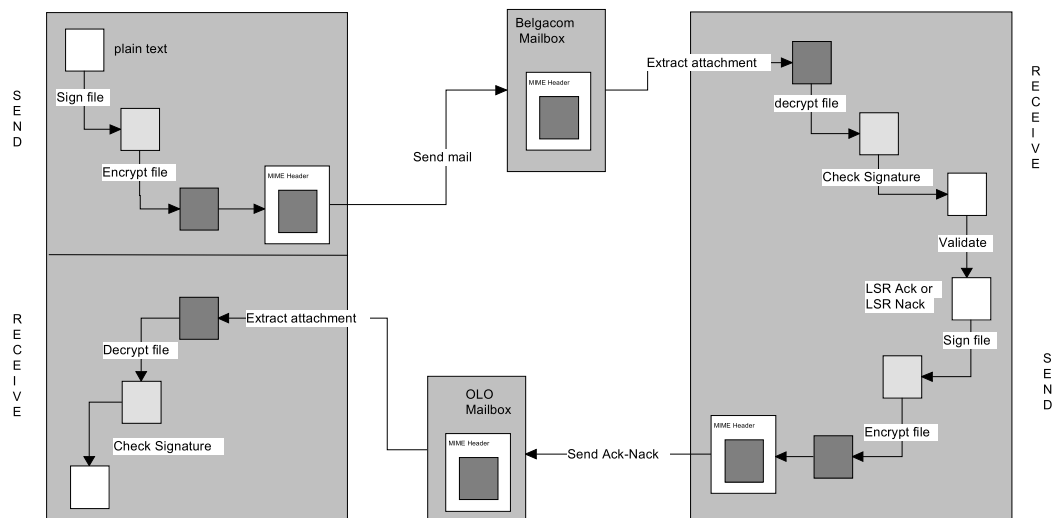


Fig. 5

- [152.171.](#) The sender prepares the attachment file in the predefined XML format, signs it, encrypts it, attaches it to an e-mail and sends it to the other Beneficiary's mailbox (agreed e-mail address).
- [153.172.](#) At the other side the attachment is extracted, decrypted and the signature is verified. After successful reception of the attachment file, an LSR Ack message is sent back to the originator of the e-mail. In case of non-conformity of the attachment, a LSR Nack message is sent back to the originator of the e-mail.
- [154.173.](#) All information exchanged must be encrypted and signed. The reason for the encryption is that since the information travels over the Internet it must be made sure that others than the addressee will not be allowed to read or modify the attachment file. The information in the attachment file is considered to be confidential. The reason for the electronic signature is that we must be sure that the sender can be authenticated and can act in the name of The Beneficiary. All these steps will be discussed in further detail in the next chapters.

7. Mail Format

7.1. General

- [155.174.](#) All e-mails sent must be compliant with the MIME 1.0 standards and use following character set: us-ascii.
- [156.175.](#) The content of the subject field is "LSR", "LSR Ack" or "LSR Nack".
- [157.176.](#) Each e-mail must contain one and only one attachment (the actual data file in XML format and the triple DES key are incorporated into one file).

158.177. Only two e-mail layouts are accepted:

1) Multipart mixed:

Content-Type: multipart/mixed;

Followed by the body part:

Content-Type: text/plain; charset=us-ascii

Content-Transfer-Encoding: **base64**

And the attachment:

Content-Type: application/octet-stream; name=WDC_ID999999999_yyyymmdd_nnnnnn.xml

Content-Transfer-Encoding: **base64**

Content-Disposition: attachment; name= WDC_ID999999999_yyyymmdd_nnnnnn.xml

The body part of the e-mail is not used, but the format is accepted, since some e-mail tools always generate a body part, even though no body text is supplied.

2) Only the attachment:

Content-Type: application/octet-stream; name=

WDC_ID999999999_yyyymmdd_nnnn.xml Content-Transfer-Encoding: **base64**

Content-Disposition: attachment; name= WDC_ID999999999_yyyymmdd_nnnnn.xml

Important Note: As shown in the example above, the value for Content-Transfer-Encoding must be base64.

7.2. Belgacom e-mail addresses

159.178. The e-mail address to be used by The Beneficiary for the sending of the Broba II ADSL Service related e-mails is WDC@belgacom.be

160.179. Identification of the sender will be based on the certificate and not on the 'from:' field. It is however advised to fill in the 'from' address with a proper value.

161.180. Only ONE e-mail address and ONE certificate per Beneficiary is allowed. In a similar way the e-mails to The Beneficiary will be sent to ONE and only ONE e-mail address. This e-mail address must be communicated to Belgacom together with the certificates.

7.3. Mail attachment naming

162.181. The name of the attachment file is constructed as follows:

WDC_ID999999999_yyyymmdd_nnnnnn.xml

Where:

WDC:	Start identifier for all Broba II ADSL messages
ID999999999:	Belgacom Customer ID of The Beneficiary.
yyyymmdd:	Date of the request
nnnnnn:	Unique sequence number of the request

Incorrect named attachment file will be rejected.

Example:

WDC_ID000573521_20001207_000015.xml

8. Electronic encryption and signature

8.1. Technical implementation

Sign attachment

[~~163.182.~~](#) The first step is to sign the attachment file with the sender's private key (PKCS #12 format). The result is the signed data. It is stored in a PKCS #7 file, which includes:

- the attachment file
- the signature of the sender
- the sender's certificate
- the CA's primary certificate
- the CA's root certificate

[~~164.183.~~](#) The CA (Certifying Authority) is responsible for delivering the certificate and the accompanying keys.

[~~165.184.~~](#) The PKCS #12 file contains both the private keys of the client and the client's certificate.

Encrypt attachment

[~~166.185.~~](#) According to the PKCS #7 standard, the file is encrypted with a secret session key. It results in an encrypted-signed data file. The secret session key is encrypted with the public key of the receiving server. Both the encrypted-signed data PKCS #7 file and the encrypted secret key are incorporated into one file and are sent to the receiver.

Decrypt attachment

[~~167.186.~~](#) Each Encrypted file includes:

- the encrypted secret key
- the encrypted signed data object

168.187. The receiver decrypts the secret key file with its private key. The result is a file containing the secret key generated by the sender. With this decrypted secret key, the receiver can decrypt the encrypted (Triple-DES) signed data (PKCS #7) object. It results in a decrypted signed data (PKCS #7) object.

Check Signature

169.188. The decrypted signed data (PKCS #7) object contains:

- the attachment file
- the signature of the sender
- the sender's certificate
- the CA's primary certificate
- the CA's root certificate

170.189. Once the decryption phase is ended, the check of the signature and of all the certificates of the signature of the sender can start. The receiver checks the signature contained in the PKCS #7 file thanks to the public key of the sender. The receiver also checks the certification chain of the signature.

171.190. The receiver directly fetches the CA's root certificate of the sender from the CA.

172.191. This certificate is introduced in the certification chain contained into the PKCS #7 file. The client's certificate of the sender must match with the CA's primary certificate of the sender, which one in its turn must match, with the CA's root certificate of the sender fetched by the receiver.

173.192. If the certification chain is kept, the signature is removed from the PKCS #7 file. The result is a plain text file.

8.2. Software

174.193. Belgacom will deliver to The Beneficiary a certificate and software for the encryption and signature. Also Belgacom delivers the documentation on the usage and installation of the provided software. Belgacom does NOT deliver packages like JAVAMail or the Java Activation Framework. They should be retrieved from the SUN Microsystems website, because The Beneficiary must agree with the linked copyrights. The software will be delivered in such a form that Beneficiary can install it and use it. Further integration in the own IT system is the responsibility of The Beneficiary.

8.3. Certificate

175.194. Each involved party must ask a Certificate. The Certificate binds the identity (for example Name and E-mail address) to a Public Key. The proof of binding is contained within the Certificate so that anyone in possession of a Certificate can satisfy himself or herself that the identity within the Certificate is indeed bound to the accompanying Public Key.

176.195. Beneficiaries are free to choose a certificate from another vendor but it must fulfil the same conditions as above.

177.196. Every Beneficiary must transit its certificate to Belgacom. The Beneficiary must also inform Belgacom regarding the Certification Authority used.

9. Message overview

9.1. Summary of messages

Message name	From	To
Attachment handling messages		
LSR Ack	Customer	BGC
LSR Nack	Customer	BGC
LSR Ack	BGC	Customer
LSR Nack	BGC	Customer

9.2. Attachment handling messages

LSR Ack

178.197. The LSR Ack message sent by the receiver is the proof for the sender that the attachment file was received and validated according to the encryption and digital signature definition, without any errors. It does NOT give any information on the contents nor the format of the attachment file (individual requests). It is the responsibility of the sender to make sure a LSR Ack is received for each sent e-mail.

LSR Nack

179.198. The LSR Nack message is sent if the received attachment file can not be validated according to the encryption and digital signature definition. If the sender receives this LSR Nack message he knows the receiver did NOT handle the attachment file. It is up to the sender to find out the problem, correct it and if necessary resent it. In case of a LSR Nack, a manual intervention is needed to solve the problem. In case of reception of non-signed attachment files no LSR Nack message is sent since the identity of the sender can not be guaranteed. These e-mails and attached files are removed from the system.

10. Communication Standards

10.1. SMTP Standard

- | [180-199.](#) The objective of Simple Mail Transfer Protocol (SMTP) is to transfer e-mail reliably and efficiently.
- | [181-200.](#) SMTP is independent of the particular transmission subsystem and requires only a reliable ordered data stream channel.
- | [182-201.](#) An important feature of SMTP is its capability to relay e-mail across transport service environments. A transport service provides an inter-process communication environment (IPCE). An IPCE may cover one network, several networks, or a subset of a network. It is important to realize that transport systems (or IPCEs) are not one-to-one with networks. A process can communicate directly with another process through any mutually known IPCE. Mail is an application or use of inter-process communication. Mail can be communicated between processes in different IPCEs by relaying through a process connected to two (or more) IPCEs. More specifically, mail can be relayed between hosts on different transport systems by a host on both transport systems.
- | [183-202.](#) See RFC 821, SIMPLE MAIL TRANSFER PROTOCOL, Jonathan B. Postel, August 1982 for a detailed description of SMTP.

10.2. MIME standard

- | [184-203.](#) Multipurpose Internet Mail Extensions defines a message representation protocol specifying considerable detail about US-ASCII message headers, and leaves the message content, or message body, as flat US-ASCII text. This set of documents, collectively called the Multipurpose Internet Mail Extensions, or MIME, redefines the format of messages to allow for:
 - textual message bodies in character sets other than US-ASCII;
 - an extensible set of different formats for non-textual message bodies;
 - multi-part message bodies;
 - textual header information in character sets other than US-ASCII.
- | [185-204.](#) Related Documents:
 - RFC 2045: Multipurpose Internet Mail Extensions Part One: Format Of Internet Message Bodies Freed & Borenstein, November 1996
This document specifies the various headers used to describe the structure of MIME messages.
 - RFC 2046: Multipurpose Internet Mail Extensions Part Two: Media Types, Freed & Borenstein, November 1996

This document defines the general structure of the MIME media typing system and defines an initial set of media types.

RFC 2047: Multipurpose Internet Mail Extensions Part Three:

This document describes extensions to RFC 822 to allow non-US-ASCII text data in Internet mail header fields.

RFC 2048: This document specifies various IANA registration procedures for MIME-related facilities.

RFC 2049: The fifth and final document, RFC 2049, describes MIME conformance criteria as well as providing some illustrative examples of MIME message formats, acknowledgements, and the bibliography.

See <http://www.rfc-editor.org/>

10.3. DES (Data Encryption Standard)

186.205. The Data Encryption Standard specifies a cryptographic algorithm that converts plaintext to ciphertext using a key, a process called encryption. The same algorithm is used with the same key to convert ciphertext back to plaintext, a process called decryption. The DES consists of 16 "rounds" of operations that mix the data and key together in a prescribed manner using the fundamental operations of permutation and substitution. The goal is to completely scramble the data and key so that every bit of the ciphertext depends on every bit of the data and every bit of the key (a 56-bit quantity for the DES). After sufficient "rounds" with a good algorithm, there should be no correlation between the ciphertext and either the original data or key.

187.206. The DES uses 16 rounds for several reasons. First, a minimum of 12 rounds was needed to sufficiently scramble the key and data together; the others provided a margin of safety. Second, the operation of 16 rounds would return the key back to its original position in an electronic device for the next use when used in accordance with the published algorithm. Third, numerous "rounds" were needed to keep an analyst or adversary from working simultaneously forward and backward and "meeting in the middle" with a solution.

See <http://security.isu.edu/isl/des.html> for more information.

10.4. PKCS #7: Cryptographic Message Syntax Standard

188.207. This standard describes a general syntax for data that may have cryptography applied to it, such as digital signatures and digital envelopes.

See <http://www.rsasecurity.com/rsalabs/pkcs/pkcs-7/> for a detailed description of the standard.

11. Certificate procedure

11.1. General procedure

- 4) Apply for a certificate to certification authority.
- 5) Provide the public key in a DER format to Belgacom.
- 6) Provide your WDC e-mail address to Belgacom (via Interconnect Manager)
- 7) Install the **Belgacom Certificate** on your system. This you will need to verify signatures and to encrypt files.
- 8) Install the in point 3 described software.
- 9) Integrate the process in your own ICT systems.
- 10) Perform tests (see below)

11.2. Software requirements

189-208. Following software will be delivered by Belgacom :

MMT API containing: jcrypto classes and Cipher classes (This API contains methods for the encryption, decryption, signing and verifying of signature).

190-209. A set of classes implementing the API and to be tailored to the specific needs:

DECRYPTFILE.JAVA	: DECRYPT SPECIFIED FILE
ENCRYPTFILE.JAVA	: ENCRYPT SPECIFIED FILE
SIGNFILE.JAVA	: SIGN SPECIFIED FILE
VERIFYFILE.JAVA	: VERIFY AND EXTRACT SIGNATURE ON SPECIFIED FILE
SENDMAIL.JAVA	: SEND SPECIFIED FILE AS ATTACHMENT USING JAVAMAIL.
READMAIL.JAVA	: EXTRACT THE ATTACHMENT FROM A MAIL AND SAVE IT TO A FILE (USES JAVAMAIL)

191-210. Some of the above-described classes use JAVAMail functionality. The JAVAMail software and related classes must be retrieved from the WebPages of SUN Microsystems (license agreement)

- Java Virtual Machine software version SUN JAVA **1.3**
 - javamail.jar : JavaMail API Version 1.1.3
 - activation.jar : Java Activation Framework Version 1.0.1

These 2 should **only be installed if the SendFile and ReadMail classes are used**. If the files are included as attach in an ordinary mail system, they're not needed.

192-211. In case the ldap class from the MMT API is used, following software is also mandatory :

- ldap.jar : Java Naming and Directory Interface Version 1.2
- providerutil.jar : Java Naming and Directory Interface Version 1.2
- jndi.jar : Java Naming and Directory Interface Version 1.2

12. E-Mail software

~~193-212.~~ This document serves as a guideline to implement the electronic communication solution, using the software delivered by Belgacom. It explains installation and implementation concepts without going into detail on the technical level for the different IT platforms. It is not the purpose of this document to give you a plug and play solution, but it helps you in creating the minimal environment needed for the Secure Mail communication.

12.1. JDK Software

~~194-213.~~ Download the correct JDK 1.3 software kit depending on the platform you will be working on (Solaris and PC can be found on the site of SUN (<http://www.java.sun.com/j2se/1.3/>) , for other platforms see the web site of your vendor).

~~195-214.~~ Install the JDK software according to the accompanied installation notes.

Please remember to set your PATH (and CLASSPATH , but -classpath option is preferred in Java 1.3) variables after the installation.

12.2. Javamail and Java Activation Framework (optional)

~~196-215.~~ Download the JavaMail and Java Activation Framework software kit that can be Solaris and PC can be found on the site of SUN.

JavaMail V1.1.3:

http://www.java.sun.com/products/javamail/javamail-1_1_3.html

Activation Framework V1.0.1:

<http://java.sun.com/products> => [select JavaBeans Activation Framework](#)

and install the software according to the accompanied installation notes.

12.3. MTM API

~~197-216.~~ Here 2 possibilities exist:

1. Using jar files:

- create a directory to store the jar files (preferably, but not necessary, a subdirectory of the JDK directory).
- unzip the MTM-API zip file into this directory.
 - CypherDecrypt.jar
 - CypherEncrypt.jar
 - Jcrypto.jar

- Ldap.jar (**only needed in certificate validation is performed**)
 - SignatureSign.jar
 - SignatureVerify.jar
- add each jar (with the directory path) to the CLASSPATH.
2. Using classes files:
- create a directory (classes subdirectory) to store the classes (preferably, but not necessary, a subdirectory of the JDK directory).
 - unzip the MTM-API zip file into this directory.
 - unzip each individual jar file (using the jar utility, Winzip or any other unzip utility following the PKWARE definition) into class files in the classes directory. The extract will automatically created all needed subdirectories
 - delete the jar files.
 - add the classes subdirectory to the CLASSPATH

198.217. Now you should have three subdirectories in your classes directory namely:

- be
- jcrypto
- Meta-inf.

199.218. During the unzipping the file 'manifest.mf' in the directory Meta-inf can be overwritten, since this includes only information on the jar files and therefore will not needed when storing the individual classes.

12.4. API Documentation

200.219. Create a subdirectory in the JDK/docs subdirectory and unzip the API-doc zip file. The starting point is tree.html.

12.5. Set of classes implementing the API

201.220. Unzip the zip file with the extra classes file into the classes subdirectory (if option 1 in the previous step was chosen, the subdirectory must first be created and the directory must be added into the CLASSPATH variable).

12.6. Implementation

202.221. Depending on the level of automation in your IT systems one of following options can be implemented.

- The classes can be integrated into a shell or batch script implementing an error handling mechanism.
- A user interface can be developed which calls the appropriate classes in the right order and can present file selection via File selection boxes.

- Each individual step can be executed manually. See next chapter for n section.
- ...

[203.222.](#) Modify the classes if needed and compile them (javac <name of class>). The class files must be put on the classes directory.

[204.223.](#) The order of calling is following:

- The sending process:
 - SignFile (see parameter list in the source file)
 - EncryptFile (see parameter list in the source file)
 - SendFile **or** include the resulting file as an attachment in your mailtool.
- The receiving process:
 - ReadMail **or** save the attachment using a mailtool
 - DecryptFile (see parameter list in the source file)
 - VerifyFile (see parameter list in the source file)

[205.224.](#) Important note: The Readmail class expects a single mail file as input. The class is unable to extract individual mail from the mailbox. The easiest solution to this is auto-forwarding your mails to individual files with unique names.

12.7. Execution

[206.225.](#) If the CLASSPATH variable is set correctly, execution of the different classes is performed with the following command : java classname (without .class extension) [input parameters list]

[207.226.](#) e.g. java SignFile <name and location of the plain text file to be signed> <name and location of private key> <name and location signed file> <name and location of password file>

[208.227.](#) in the other case provide the -classpath option followed by the needed jars.

Appendix D: XML Back-up procedure

1. General

[209-228.](#) The back-up plan should be seen as an abnormal operational mode, which will cause extra costs, resources and processes for order handling, both at Belgacom and Beneficiary side.

[210-229.](#) In the interest of both parties, back-up operational mode will always be an exception and should be as short as possible. If unavoidable and in a spirit of good partnership:

- First focus of both parties will be to solve the problem and return as soon as possible to the normal operational mode (standard encrypted XML procedure). Both parties will closely co-operate together to achieve this goal. SPOCS will be assigned at Beneficiary and Belgacom side to this purpose and facilitate the communication during the back-up procedure.
- Both parties to continue service will do best effort. However volumes and lead times of the 'normal operational mode' can't be guaranteed.
- The back-up operations mode won't be subject to any cost recuperation by one party from another, but focus will be instead on 'make things work'.

[211-230.](#) In case there is no XML-procedure in place or if this procedure is not sufficient nor effective for a particular process (e.g. migrations) all orders can be given by fax, letter, e-mail

2. Back-up procedure

[212-231.](#) The back-up procedure consist out of different steps:

Phase 1: Assignment of Beneficiary and Belgacom SPOCs for back-up procedure

[213-232.](#) Together with the signing of a contract, parties will exchange the names and co-ordinates of their SPOC for this back-up procedure.

Phase 2: Fault detection

[214-233.](#) A '**general system error**' is detected in the normal operational mode by at least one of the parties.

[215-234.](#) This can be:

- At the level of the XML transfer:
One of the parties is unable to create/send/receive/decrypt/... XML files
- At the level of the message transfer:
One of the parties doesn't receive Ack/Nack messages, which leads to the suspicion that the other party receives none of his messages.

[216-235.](#) An Ack/Nack message should be received within 4 hours after sending of a message to the other party. However accidentally an Ack/Nack message may be lost, e.g. on the Internet or in the IT-systems of the receiving party. Care should therefore be taken to jump to the conclusion the Message Transfer System is not working properly because of a 'general system error', based on the loss of only one or a limited number of Ack/Nack message.

[217-236.](#) General remark: Problems, which don't assume a general system error, will always be solved **on a case-by-case basis**, without triggering a back-up procedure. An example of such problem, which doesn't assume a general system error, may e.g. be the sporadic loss of Ack/Nack messages by one Beneficiary, while the system is working properly for all other Beneficiaries.

[218-237.](#) The SPOCs will commonly assess the nature of the problem (general system error or not). In either case, the communication channel between the assigned SPOCs will also be used to solve 'non general system' kind of problems on a case-by-case.

Phase 3: problem solving

[219-238.](#) The SPOCs will get in contact in order to inform each other of the problem. They will assess the impact of the problem and set up an action plan to solve it. **In this phase they will try to get a solution without proceeding to the a-normal back-up operational mode.** They will agree on a timing, within which the fault should be resolved and normal operational mode can be resumed. Standard this timing will be 4 hours to give the (IT) teams the chance to solve the problem. Another timing may be convened between the SPOCs, depending on the nature of the fault and the impact.

[220-239.](#) During trouble resolution both SPOCs will closely stay in contact with each other to follow up progress of solution.

[221-240.](#) If the fault is resolved within the agreed timing, normal operational mode will be resumed after the needed testing (see phase 6).

[222-241.](#) If the fault is not solved within the agreed timing, SPOCs will get in contact in order to start up the next phase (see phase 4) or will agree to stay in phase 3 for an additional timing.

Phase 4: message exchange by e-mail with non-encrypted order in XML format

[223-242.](#) After expiration of the agreed time during phase 3 without trouble resolution, SPOCs will get in contact to start up phase 4, i.e.:

[224-243.](#) Start-up the a-normal 'back-up' operational mode for message exchange, based on e-mail with non-encrypted order in XML format.

[225-244.](#) SPOCs will agree previously on:

- The nature of the e-mail exchange: bi-directional or uni-directional. Although bi-directional will be the most commonly mode, uni-directional e-mail exchange may be a pragmatic (temporarily) solution.
- e-mail addresses to be used to exchange message

- The number of messages (per day) that will be transmitted in this mode. This operational mode will limit the volumes, capable to be treated by the existing resources. To assure a minimum service and smooth return to normal mode (with minimal 'manual' orders left) this is an essential part of the procedure.

226:245. SPOCs will closely stay in contact during this phase in order to follow up operational performance, action plan and trouble solving.

227:246. As soon the problem is solved, normal operational mode will be resumed after the needed testing (see phase 6).

Phase 5: message exchange by fax in XML format

228:247. This phase is to be avoided as much as possible, as it will demand re-typing of all data (with the need of extra resources, fully manual processes and the generation of data quality issues). It will only be accepted in case the e-mail procedure does not work (e.g. public Internet network down) and return to phase 2 will be done as soon as possible.

229:248. This phase will therefore be exceptional and previous agreement between SPOCs is needed. The fax, exchanged between the parties, will be the non-encrypted XML, that otherwise would be sent by e-mail.

230:249. The Fax numbers will be communicated between parties when applicable.

Phase 6: test and resume normal operation

231:250. As soon as the problem is solved some test will be done, i.e.:

- When the problem is solved, the concerned party will firstly test his systems. E.g. If the fault was at Belgacom side, Belgacom will perform an end-to-end test with test messages of a dummy Beneficiary (or the real Beneficiary if agreed upon).
- A first message will be processed between the two parties and proper transfer will be checked.
After confirmation by both parties everything is up and running properly again, no e-mail or fax messages will be accepted and return to the standard encrypted XML procedure will be done at once.

Important note:

232:251. As the Beneficiary may not yet have his XML system in place immediately at the start of the contract, Belgacom can accept to start the service based on the back-up transfer system of phase 4 (e-mail with non encrypted order in XML format). This starting phase is however limited in time (max. 1 month) and volume (max. 1 order/day), unless otherwise agreed upon between parties. Intention will always be to go as soon as possible to the normal operational mode, i.e. the standard encrypted XML procedure.

Appendix E: Templates

1. End User line Forecasting templates

233-252. Remarks:

- M_i refers to the month in which the forecasting templates are submitted.
- All quantities (M_1 to M_{12}) are incremental values.
- Each template will contain a heading with an identification field. This identification will be filled out by the Beneficiary and will contain info on the Beneficiary's reference and the edition of the template.
- The reception date will be filled out by Belgacom.

1.1. "Planning & Field Operations" Forecast

Forecasting Template for Broba II Orders						
Customer reference:						
Service : BROBA II ADSL, Reach Extended ADSL2, ~~or~~ ADSL2+ or SDSL						
Edition:						
Reception date:						
Telephone Zone	M_1	M_2	M_3	M_4	M_5	M_6
02						
03						
04						
09						
...						
089						

1.2. "Customer Operations" Forecast

Forecasting Template for Broba II Orders										
Customer reference:										
Edition:										
Service : BROBA II ADSL, Reach Extended ADSL2, ~~or~~ ADSL2+ or SDSL										
With or Without voice										
Reception date:										
Telephone Zone	M_1	M_2	M_3	M_4	M_5	M_6	M_7	M_8	...	M_{12}
Sub-area 1.1										
Sub-area 1.2										
Sub-area 2.1										
Sub-area 2.2										
Area 3										

Area 4										
Area 5										

2. Order templates

2.1. End User line

[234-253.](#) Ordering the activation of ADSL [or SDSL](#) on an End-User line is done through XML. See for details and examples on the Belgacom CWS secured website.

2.2. Bandwidth

[235-254.](#) Ordering Bandwidth capacity, as well as changing or cancelling bandwidth is done through XML. See for details and examples on the Belgacom CWS secured website.

However, a back-up plan has been defined in case of problems. Firm orders of bandwidth per LEX shall be done through the use of the specific templates provided in section 2.2 of this Appendix.

The back-up plan should be seen as an abnormal operational mode, which will cause extra costs, resources and processes for order handling, both at Belgacom and Beneficiary side.

In the interest of both parties, back-up operational mode will always be an exception and should be as short as possible. If unavoidable and in a spirit of good partnership:

- First focus of both parties will be to solve the problem and return as soon as possible to the normal operational mode (standard encrypted XML procedure). Both parties will closely co-operate together to achieve this goal. SPOCS will be assigned at Beneficiary and Belgacom side to this purpose and facilitate the communication during the back-up procedure.
- Both parties to continue service will do best effort. However volumes and lead times of the 'normal operational mode' can't be guaranteed.
- The back-up operations mode won't be subject to any cost recuperation by one party from another, but focus will be instead on 'make things work'.

In case of use of the back-up plan, the Beneficiary has to indicate the following elements on the order form:

Access Area	Reference of the Access Area in which the VP has to be created
Lex/LDC reference	Reference of the LEX in which the VP has to be created

BGC ATM POP	Belgacom ATM Access Point to which Beneficiary is connected
Access Line codification Number	Reference of the Access Line on which the VP has to be created
VP#	Number of VP the OLO has on a specific DSLAM VP1: First VP of the Beneficiary on the DSLAM VP2: Second VP of the Beneficiary on the same DSLAM VP3: Third VP of the Beneficiary on the same DSLAM VP4: Fourth VP of the Beneficiary on the same DSLAM VP5: Fifth VP of the Beneficiary on the same DSLAM VP6: Sixth VP of the Beneficiary on the same DSLAM VP7: Seventh VP of the Beneficiary on the same DSLAM VP8: Eighth VP of the Beneficiary on the same DSLAM VP9: Ninth VP of the Beneficiary on the same DSLAM VP10: Tenth VP of the Beneficiary on the same DSLAM VP11: Eleventh VP of the Beneficiary on the same DSLAM VP12: Twelfth VP of the Beneficiary on the same DSLAM
Vpi OLO	Unique number OLO gives his VP on that LEX/LDC
QoS	Quality of service of the VP (UBR+ or VBR nrt or VBR rt or CBR)
PCR (Kbps)	Peak Cell Rate
SCR (Kbps)	Sustainable Cell Rate (Min. 256 Kbps per VP; granularity of 256 Kbps)
PCR/SCR	Burst ratio (1 or 2 or 3 or 4)
MCR (Kbps)	Minimum Cell Rate
Contract duration	Duration of the VP contract
Beneficiary Requested Date NEW Order date	Date at which the Beneficiary would like the Access Line ¹ to be in service
DSLAM	Coordinate of the DSLAM where the VP must terminate
VP type	Type of the VP
Remark	

236-255. The Beneficiary has to provide Belgacom with the old values and the new values of the VP(s) to modify.

BROBA II ADSL & SDSL – VIRTUAL PATH ORDERING TEMPLATE

1. General

[237-256.](#) This document concerns the ordering of a virtual path in the framework of the Belgacom Broba II (Broba II ADSL) offer.

[238-257.](#) This offer is valid for a period of four weeks from the sending date of the fax or from the signature of this Virtual Path order form.

2. Beneficiary information

Beneficiary name	
SPOC name	
SPOC function	
Phone number	
Fax number	
E-mail address	

3. Belgacom information

SPOC name	
SPOC function	
Phone number	
Fax number	
E-mail address	

4. New Virtual Path information

ID	Access Area	LEX/LDC ref.	BGC ATM POP	Access Line Codif. Nb	Vp #	Vpi OLO	QoS	PCR (Kbit/s)	SCR (Kbit/s)	PCR/SC R	MCR (Kbit/s)	Contract Duration	"NEW" Order Date	Dslam	Vp Type	Remark
1																
2																
3																
4																
...																
12																

5. Modify Virtual Path

ID	Access Area	LEX/LD C ref.	BGC ATM POP	Access Line Codif. Nb	Vp #	Vpi OLO	QoS		PCR (Kbit/s)		SCR (Kbit/s)		PCR/SCR		MCR (Kbit/s)		Contract Duration	Order Date	Dslam	Vp Type	Remark
							Old	New	Old	New	Old	New	Old	New	Old	New					
1																					
2																					
3																					
4																					
...																					
12																					

2.3. Access Line

1. General

239.258. This document concerns the ordering of an access line in the framework of the Belgacom Broba II (Broba II ADSL) offer.

240.259. This offer is valid for a period of four weeks from the sending date of the fax or from the signature of this access line order form.

2. Beneficiary information

Beneficiary name	
SPOC name	
SPOC function	
Phone number	
Fax number	
E-mail address	

3. Belgacom information

SPOC name	
Phone number	
SPOC function	
Fax number	
E-mail address	

4. Access Line information

Type of Data Link	(Belgacom-sited or Customer-sited)
Capacity	(2 Mbps or 34 Mbps or 155 Mbps)
Belgacom Location	(ATM Access Point Reference)
Beneficiary Location	(Beneficiary Site Address from which the access line has to be implemented) Note: In case of a Belgacom-sited Access Line, Beneficiary can indicate the Belgacom Location
Interfaces	See available interfaces per type of Access Line and bandwidth in <u>Annex 2</u> , Belgacom technical specifications.
Installation Fee	EUR
Data Link Rental	EUR/month (in case of Customer-sited Data Link)
Patch Line Rental	EUR/month
Beneficiary Requested Date	Date at which the Beneficiary would like the Access Line to be in service

Annex 5

BROBA II ADSL & SDSL

BASIC SERVICE LEVEL AGREEMENT

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1. Object

1. The present document defines the Terms and Conditions upon which Belgacom will deliver installation and maintenance of basic services for the Broba II ADSL & SDSL. For all operational aspects, reference is made to the Annex 4 - Planning and Operations for Broba II ADSL & SDSL.
2. The terms and conditions of this SLA are applicable within the limits of the forecasted volumes provided by the Beneficiary in line with the forecasting mechanism and deviations described in the Annex 4 (Planning and Operations).
3. The SLA conditions of the BROTSOLL are applicable to the access lines or OLO access lines as mentioned in this document.

2. Scope

4. The scope of this document is to set a framework for operational collaboration between Belgacom and Beneficiary that ensures the respect of the fixed deadlines and an acceptable quality of the provided services.
5. The intention is to minimize the risk of shortcomings and so motivate all parties to respect the thresholds set in this SLA and to provide an incentive to enhance the performance of both parties.
6. Both parties agree that the objective of this document is to optimize operational collaboration and all efforts should be taken to avoid compensations or penalty fees.
7. The working of this Service Level Agreement is subject to a learning curve, i.e. the current values included are target values that are to be evaluated on a regular basis and excessive peaks in ordering, i.e. very concentrated ordering in a very short period of time, must be analyzed when happening. This document is an evolving document that may be adapted and revised regularly.

3. Prerequisites

8. Both parties agree to respect the content of this document and to offer services as described in this document.
9. When specific follow up or support needs to be performed, both parties are obliged to provide a SPOC with its respective name, telephone number or e-mail.
10. Timers in this document expressed in days are always working days unless specified otherwise. For a timer of x days, the action must be completed before end of working day x after reception of the order or other Beneficiary message, unless specified otherwise. Timers expressed in months consist of 21 working days. Under the present document, a working day for order purposes is considered as being from 8h00 to 16h30 excluding Saturday, Sunday, Belgian and Belgacom holidays. Belgacom holidays are 2 January and 26 December.

11. In case of massive orders, provisioning will be done on project-basis. In that case, planning can be negotiated between Beneficiary and Belgacom. Beneficiary must immediately inform Belgacom when communicated volume is exceeded. In that case, although SLA will not apply, Belgacom will manage, as far as possible, this increase of orders according to its best suitability.
12. In order to ensure reasonable operational work load, the Beneficiary should see to a reasonable spread of his orders during the month. For the execution of the present Contract, the maximum daily volume intake for the concerned month is defined as 10% of the volumes projected in the forecast for this month (such maximum daily volume does not allow the Beneficiary to exceed the total forecasted volume for the concerned month). The orders exceeding on a daily basis the maximum daily volume intake are exempted from the SLA conditions. Belgacom will execute these orders on a best effort basis.
13. Timer violations outside the working hours are not logged as such and shall not be used to claim service shortage.
14. The Service Level Agreement is not valid in situations of "Force Majeure" as defined in the "General Terms of Conditions".
15. Timers that are delayed due to Beneficiary are not valid within this Basic Service Level Agreement.

4. Timers

16. This paragraph includes the most relevant timers in the operational processes framework. The purpose is that these timers will be reviewed periodically based on experience.
17. The timers included below are binding and a revision of these last is possible after BIPT approval.

4.1. Provisioning

4.1.1. Provisioning of End User Line

18. The provisioning of End User Line is the activation of the ADSL on the line of an individual End-User. Note that for the voice telephony of Belgacom, it is the End-User that receives a Basic Service for the provision of a normal connection to the public telephone network as well as maintenance work.

4.1.1.1. Validation Timer

19. As soon as an order to activate the Broba II ADSL & SDSL for an individual End-User is submitted to Belgacom through the secured electronic e-mail system (XML) or as back up procedure via non-secured electronic system and fax as described in the Annex 4 - Planning & Operations, the order will be processed for validation. The validation confirmation timer will start on the receipt of the order. This receipt is the automated acknowledge message that is sent to the Beneficiary. Messages that are incorrect, due to the reasons as described in the Annex 4 - Planning and Operations will be returned with a Not Acknowledged message. In this case, Beneficiary needs to resend the order with the corrections.
20. The validation process consists of an administrative and technical validation. The validation will be sent as soon as all validations have passed successfully. In case of not acceptance of the order, the reasons will be communicated with the respective message.
21. Based on the current experience on similar data products, the validation timer is set at 5 working days for 99% of the orders.

4.1.1.2. Implementation Done Timer

22. As soon as the implementation is done, Belgacom will notify the Beneficiary of the completion of the order. This confirmation is done by sending a message through the electronic e-mail system or by fax as a back-up procedure. This timer includes the number of days the requested Ready for Service Date was passed. The Implementation done timer is set at:

	Timer
Implementation done timer (to be respected by Belgacom)	1 working day

23. If a technical problem impedes the RFS, the Beneficiary and Belgacom need to agree on a possible approach: either continue the trouble-shooting or work out an intermediate solution. In case of an intermediate solution, this needs to be evaluated on a case-by-case basis and is not automatically possible.

4.1.1.3. Total Provisioning Timer

24. The total provisioning timer is the time frame to be respected for booking in working days taken as from the order date of the Beneficiary to the date of the Done Message. The Total provisioning Timer includes the validation of an order, the implementation and the Done notification. The total provisioning timer consists of a timer range wherein the Beneficiary can determine its Ready for Service date. Beneficiary provides the implementation day (also referred to as CRD Customer Requested Date, Due Date or Ready for Service Date) taken into account the minimum and maximum total provisioning timer. The minimum provisioning timer is indicated below. The maximum provisioning timer is set at 42 calendar days (corresponding to the maximum CRD Customer Requested Date).

25. The timers are valid in case all needed infrastructure is in place (for Broba over ATM: Access Line and Virtual Paths or Circuits; for Broba over Ethernet: OLO Access Line and VLANs). If it is not the case, timers of VPs/VC/VLANs provisioning as defined in section 29 have to be added to this timer. If a SNA is required, then it will be planned between Belgacom and Beneficiary within 20 working days as from its detection. These cases fall out of the application of SLAs.

Total provisioning timers to be respected by Belgacom:

	~~March 1, 2008~~	~~June 1, 2008~~	~~Sept 1, 2008~~
BROBA II with ~~out~~ <u>customer visit</u> ~~voice~~	~~10wd 95% incl "done"~~	~~9wd 95% incl "done"~~	8wd 95% incl "done"
BROBA II with ~~voice~~ <u>with Telecom installation</u> <u>customer visit</u>	~~14wd 95% incl "done"~~	~~12wd 95% incl "done"~~	10wd 95% incl "done"
~~BROBA II without voice~~	~~14wd 95% incl "done"~~	~~12wd 95% incl "done"~~	~~10wd 95% incl "done"~~

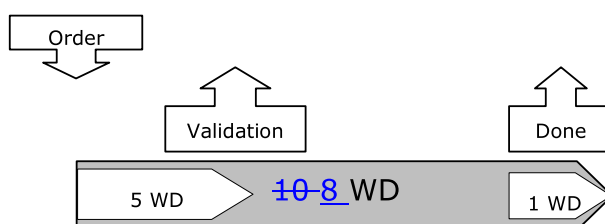
	~~March 1, 2008~~	~~June 1, 2008~~	~~Sept 1, 2008~~
BROBA II with ~~out~~ <u>voice</u> <u>customer visit</u>	~~20wd 99% incl "done"~~	~~19wd 99% incl "done"~~	18wd 99% incl "done"
BROBA II with ~~voice~~ <u>with Telecom installation</u> <u>customer visit</u>	~~24wd 99% incl "done"~~	~~22wd 99% incl "done"~~	20wd 99% incl "done"
~~BROBA II without voice~~	~~24wd 99% incl "done"~~	~~22wd 99% incl "done"~~	~~20wd 99% incl "done"~~

~~26. 4 months after the start of the new NTP process, the above mentioned provisioning timers will be transformed into "With or Without customer visit" timers instead of "With or Without voice" timers, according to the following rules :~~

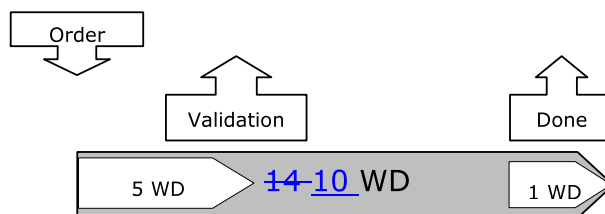
- ~~• With customer visit timers : above mentioned "Without voice" timers or "With voice with Telecom installation" timers~~
- ~~• Without customer visit timers : above mentioned "With voice" timers~~

27.26. The total provisioning timer will be the basis for the calculation of compensations. Compensations for the 95% timer are only due within the limits of the forecasted volumes that have been submitted according to the rules described in Annex 4 Planning & Operations of the present offer and for which the deviation rules are respected.

E.g.: timers for BROBA II with out customer visit ~~voice~~ without SNA, ~~as from March 1, 2008~~
(~~see above for other timers applicable as from June 1st and September 1st~~)



E.g.: timers for BROBA II with customer visit ~~out voice~~ without SNA, ~~as from March 1, 2008~~
(~~see above for other timers applicable as from June 1st and September 1st~~)



4.1.2. Provisioning of Virtual Paths, Virtual Circuits or VLANs (VPs/VCs/VLANs)

28.27. The provisioning of VPs/VCs/VLANs covers the set-up and configuration of VPs/VCs/VLANs and the modification of the existing VPs/VCs/VLANs parameters.

4.1.2.1. Set-up and configuration of VP/VC/VLAN Timer

29.28. The set-up and configuration of VP/VC/VLAN timer is related to the creation of a new VP/VC/VLAN between a DSLAM and the Beneficiary. The set-up and configuration of VP/VC/VLAN timer will start on the receipt of the order, submitted to Belgacom through the secured electronic e-mail system that is automatically sent by Belgacom to the Beneficiary if this automatic receipt sending is activated, if this is not so, the date of sending by Beneficiary prevails (XML) or as backup procedure via

non-secured electronic system and fax as described in the Annex 4. This receipt is the automated acknowledge message that is sent to the Beneficiary. Messages that are incorrect, due to the reasons as described in the Annex 4 - Planning and Operations will be returned with a Not Acknowledged message. In this case, Beneficiary needs to resend the order with the corrections. The set-up and configuration of VP/VC timer is set at:

	Timer
Set-up & configuration timer (to be respected by Belgacom)	10 working days

4.1.2.2. Modification of VP/VC/VLAN parameters Timer

30.29. The modification of a VP/VC/VLAN parameters timer is related to the modification of the parameters of an existing VP/VC/VLAN between a DSLAM and the Beneficiary. The process consists of an administrative treatment and a technical treatment of the order and requires a synchronization with the Beneficiary.

31.30. The modification of a VP/VC/VLAN parameters timer will start on the receipt of the order. This receipt is the confirmation by e-mail system that is sent automatically by Belgacom to the Beneficiary if this automatic receipt sending is activated, if this is not so, the date of sending by Beneficiary prevails or the fax transmission date (if fax was used as back-up procedure). The modification of a VP/VC/VLAN parameters timer is set at:

	Timer
Modification of VP/VC/VLAN parameters timer (to be respected by Belgacom)	3 working days

4.1.3. Provisioning of Access Line

32.31. The provisioning of access line timers follows the timers described in section 11.2, chapter 11 of the document "BROTSoLL_Main Body",

4.2. Repair

4.2.1. Repair Time on the End User line timer

33.32. The repair time on the End User line timer starts when Belgacom receives a Trouble mention based on the issue description communicated by the Beneficiary and ends at the closure of this Trouble Ticket after the feedback has been given by Belgacom to the Beneficiary. If an appointment is needed at the End-User address and the problem resides at the high bandwidth part, it is the Beneficiary that arranges an appointment at the End-User premises.

34.33. This timer is not subject to this Service Level Agreement in the following cases:

- An appointment (if absolutely needed) is not accepted at the proposed date¹, in case of absence of the End-User at appointment date, in any case of incomplete² or incorrect information to be provided by the Beneficiary with relevance for the repair process.
- Limitation/degradation of service due to spectrum management if Belgacom applied the correct rules.
- All cases covered by §35 hereafter.

	Timer
Repair timer End User line (to be respected by Belgacom)	Day of trouble ticket opening + 1 (before end of the following second working day)

35.34. For a newly installed BROBA ADSL without voice line, when the provisioning process - described in the Appendix B: "NTP process for Provide New BROBA II without voice products" of the BROBA ADSL Main Body – allowed to determine that the installation of a NTP by a Belgacom technician was not necessary, in case the trouble covered by the Trouble Ticket was due to the absence of the Network Termination Point, the repair timer will be equal to the difference between the with and the without voice provisioning timers defined in the section 4.1.1.3 "Total Provisioning Timer" of this document.

36.35. If an appointment is needed at the end-user address, the repair timers will only apply if the Beneficiary specifies in the Trouble Ticket its end-user availability.

4.2.2. Repair Time on the ATM Transport Timer

37.36. The repair time window for ATM transport is done by trouble ticket handling during working days.

38.37. The repair time on the ATM/Ethernet Transport timer starts when Belgacom receives a Trouble mention based on the issue description communicated by the Beneficiary and ends at the closure of this Trouble Ticket after the feedback has been given by Belgacom to the Beneficiary.

	Timer
Repair time Timer ATM/Ethernet Transport (at LEX level) (to be respected by Belgacom)	Day of trouble ticket opening + 1 (before end of the following second working day)

	Timer
Repair time Timer ATM/Ethernet Transport (at ATM Access Point level/Service PoP level) (to be respected by Belgacom)	4 working hours after trouble ticket opening

¹ The intervention on the End User line timer is not applicable in case appointment is scheduled with client on day later than d+1 or d+2. In this case, the timers will be applicable as from that date.

² Belgacom refers to Annex 5A "Improved SLA", section 6 , for the complete set of information

4.2.3. Repair Time on the Access Line Timer

39.38. The repair of access line timers follows the timers described in section 11.3, chapter 11 of the document "BROTSoLL_Main Body",

5. Wrongful Repair Requests

40.39. Belgacom will charge the Beneficiary with the fee related to SLA Wrongful Repair Requests (see Annex 6 – Pricing and Billing) if the fault is not attributable to Belgacom or if the fault results from the abnormal use of the line or any other Beneficiary - or end user of the Beneficiary - fault.

41.40. In case during the repair process, Belgacom performed useless actions further to Beneficiary's request, i.e. in case of absence of end-user at the appointment, incorrect information provided, Belgacom will charge the Beneficiary with the costs of those actions.

6. Terms and Conditions for Compensations

6.1. General

42.41. Compensations are applicable in the cases that Belgacom has not respected its commitment within the delay or on the date agreed with the Beneficiary, excluding the cases in which the Beneficiary is responsible for the delay or in the case of force majeure.

43.42. This SLA guarantees 100 % of timers. However all troubles can not be solved within these timeframes.

- For repair, the percentage of non wrongful repair tickets for which a Beneficiary may request compensations for a specific month varies in function of the percentage of wrongful repair of the same Beneficiary and of the same month, according to the following table :

% wrongful repair	% repair for which compensations are applicable
$X \leq 10\%$	99%
$10\% < x \leq 20\%$	95%
$X > 20\%$	90%

- For provisioning, compensations will never be applicable to the 1% of the orders representing the worst cases.

These percentages of cases are identified on basis of the cases over one calendar month.

44.43. The provisioning orders as well as the repair ticket having received an "HOLD" notification for reasons which are independent of Belgacom, compensations are not applicable - for example when an End-User is absent.

45.44. Compensations are only applicable if the volumes per month are below the defined limits in the forecasting process as describe in the Annex 4 – Planning and Operations.

46.45. In case of timer escalations, the consequences as described further in this paragraph shall be applicable to Belgacom taking into account the concerned item (end-user line, ATM/Ethernet Transport and Access Line). Compensations are calculated per timer without cascade effect, meaning that if a timer has been exceeded, compensations will only be due for this single timer (e.g. If a problem occurs on the access line, compensation will be paid only for the access line and not for the ATM/Ethernet Transport and for not for the End Users).

47.46. Quarterly quality meetings will be organized between Belgacom and the Beneficiary in order to compare the amounts of compensation that have been assessed by both parties.

6.2. Provisioning Timer Escalations

6.2.1. Provisioning End User line Timer Escalations

48:47. Provisioning was not completed on the agreed Due Date. Except in the event of other deadlines being agreed with the Beneficiary, Belgacom undertakes to take all steps to establish a new connection. If this deadline cannot be respected, Belgacom undertakes to inform the Beneficiary of the reasons for the delay and also to communicate the new deadline for meeting his request.

49:48. In cases that Belgacom has not respected its commitment within the delay or on the date agreed with the Beneficiary, the Beneficiary will be entitled to a compensation per end-user line and per calendar day, according to the rules presented in the following table.

Type of provisioning timer	Compensation
95% timer	10 € per calendar day (until the 10 working day timer has been reached)
99% timer	5 € per calendar day (above the 10 working day timer)

6.2.2. Provisioning VP/VC/VLAN Timer Escalations

50:49. The provisioning of VP/VC/VLAN timer escalation includes the provisioning of new VP/VC/VLAN and the modification of existing VP/VC/VLAN when the provisioning of a new VP/VC/VLAN or the modification of an existing VP/VC/VLAN was not completed on the agreed date. Except in the event of other deadlines being agreed with the Beneficiary, Belgacom undertakes to take all steps to set-up or to modify the VP/VC/VLAN. If this deadline cannot be respected, Belgacom undertakes to inform the Beneficiary of the reasons for the delay and also to communicate the new deadline for meeting his request.

51:50. The Beneficiary will be entitled to a compensation that corresponds to the values per VP/VC/VLAN presented in the following table.

	Compensation
Provisioning of VP/VC/VLAN Timer Escalation (to be respected by Belgacom)	€ 10 per VP/VC/VLAN per calendar day delayed

6.2.3. Provisioning Access Line Timer Escalations

52:51. The Beneficiary will be entitled to the same compensation as described in section 11.2, chapter 11 of the document "BROTSoLL_Main Body",

6.3. Repair Timer Escalations

6.3.1. Repair End User line Timer Escalations

53:52. Interruptions of service which last more than the timers defined in Section 4.2.1 "Repair Timer on the End-User line", §34 & 35, and are the fault of Belgacom shall entitle the Beneficiary to a reimbursement of the rental fee corresponding to the duration of the interruption, provided he cannot claim compensation due to a case of "force majeure" where Belgacom is unable to establish the connection or repair the breakdown within the agreed timeframe. In these cases, Belgacom shall notify the Beneficiary of the timeframe in which his request will probably be carried out. The timeframe taken into consideration for calculating the reimbursement amount goes from the day that the interruption is reported up to and including the day that service is restored.

54:53. The Beneficiary will be entitled to a compensation that corresponds to a percentage of the daily recurring fee per end-user line.

	Compensation
Repair Timer Escalations (to be respected by Belgacom)	150 % of daily rental fee per calendar day

6.3.2. Repair ATM Transport Timer Escalations

55:54. Interruptions of service where Belgacom did not intervene within the timeframes as defined in section 4.2.2 and are not the fault of the Beneficiary shall entitle the Beneficiary to a reimbursement that corresponds to the value presented in the following table, provided he cannot claim compensation due to a case of force majeure where Belgacom is unable to act within the agreed timeframe. In these cases, Belgacom shall notify the Beneficiary of the timeframe in which his request will probably be carried out.

	Compensation
Repair time Timer Escalations ATM/Ethernet Transport (to be respected by Belgacom)	€100 per calendar day delayed

6.3.3. Repair Access Line Timer Escalations

56:55. The Beneficiary will be entitled to the same compensation as described in section 11.3, chapter 11 of the document "BROTSoLL_Main Body",

57.

Annex 5 A

BROBA II ADSL & SDSL

IMPROVED SERVICE LEVEL AGREEMENT

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1. Object

1. The present document defines the Terms and Conditions upon which Belgacom will deliver repair services in the framework of Broba II ADSL & SDSL-VP & VC Switching. The elements included in this document replace those in the basic service level agreement, unless otherwise stated.

2. Scope

2. The scope of this document is to set a framework for operational collaboration between Belgacom and Beneficiary that ensures the respect of the fixed deadlines and an acceptable quality of the provided services.
3. The intention is to minimize the risk of shortcomings and so motivate all parties to respect the thresholds set in this SLA and to provide an incentive to enhance the performance of both parties.
4. Both parties agree that the objective of this document is to optimize operational collaboration and all efforts should be taken to avoid compensations or penalty fees.
5. The working of this Service Level Agreement is subject to a learning curve, i.e. the current values included are target values that are to be evaluated on a regular basis and excessive peaks in ordering, i.e. very concentrated ordering in a very short period of time, must be analyzed when happening.

3. Prerequisites

6. This Improved Service Level Agreement is signed between two parties being Belgacom and Beneficiary concerned.
7. Belgacom will provide a SPOC with its respective name, telephone number or e-mail for the purpose of follow up or support. An escalation procedure is foreseen as described in the escalation procedure document. Escalation is only relevant after defined timer has been passed.
8. The document reflects only the service indicated. Any future interference due to synchronization with any other product is out of scope.
9. The Improved Service Level Agreement is not valid in situations of "Force Majeure" as defined in the "General Terms and Conditions".
10. In case of incomplete information in ticket creation (see point 6) by Beneficiary, the ticket concerned will not be taken into account for the timers respect and compensations as further specified in this document.
11. Only service interruptions are covered by the current service. Degraded service (if any Bitstream activity is detected – see point 8) is not covered by the present ISLA.
12. If an appointment is needed at end user address, access is authorized without negotiation. It is the responsibility of the Beneficiary to inform its end user about it. This timer is not subject to the ISLA in case an appointment is not accepted by the Beneficiary or its end user at the proposed date and/or hour, in case of absence of

the end user at the appointment date and time, and in any case of incomplete or incorrect information provided by the Beneficiary with relevance for the repair process.

4. Conditions

13. The services offered in virtue of this Improved SLA are to be described as follows:
 - Single helpdesk for all access lines & backbone & end-user lines issues
 - Improved timers for repair
 - Improved availability level
 - Higher compensations in case of default (compared to Basic SLA)
14. Belgacom is committed to achieve for the Broba II services the best possible quality standards; as such the timers indicated in this document are maximum time intervals.
15. Belgacom confirms that it is applying normal network monitoring tasks and as such may already correct any fault detected without waiting for the Beneficiary to detect a fault. On lines without voice, Belgacom has no view on the end-user lines: this is where Belgacom's obligation for "normal network tasks" ends.
16. This Improved SLA is valid if for every trouble ticket the following conditions are applicable:
 - Delivery of forecasts on a range of active lines subject to ISLA is desirable but not mandatory. This delivery of forecasts will never prevent the putting into effect of the signed Broba II ADSL & SDSL ~~VP & VC Switching~~ ISLA. In any case, at the latest at the signing of the Broba II ADSL & SDSL ~~VP & VC Switching~~ ISLA, the Beneficiary will provide Belgacom with a list of lines to start the ISLA. In case the Beneficiary gives forecasts for new lines (or change SLA type), the forecasting method must be agreed upon by Beneficiary and Belgacom. In case no forecast is given by the Beneficiary for new lines (or change SLA type), the maximum increase per month of the number of active lines in the ISLA is fixed by BIPT at 30% per month, calculated on the number of active lines in the ISLA in the preceding month.
 - The Beneficiary reports by e-trouble ticketing, phone (0800/93122), fax (02/540.46.69) or e-mail (broba.repair@belgacom.be).
 - Overall authorization from the Beneficiary to access User premises without negotiation if needed for repair. A prior notification is to be given for any particular case. The overall authorization is considered to be not applicable if there is no prior notification. This is needed to give the Beneficiary the opportunity to inform the user prior to the access by Belgacom. Belgacom has to be informed when the end-user will be available on site.
 - Test and repair are actions authorized without negotiation or warning.
 - The repair timer will start after the validation of the information provided described in the diagnoses below in the trouble ticket.

5. Terminology

17. Trouble Ticket: The file created in Belgacom's computer system by a front-end helpdesk officer or an e-tool when a Beneficiary reports a problem. This file contains the information already available in the computer systems, the information provided by the Beneficiary and the information added by technicians during the repair process.
18. Trouble Intake: The creation of the Trouble Ticket in the computer systems for the repair of Belgacom services.
19. Gross Repair Time: Time needed to restore the service to the Beneficiary. This runs from the Trouble Intake to the close of the Trouble Ticket - i.e., the time when the service is re-established and after feedback has been given by Belgacom to the beneficiary and after the beneficiary has agreed with the closure of the ticket.
20. Stop-Clock Time: Time during which the timer is stopped not attributable to Belgacom or one of its subcontractors or suppliers, e.g., inability to access certain sites, delay by third parties in carrying out work to be performed before Belgacom can act, performance of line measurements, etc.
21. Net Repair Time: Difference between the Gross Repair Time and the Stop-Clock Time.
22. Time to First Intervention: Interval between the trouble being reported by the Beneficiary and the first action taken by a Belgacom technician to repair the service via either a remote operation or on-site intervention.
23. Clock Hours: Target Repair Time, expressed in Clock Hours, i.e. where the service to be provided by Belgacom is available 24 hours per day, 7 days a week.
24. Working Hours: Target Repair Time expressed in Working Hours, i.e., where the service is available during Working Days from 8h00 to 16h30, excluding Saturday, Sunday, Belgian holidays and Belgacom holidays.

6. Information and test results

25. It is mandatory that the Beneficiary gives test results when opening a Trouble Ticket. Belgacom delivers the form of standardization of these test results. The applicable test methods are proposed by Belgacom and are mandatory. Reference is made to the Belgacom template.

The following administrative info has to be included in the complaint template:

- Circuit identity number
- Voice phone number (NA) --> lines with voice only
- Installation address of the line
- End user contact person and contact phone number in case of field intervention
- Leased line codification number of the access line
- End user ADSL/SDSL line profile
- Only for BROBA over ATM: End user ATM Traffic descriptor down & up
- Only for BROBA over ATM: VPi and VCI at access line of Beneficiary
- Only for BROBA over Ethernet: Agent Circuit ID.
- BROBA II first use or not (bad provisioning or not)
- Single user affected or several users affected

Diagnose info to be included by the Beneficiary in the complaint template for BROBA II with voice lines:

- Is service fully interrupted or degraded
- Is End User ADSL line synchro present or not
- Confirm if ADSL modem or router is powered on
- Confirm if Computer is powered on
- Confirm if splitter(s) is(are) connected and checked
- Confirm if End User internal cabling is checked
- Only for BROBA over ATM: Is ATM connectivity test (OAM F5 Segment or end-to-end Loop back Cell) successful or not?

Diagnose info to be included by the Beneficiary in the complaint template for BROBA II without voice lines:

- Is line "open" or "short-circuited"?
- Measurement of the length of the line
- Measurement of the insulation between wires and wire/earth
- Is service fully interrupted or degraded?
- Is End User ADSL/SDSL line synchro present or not?
- Confirm if ADSL/SDSL modem or router is powered on
- Confirm if Computer is powered on
- Confirm if End User internal cabling is checked
- Only for BROBA over ATM: Is ATM connectivity test (OAM F5 Segment or end-to-end Loop back Cell) successful or not?

7. Set-up of service

26. Activation of the Broba II ADSL & SDSL ~~VP & VC Switching~~ ISLA per line can be done at ordering, the process needed to activate the ISLA will start immediately after the implementation of the Broba II ADSL & SDSL ~~VP & VC Switching~~ service. The request will be included in the remarks field of the XML when ordering if this remark field appears to be too small to include all information (because this field has also to be used to mention other kind of information), a second XML order for the same line can be issued by Beneficiary, where beneficiary will precise in the remarks field that is a second order issued for the purpose of completing the information. At first, no change is possible through XML. Changing users already connected will be treated on a case-by-case basis within maximum two working days. In any case, each individual request can also be sent by fax, following the rules defined in the backup procedure, if XML is not available. The Beneficiary will provide Belgacom with a list of lines at the latest two working days before the bringing into service of the ISLA.

8. Nature of the service disruption

27. When reporting a disruption, it is essential that the Beneficiary clearly identifies the nature of the problem, i.e., to distinguish disruptions that have an impact on traffic from those that do not.
- Impact on traffic: A problem is presumed to have an impact on the traffic when it requires immediate action by Belgacom to effect a repair, i.e., in case of a complete line disruption.
 - No impact on traffic: A problem is not considered to impact on traffic when it does not require immediate action by Belgacom to effect a repair, e.g., recurrent temporary disruption, quality problems, etc.
28. Service disruptions that do not impact on traffic are reported in the same manner as those that do. However, since long-term analysis is generally required to resolve such problems, Belgacom shall not be able to guarantee the Repair Time as for problems resulting in full line disruption.
29. In case of quality problems and recurrent temporary disruption where there is no impact on traffic, Belgacom will cooperate in good faith with the Beneficiary to find the cause of the problem. Information of the findings and results of the research about the causes are to be exchanged between Belgacom and the Beneficiary. Where such a decision is taken, the Beneficiary shall authorize Belgacom to interrupt the troubled line where necessary to effect immediate repairs within the requisite deadline.

9. Stop-Clock or freeze rules

30. The clock for repair starts when the complaint ticket is valid, i.e. in line with the conditions described in section 6.

31. There are four scenarios in which Belgacom may use the stop-clock procedure:

- Cooperation with the Beneficiary is impossible due to the absence of staff on the local site, there is no possibility of accessing the site or, despite several attempts, the Beneficiary contact point has proved impossible to contact by telephone, provided that those cases can be proved by e-mail evidence;
- The Beneficiary asks for the repair to be postponed or an appointment if applicable to be rescheduled;
- A Trouble Ticket is opened and the Beneficiary does not allow Belgacom to interrupt the line in order to perform tests.
- Awaiting feedback, input or confirmation of the Beneficiary that prevents Belgacom to proceed to the repair process

32. If the stop-clock procedure is used, this shall be fully documented in the System, which will set out the:

- Reason for stop-clock;
- Action to be undertaken;
- Timing;
- Name of the contact person in the Beneficiary's organization who was informed (except when the Beneficiary cannot be contacted by phone) or requests the stop clock.

10. Wrongful Repair Requests

33. Belgacom will charge the Beneficiary with the fee related to SLA Wrongful Repair Requests (see Annex 6 – Pricing and Billing) if the fault is not attributable to Belgacom or if the fault results from the abnormal use of the line or any other Beneficiary - or end user of the Beneficiary - fault.
34. In case during the repair process, Belgacom performed useless actions further to Beneficiary's request, i.e. in case of absence of end-user at the appointment, incorrect information provided, Belgacom will charge the Beneficiary with the costs of those actions.

11. Beneficiary's obligations

11.1. Contact persons

- 35. It is highly recommended that the Beneficiary provides a helpdesk. Belgacom may be unable to guarantee the repair time and feedback deadlines where it is unable to inform the Beneficiary of the status of repair operations.
- 36. It is highly recommended that the Beneficiary guarantees the availability of a 24/24, 7/7 helpdesk.
- 37. A technical contact with the Beneficiary will be available 24/24, 7/7.
- 38. Beneficiary will provide a SPOC with its respective name, telephone number and e-mail address for the purpose of follow up or support.

11.2. Site access

- 39. When calling the Belgacom Helpdesk, the Beneficiary will communicate the site access procedure..
- 40. If an appointment is needed at end user address, access is authorized without negotiation. It is the responsibility of the Beneficiary to inform its end user about it..
- 41. The appointment date and time proposed by Belgacom will be agreed between the Beneficiary and Belgacom.
- 42. The end user or site contact person communicated is present at the proposed date and/or hour
- 43. Any failure to comply with these procedures shall result in a stop clock / freeze rule.
- 44. If necessary, the Beneficiary shall also undertake to provide the necessary staff during the repair process.

11.3. Required Information

- 45. Beneficiary will provide correct information with relevance for the repair process.
- 46. In case of incomplete information in ticket creation by the Beneficiary, the stop clock / freeze rule is applicable and the timer will be unfrozen after the Beneficiary has provided the necessary information.

12. Timers

12.1. Preliminary

12.1.1. Timers

47. All timers in present document are net timers. Delays due to Beneficiary are not taken into account and lead to stop clock. Net time is gross time minus stop clock times.

12.1.2. General Feedback Timer

48. Belgacom will give feedback to the Beneficiary within one hour after trouble ticket validation. In any case, a trouble is only to be considered as being closed after Belgacom has given feedback to the Beneficiary.

12.1.3. Note

49. The Repair Timer will be frozen in case appointment needed for the intervention proposed by Belgacom is scheduled later on demand of the Beneficiary and at that time the repair timer will be unfrozen and continued.

12.2. Repair

12.2.1. End-user line Trouble Ticket Resolution timer

50. The Trouble Ticket Resolution timer starts when Belgacom receives a trouble mention based on the issue description communicated by the Beneficiary and ends at the repair done permanently or identified as being definitely non-Belgacom originated of this Trouble Ticket. If an appointment is needed at the User address, access is authorized without negotiation. It is the responsibility of the Beneficiary to inform its User in those cases. This timer will be frozen in case an appointment if needed is not accepted by the Beneficiary at the proposed date, in case of absence of the User at appointment date, and in any case of incomplete or manifest incorrect information provided by the Beneficiary with relevance for the repair process.

	Trouble Ticket Creation
Trouble Ticket Handling (to be respected by Belgacom)	24/24 hours, 7/7 days
	Repair Window
Repair Window (to be respected by Belgacom)	24/24 hours, 7/7 days

12.2.1.1. Case of End-User line with voice

	Repair Timer
Repair timer for Broba II with voice (to be respected by Belgacom)	6 hours

12.2.1.2. Case of End-User Line without voice

	Repair Timer
Repair timer for BROBA II without voice (to be respected by Belgacom)	8 hours

12.2.1.3. Availability

51. Availability is equal to net timer of interruption due to Belgacom fault divided by the total time per year of availability committed to end user from the date of signing the agreement of the Broba II ADSL & SDSL ~~VP & VC Switching~~ service, taking into account the total number of lines from a Beneficiary subject to this ISLA. The time of interruption is defined as from the trouble ticket start resolution timer for a trouble that has been sorted out as being a Belgacom fault, excluding conditions of "Force Majeure" and wrongful repair requests up to the moment of the ticket closure, mentioned to the Beneficiary with information about the reason of outage.

	Average yearly availability
Availability	99,4% for < 1500 lines in improved SLA 99,5% for 1500 lines in improved SLA 99,6% for 2500 lines in improved SLA 99,7% % for > 5000 lines and conditions see below in improved SLA

52. For a volume of more than 5000 lines, availability is set at 99,7% if all of the following conditions are fulfilled. Cases where this condition is not achieved will be out of scope of this availability improvement.

- The Beneficiary will perform its own proactive measurements following a measurement procedure agreed with Belgacom and communicate the results of these measurements on a regular basis. Belgacom will analyze and could perform pro-active repair actions on the Beneficiary's loops based on these results. Note that it should be defined how Belgacom can recover the costs for these actions.
- Give Belgacom technically, the possibility to make the intervention on the pair (ensure continuity) till a demarcation point between Belgacom and the Beneficiary collocation, if any (without dismantlement of the pair at the Beneficiary equipment). For this, no fast test procedure can be done, as it is always a test between Belgacom and Beneficiary technician. If this is not possible, i.e. the inclusion and full conversion from all lines to an Handover Distribution frame is needed, this cases will be excluded
- Mention for every demand of repair, what type of signal is coming to the User.

53. The volume for applicability of case 1) can be agreed bilateral between Belgacom and the Beneficiary.

12.2.2. Repair on the DSLAM Timer

54. The Repair on the DSLAM timer starts when Belgacom receives a Trouble mention based on the issue description communicated by the Beneficiary and ends at the repair done permanently or identified as being definitely non Belgacom originated of this Trouble Ticket after the feedback (including detailed description of the issue or the issue intervention) has been given by Belgacom to the Beneficiary.

DSLAM	Timer
Intake window	• 24x7: 24 hours / day – 7 days per week
Repair within (to be respected by Belgacom)	• 4 working hours in case of remote intervention • 8 working hours in case of on-site intervention

55. First feedback after maximum one working hour, subsequent feedback each hour.

12.2.3. Repair on the ATM/Ethernet Transport Timer

56. The Repair on the ATM/Ethernet Transport timer starts when Belgacom receives a Trouble mention based on the issue description communicated by the Beneficiary and ends at the repair done permanently or identified as being definitely non Belgacom originated of this Trouble Ticket after feedback (including detailed description of the issue or the issue intervention) has been given by Belgacom to Beneficiary.

	Timer
Intake window	• 24x7: 24 hours / day – 7 days per week

	Timer
Repair Timer ATM/Ethernet Transport (to be respected by Belgacom)	• 4 working hours after trouble ticket opening in case of remote intervention or intervention without rollout (case of manned sites) • 8 working hours in case of field intervention (only cases of unmanned sites and impossibility of remote operations)

	Timer
Repair Timer Plus ATM/Ethernet Transport (at ATM Access Point/Service PoP and LEX levels) (to be respected by Belgacom)	• 4 hours after trouble ticket opening in case of remote intervention or intervention without rollout (case of manned sites) • 8 hours in case of field intervention (only cases of unmanned sites and impossibility of remote operations)

57. 1st information after one hour, subsequent feedback each hour

12.2.4. Repair on the Access Line Timer

58. The repair of access line timers follows the timers described in section 11.3, chapter 11 of the document "BROTSoLL_Main Body",

13. Prices

59. Reference is made to Annex 6 Pricing and Billing

14. Compensations

14.1. General

60. Belgacom shall pay compensation to the Beneficiary for any delay not respecting the ISLA date or time otherwise agreed with Beneficiary. Belgacom shall not pay compensation to the Beneficiary for periods of delay, resulting from circumstances beyond its reasonable control, like a force majeure event or a delay caused by Beneficiary or the end-user (i.e. during which the timer "clock" is stopped). Belgacom shall notify Beneficiary as soon as possible when such circumstances arise and inform Beneficiary of the details of the events and the estimated duration. In case of "Force Majeure", Belgacom will try to soften the effects of the events and to continue to fulfill its contractual obligations as soon as reasonably possible.
61. Payment will be expressed in a discount on next provisioning and rental bill(s) for the respective service.
62. The Beneficiary has to provide Belgacom with the necessary information in case of a delayed repair or any shortage of Belgacom that gives cause for the compensations described in this ISLA. Belgacom will upon receipt verify this information. When this verification shows a shortcoming of Belgacom that gives cause for paying compensation, this payment will be done immediately and automatically.
63. The Beneficiary will submit a detailed request for compensation to Belgacom including for every repair requested at least date and hour notified/resolved, circuit id, problem on line and product type. The validity of each request for compensation will be examined by Belgacom and motivated in case of rejection for one or more repair records of this compensation request.
64. In case of repair timer escalations, the consequences as described further in this paragraph shall be applicable to Belgacom.

14.2. End-user line Repair Timer Escalations

65. Troubles which last more than the timers described in point 12.2.1 and are the fault of Belgacom shall entitle Beneficiary to receive payment of compensation by Belgacom, provided he cannot claim compensation due to a case of force majeure where Belgacom is unable to respect the timers. In these cases, Belgacom shall notify Beneficiary of the probable timeframe. The timeframe taken into consideration for calculating the compensation goes from the day on which the trouble is reported to the day of closing the trouble ticket included. The calculation of the % is done on a monthly basis.

	Compensation
Repair Timer Escalations for Broba II with voice	> 6 hours: 150% of the line monthly rental fee > 12 hours: 200% of the line monthly rental fee > 24 hours: 300% of the line monthly rental fee > 48 hours: 400% of the line monthly rental fee > 72 hours: 500% of the line monthly rental fee, which is the maximal Compensation

	Compensation
Repair Timer Escalations for Broba II without voice	> 8 hours: 150% of the line monthly rental fee > 12 hours: 200% of the line monthly rental fee > 24 hours: 300% of the line monthly rental fee > 48 hours: 400% of the line monthly rental fee > 72 hours: 500% of the line monthly rental fee, which is the maximal Compensation

Availability

66. In case the guaranteed minimum yearly availability of the line is not respected due to a cause that is not external to Belgacom, the Beneficiary is entitled to a compensation as described in the table hereunder. The definition of the availability is given at the section 12.2.1.3

Availability Compensation	
Number of related pairs	Compensation (in EUR)
< 100 or < 2 LEX/LDC concerned	0
> 100 and > 1 LEX/LDC concerned	5% of yearly rental fee Improved SLA

14.3. Repair DSLAM Timer Escalations

67. Interruptions of service where Belgacom did not intervene within the timeframes as defined in section 12.2.2 and are not the fault of the Beneficiary or of its user shall entitle the Beneficiary to compensation.

	Compensation
Repair Timer Escalations DSLAM (to be respected by Belgacom)	• 4 working hours in case of remote intervention or > 8 working hours in case of field intervention: 100% of monthly rental fee of the line • end next calendar day after trouble ticket creation: 150% of monthly rental fee of the line + every day after end next calendar day after trouble ticket creation: 150% of monthly rental fee of the line, with a maximum of 450% of monthly rental fee of the line

14.4. Repair ATM/Ethernet Transport Timer Escalations

68. Interruptions of service where Belgacom did not intervene within the timeframe as defined in section 12.2.3 and are not the fault of the Beneficiary or of its end user shall entitle the Beneficiary to a reimbursement of the rental fee corresponding to a percentage of the daily rental fee of the bandwidth with the same quality of service (QoS) within the concerned Access point, pro rata to the number of VP/VC/VLAN impacted, provided he cannot claim compensation due to a case of force majeure where Belgacom is unable to act within the agreed timeframe. In these cases, Belgacom shall notify the Beneficiary of the timeframe in which his request will probably be carried out.

	Compensation
Repair Timer Escalations ATM/Ethernet Transport (to be respected by Belgacom)	• 300% of daily rental fee, per VP/VC/VLAN, per QoS (within a specific access point, per day) • [Daily rental fee of the total bandwidth with the same QoS in the concerned Access point or Service PoP / number of VP/VC/VLAN] * 3 (calculation to be made in a sliding window of 2 months)

14.5. Repair Access Line Timer Escalations

69. The Beneficiary will be entitled to the same compensation as described in section 11.3, chapter 11 of the document "BROTSoLL_Main Body",

BROBA II ADSL

Annex 6

Pricing and Billing

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Preliminary notes

All prices included in this Price List are expressed in Euro, VAT excluded.
Structure and prices of the below Price List are subject to further adaptations.

1. Pricing

1.1. Startup fee

- 1 The start-up fee is charged to Beneficiary, operator, consultant or other that requires explanations by Belgacom BROBA specialists (Product Management and/or Customer service) on the offer content (e.g. this fee is not charged for negotiation meetings). This fee is due until the first installation of the Beneficiary of a VP to a DSLAM.

Information on BROBA	Price
Rate per hour per Belgacom person	€99,49

1.2. Tariffs applicable for the End User line

1.2.1. One time fees

1.2.1.1. XML Inquiry Fee

- 2 The XML inquiry fee will be invoiced only in case the Beneficiary does not place a firm order within 45 working days after the inquiry has been proceeded with positive result by Belgacom. In such case, this Beneficiary will be invoiced the following amount for the work performed by Belgacom.

	Euro
Inquiry Fee for BROBA II ADSL (with or without voice)	€9,94

1.2.1.2. LLU Inquiry Tool

- 3 The Beneficiary will be invoiced the following amount per inquiry done.

	Euro
Per inquiry done	€0,00

1.2.1.3. Activation Fee of ADSL Service on an End User Line

Activation Fee per line without Customer Visit	Price
Activation fee for BROBA II ADSL with voice	€ ~~46,09~~ <u>42,88</u>
Activation fee for BROBA II ADSL without voice	€ ~~40,98~~ <u>37,78</u>

- 4 The activation fees are ~~inclusive~~exclusive the price of the activation of ~~the any~~first VC on the End User Line.

Additional fee for Telecom Installation	Price
BROBA II ADSL with voice	€38,88
BROBA II ADSL without voice	€58,64

- 5 In case of request by the Beneficiary of a Telecom Installation together with the Activation of an End User Line, the additional fee for Telecom installation is added to the Activation Fee without Customer Visit.
- 6 If an activation for BROBA ADSL without voice without visit is ordered but that during the activation process of the line, Belgacom finds that a customer visit is required, according to the process described in the Appendix B: "NTP process for Provide New BROBA II without voice products" of the BROBA ADSL Main Body, the additional fee for Telecom installation will be added to the Activation Fee without Customer Visit, independently of the initial request of the Beneficiary.
- 7 If during a repair action performed by Belgacom on a newly installed BROBA ADSL without voice line, when the provisioning process - described in the Appendix B: "NTP process for Provide New BROBA II without voice products" of the BROBA ADSL Main Body - allowed to determine that the installation of a NTP by a Belgacom technician was not necessary, in case the trouble covered by the Trouble Ticket was due to the absence of the Network Termination Point, an additional fee for Telecom Installation detected during a repair action will be due. This fee will be invoiced on top of the Activation Fee without Customer Visit.

Additional fee for Telecom Installation detected during repair	Price
BROBA II ADSL without voice	€91,54

- 8 The additional fee for the Telecom installation on Broba II with voice end-user line includes the Splitter installation, travel to the end-user and hardware costs.
- 9 The 2 additional fees for the Telecom installation on Broba II without voice end-user line include the Network Termination Point installation, travel to the end-user and hardware costs.

1.2.1.4. VC Configuration Fee on an End User Line

	Euro
Activation/Modification/ De-activation fee per VC	€3,21

10 ~~For the first VC activated together with the activation of the End User Line, the above-mentioned fees for the VC Activation must not be added to the Activation Fee per line~~ billed independantly of any other fee.

11 ~~For the last VC de-activated together with the de-activation of the End User Line, the above-mentioned fee for the VC de-activation must not be added to the De-activation Fee per line.~~

~~12~~11 This fee will ~~also~~ be applicable per VC configuration for the services Broba over ATM and Broba over Ethernet with shared VLAN, or in case of modification of VC, from ATM to Ethernet transport with shared VLAN (and vice-versa), for the same Beneficiary.

1.2.1.5. VC Configuration Fee on an End User Line, with dedicated VLAN

	Euro
<u>Activation fee per VC</u>	<u>€41,61</u>
<u>Modification fee per VC</u>	<u>€33,63</u>
<u>De-activation fee per VC</u>	<u>€12,21</u>

12 The activation fee is applicable per VC configuration for the service Broba over Ethernet with dedicated VLAN, or in case of modification of VC, from ATM to Ethernet transport with dedicated VLAN (and vice-versa), for the same Beneficiary.

~~1.2.1.5.~~1.2.1.6. Modification of End-User Line Profile

	Euro
Modification (per modified Line Profile)	€3,21

- 13 In case of simultaneous Modification of a Line Profile and of a VC of the same End-User Line, both fees will be invoiced.

~~1.2.1.6.~~1.2.1.7. Coordinated Move

Coordinated Move Fee	Price
Move of the BROBA II ADSL with voice service from location A to location B in coordination with PSTN move	€ ~~50,4444,02~~

- 14 This fee remunerates the coordination of the move of the Beneficiary's data service together with the Belgacom Voice service, in the framework of a BROBA II ADSL with voice. The coordinated move fee includes both the activation and the de-activation part of the move.

- ~~15~~ The coordinated move fee is exclusive the price of activation and deactivation of any VC on the End User Line.

~~1.2.1.7.~~1.2.1.8. Conversion PSTN/ISDN

- ~~15~~16 Conversion is the change from BROBA II ADSL with voice over PSTN toward BROBA II ADSL with voice over ISDN and vice versa.

Conversion Fee	Price
BROBA II ADSL with voice	€35.74

~~1.2.1.8.~~1.2.1.9. De-activation fee of an End User line

- ~~16~~17 This is the fee that the beneficiary has to pay in case the beneficiary wants to stop an already activated service.

	Euro
De-activation fee for BROBA II line with voice	€ ~~4,351,14~~
De-activation Fee for BROBA II line without voice	€ ~~4,511,31~~

- ~~17~~18 The above-mentioned fees are ~~inclusive~~exclusive the price of the de-activation of ~~the last~~any VC on the End User Line.

~~1.2.1.9~~1.2.1.10. Change Date Fee

~~1819~~ When a Beneficiary (or Belgacom) requests to change the date of implementation, Belgacom (or the Beneficiary) will invoice this Beneficiary (or Belgacom) the following Change Date fee:

Change Date Fee	Euro
Change before DD-1 (12 pm)	€6,59

~~1920~~ In case such change is requested after due date-1 (12 pm), the same fee will be paid by the Beneficiary (or Belgacom) up to the condition that the new activation date is within 20 working days.

~~1.2.1.10~~1.2.1.11. Cancellation Fee

~~2021~~ The Beneficiary requesting the cancellation of an order shall pay to Belgacom the administrative fee mentioned in the table below:

Cancellation Fee	Euro
Cancellation before DD-1 (12 pm)	€6,99

~~2122~~ In case cancellation is requested after DD-1 (12 pm), the related activation fee and the de-activation fee (instead of the cancellation fee) will have to be paid by the Beneficiary (refer to point 1.2.1.3. of this section). In practice, Belgacom will try at best effort to stop the intervention even after the deadline. If successful, only the cancellation fee in the table above will be charged.

~~1.2.1.11~~1.2.1.12. Move from LDC to LEX

~~2223~~ This fee is due when an end-user line is moved from a LDC to its corresponding LEX during the activation of the line. This action will only be performed if the move request is done at the moment of the activation of the end-user line with voice.

	Euro
Move from LDC to LEX Fee	€64,05

~~1.2.1.12~~1.2.1.13. Pending order due to useless end-user visit

Pending order due to useless end-user visit	Euro
Per intervention	€20,04

2324 This fee is due when an end-user of the Beneficiary is not present at his premises on the appointment date, if the validate message has been sent by Belgacom to the Beneficiary in the timing described in Annex 5 (SLA), so that the Beneficiary has had the opportunity to propose an alternative date-hour if necessary.

1.2.1.13-1.2.1.14. Improved SLA

2425 One-time fee for configuration of systems and resources. The setup fee is to be paid one time only, for the first Improved SLA BROBA II (~~"Improved SLA Broba II ADSL & SDSL VP switching"~~ or ~~"Improved SLA SDSL VC switching"~~).

	One-time fee
Setup fee	€2.000,47

2526 One-time fee per line for setup of ISLA in case of a new line.

	One-time fee
Activation fee	€8,23

2627 One-time fee per line for change of the SLA from Basic to Improved (or reverse) in case of an existing line.

	Per local loop
Change SLA type fee	€8,23

2728 Rental fee per local loop with the ISLA type in addition to the monthly fee.

	Monthly Rental
Extra Rental Fee	€8,74

2829 Extra monthly rental fee for the ATM or Ethernet transport repair timer.

	Monthly Rental
Extra ATM Fee	€5,75 per VP <u>or per shared VLAN</u>

1.2.1.14-1.2.1.15. Small Network Adaptations

2930 In case Belgacom needs to perform additional work, also called Small Network Adaptation, according to the terms and definitions as defined in this Offer, the following fee will apply in surplus of the installation fee.

	Euro
Small Network Adaptations	€441,66

3031 This fee, applicable (if any) only in case of ADSL without voice, will only be billed after having given to the Beneficiary the proof of the effective need and execution

(with number of pairs introduced) of the Small Network Adaptations. This has to be done in written form. If no proof is given, the relevant fee is not due by the Beneficiary. Only the number of pairs related to the request are due, on a pro-rata base.

1.2.1.15.1.2.1.16. Wrongful repair request

3132 In case of wrongful repair request by a Beneficiary, Belgacom will invoice this Beneficiary an administrative fee of 104,61 Euro

3233 If Belgacom has performed specific work due to this wrongful repair request made by Beneficiary, Belgacom will invoice these additional costs to Beneficiary.

3334 In case of wrongful request by Beneficiary, the invoicing of 104,61 EUR is to be done exclusively following the provisions of section 5 ("Wrongful Repair Requests") of Annex 5. Belgacom will provide the following information to the Beneficiary as well as to the BIPT: detailed data about the relevant cases, the ticket numbers, the date and hour of opening and closing of the tickets, the identification numbers (e.g. directory numbers) and the reason why Belgacom's responsibility is not involved.

1.2.2. Monthly Recurring fee per End User line

Monthly Recurring Fee	Euro
BRUO Shared Pair	Price applicable for the invoiced period
BROBA II ADSL, ADSL2 Reach Extended and ADSL2+ with voice specific costs	€5,02
BROBA II ADSL, ADSL2 Reach Extended and ADSL2+ with voice	BRUO Shared Pair + BROBA II ADSL and ADSL2 Reach Extended with voice specific costs

Monthly Recurring Fee	Euro
BRUO Raw Copper	Price applicable for the invoiced period
BROBA II ADSL, ADSL2 Reach Extended and ADSL2+ without voice specific costs	€5,02
BROBA II ADSL, ADSL2 Reach Extended and ADSL2+ without voice	BRUO Raw Copper + BROBA II ADSL and ADSL2 Reach Extended without voice specific costs

1.3. Tariffs applicable for the ATM Transport

1.3.1. Preamble

- 3435 The Beneficiary must be connected to at least one ATM Access Point in each access area in which he wants to deliver the Broba service.
- 3536 Pricing is differentiated based upon the requested "quality of service" and the fact whether local or non-local ATM tariffs do apply.
- 3637 The formulas in section 1.3.2 are applicable
- In SDSL VC switching: per VC.
 - In ADSL and SDSL VP switching: per VP billed.
 - In each LEX/LDC where the Beneficiary benefits of Virtual Paths (VPs), Belgacom bills the bandwidth of all the VP's¹ of the Beneficiary on each DSLAM where the Beneficiary occupies minimum 36 positions².
 - In each LEX/LDC where the Beneficiary benefits of Virtual Paths (VPs) and where the Beneficiary occupies less than 36 positions on each DSLAM, Belgacom will only bill the most expensive VP³ of the Beneficiary, per VP type.

If a Beneficiary benefits of Virtual Paths in a LEX/LDC, and that these are not billed according to above-mentioned rule, then the bandwidth of these VPs may not be higher than the following values, per QoS:

- UBR: 20Mbps
- VBR nrt: 20Mbps
- VBR rt: 2Mbps
- CBR: 1 Mbps.

- 3738 The prices set below are those stated in BIPT's advises on Backhaul. These advises are the object of requests for annulment before the "Council of State". Accordingly, Belgacom reserves its right to apply different prices should these requests succeed.
- 3839 All formulas for the calculation of the costs that are listed in this offer are based upon Mbps. When input figures are provided using other measurement units, the conversion rules 1 Mbps = 1.000 Kbps and 1 Gbps = 1.000 Mbps do apply.

1.3.2. Formulas

- 3940 Based on the formulas hereunder, it is possible to determine the exact price in Euros for a bandwidth in Mbps. The first formula is applicable for the non-local ATM tariffs, the second one for local ATM.

¹ Only applicable for VP's with at least one VC.

² One position on one DSLAM card corresponds to one end-user of a Beneficiary.

³ Only applicable for VP's with at least one VC. If the most expensive VP has no VC, then Belgacom will bill the next most expensive VP with at least one VC.

1.3.2.1. Formula for non-Local ATM

4041 The following formula allows to compute the ATM tariffs in Euros for bandwidths in Mbps for non-local ATM transport between DSLAM's and ATM Access Points to which Customer is connected (case of LEXs or LDCs not directly connected to an ATM Access Point).

$$\text{ATM\_NL tariff} = \text{MIN}(\text{ATM\_NL\_LOW}, \text{ATM\_NL\_HIGH})$$

$$\text{ATM\_NL\_LOW} = 12,683 + \text{QoSFIX\_LOW}_{q, \text{nl}} + \text{BWNL}_{r, q} * (30,002 + \text{QoSVAR\_LOW}_{q, \text{nl}}) * \text{PCR}_r$$

$$\text{ATM\_NL\_HIGH} = 37,503 + \text{QoSFIX\_HIGH}_{q, \text{nl}} + \text{BWNL}_{r, q} * (9,2634 + \text{QoSVAR\_HIGH}_{q, \text{nl}}) * \text{PCR}_r$$

Where:

- $\text{BWNL}_{r, q}$: bandwidth (Mbps in SCR) of a VP (in VP switching) or a VC (in VC switching), characterised by non-local ATM transport, a ratio PCR/SCR r and a quality of service q.
- PCR_r : correction factor for PCR/SCR ratio r.
- $\text{QoSFIX\_LOW}_{q, \text{nl}}$, $\text{QoSFIX\_VAR}_{q, \text{nl}}$, $\text{QoSFIX\_HIGH}_{q, \text{nl}}$ and $\text{QoSVAR\_HIGH}_{q, \text{nl}}$: correction factors for QoS q in non-local ATM transport.

4142 The correction factor for PCR/SCR ratio which have to be taken into account are as follows:

PCR/SCR	1	2	3	4	5	6	7	8
	100,00%	155,61%	192,68%	225,12%	255,71%	285,37%	314,50%	343,29%

4243 The correction factor to apply per QoS are the following:

QoSFIX_LOW_q	Local	Non Local	QoSFIX_HIGH_q	Local	Non Local
CBR	-	-	CBR	-	-
UBR+	- 1,9916	- 2,1271	UBR+	- 3,0190	- 6,2897
VBR NRT	-	-	VBR NRT	-	-
VBR RT	-	-	VBR RT	-	-

QoSVAR_LOW_q	Local	Non Local	QoSVAR_HIGH_q	Local	Non Local
CBR	5,4868	9,0833	CBR	5,4868	9,0833
UBR+	- 1,2563	- 5,0317	UBR+	- 0,0672	- 1,5536
VBR NRT	-	-	VBR NRT	-	-
VBR RT	2,7434	4,5416	VBR RT	2,7434	4,5416

1.3.2.2. Formula for Local ATM

4344 The following formula allows to compute the ATM tariffs in Euros for bandwidths in Mbps for local ATM transport between DSLAM's and ATM Access Point to which Customer is connected (case of LEXs or LDCs directly connected to an ATM Access Point).

$$\text{ATM\_L tariff} = \text{MIN}(\text{ATM\_L\_LOW}, \text{ATM\_L\_HIGH})$$

$$\text{ATM\_L\_LOW} = 6,6063 + \text{QoSFIX\_LOW}_{q,l} + \text{BWL}_{r,q} * (4,1673 + \text{QoSVAR\_LOW}_{q,l}) * \text{PCR}_r$$

$$\text{ATM\_L\_HIGH} = 10,014 + \text{QoSFIX\_HIGH}_{q,l} + \text{BWL}_{r,q} * (0,2229 + \text{QoSVAR\_HIGH}_{q,l}) * \text{PCR}_r$$

Where:

- $\text{BWNL}_{r,q}$: bandwidth (Mbps in SCR) of a VP (in VP switching) or a VC (in VC switching), characterised by local ATM transport, a ratio PCR/SCR r and a quality of service q .
- PCR_r : correction factor for PCR/SCR ratio r (see §4241 above).
- $\text{QoSFIX\_LOW}_{q,l}$, $\text{QoSFIX\_VAR}_{q,l}$, $\text{QoSFIX\_HIGH}_{q,l}$ and $\text{QoSFIX\_HIGH}_{q,l}$: correction factors for QoS q in local ATM transport (see §4342 above).

45 During a definite period of 6 months commonly agreed between the Beneficiary and Belgacom, which has to take place within the first 24 months after signing the Belgacom Reference Offer, Belgacom will only bill one activation fee per LEX (or LDC) for all VPs of same type activated by Belgacom for this Beneficiary during this period. After this period, an activation fee is due for any new VP.

1.3.3. One-time Fees

1.3.3.1. Fees for activation of VPs

	Euro
Activation fee per VP	€38,51

1.3.3.2. Fees for change of ATM Transport parameters (VP modification)

	Euro
Modification fee per VP	€19,01

1.3.3.3. Bandwidth Rerouting Fee

Bandwidth Rerouting Fee will be charged when one logical point of termination of a vp changes, for example a new access line or a new pop.

	Euro
Activation fee per rerouting per VP	€2,07

1.3.3.4. Fees for de-activation of VPs

	Euro
De-Activation fee per VP	€19,44

1.3.4. Documentation of the VPs billing

[4446](#) Belgacom will detail the invoicing VP per VP and deliver to the Beneficiaries the information needed to validate their invoice, like number of occupied positions per DSLAM and per day, and technical characteristics of the VP's.

1.3.5. Tariffs applicable for the Access Line

[4547](#) It should to be mentioned that Belgacom has to work on the cost orientation basis, and that these costs have to be minimal for the Beneficiary. It means that, for example, "Access Line" ordered by a Beneficiary in the context of BROBA 2 contract, could be used by this Beneficiary to set up additional VPs for other purposes (e.g. a Turboline Wholesale contract). This example is not limitative neither exclusive.

[4648](#) It is also possible for the Customer sited data links, where the Beneficiary can also sublet this Access Line to third parties, e.g. PVP's set up by Belgacom.

1.3.6. Tariffs applicable for Customer-Sited Access Line

4749 For the tariffs applicable to Customer-Sited Access Line, reference is made to Belgacom Backhaul Leased Lines offer.

City	Address	NCOW	Applicable Tariff
Aalst	Ridderstraat 43	5321	OLO to LEX
Antwerpen - Berchem	Karel Coggestraat 2	3227	OLO to AGE
Antwerpen - Centrum	Lange Nieuwstraat 106	3224	OLO to AGE
Arlon	Avenue Jean-Baptiste Nothomb 40	6321	OLO to LEX
Ath	Rue Jean Jaurès, 11	6828	OLO to LEX
Brugge - Assebroek	Matmeers 2 A	5033	OLO to AGE
Brussels - Ixelles/Elsene	Rue Borrens - Borrensstraat 16	2646	OLO to LEX
Brussels - Etterbeek	Rue J. de Lalaing - J. de Lalaingstraat 36-40	2280	OLO to LEX
Brussels - Evere	Avenue des Anciens Combattants - Oudstrijderlaan 94	2726	OLO to LEX
Brussels - Linthout	Rue V. Lefèvre - V. Lefèvre 24-26	2732	OLO to LEX
Brussels - Marais	Rue du Marais - Broekstraat 72-74	2220	OLO to AGE
Brussels - Paille	Rue Lebeau - Lebeauststraat 2	2513	OLO to AGE
Brussels - Sacré-Coeur	Avenue A.J. Slegers - A.J. Slegerslaan 36	2770	OLO to LEX
Brussels - Schaarbeek	Rue Jan Blockx - Jan Blockxstraat 26-30	2215	OLO to LEX
Brussels - St-Gilles- /St. Gillis	Rue Steens - Steensstraat 11	2538	OLO to LEX
Brussels - Uccle	Rue Rodenbach - Rodenbachstraat 133	02	OLO to LEX
Brussels - Woluwe	Voordestraat 10	2725	OLO to LEX
Charleroi - Centre	Rue de la science 2	7127	OLO to LEX
Charleroi - Gilly	Sentier de la Limite 80	7141	OLO to AGE
Chimay	Rue Reine Astrid 5	6021	OLO to LEX
Ciney	Rue d'Omalus 67 B	8321	OLO to LEX
Dendermonde	Courtensstraat 22	5221	OLO to LEX
Diest	Ferd. Allenstraat 38	1333	OLO to LEX
Dinant	Rue Bribosia 9	8222	OLO to LEX
Durbuy	Chainrue 52	8621	OLO to LEX
Genk	Europalaan 27	8930	OLO to LEX
Gent - Centrum	Sint Niklaasstraat 27	9223	OLO to AGE
Gent - Keizer Karel	Keizer Karelstraat 1	9265	OLO to AGE
Hasselt	Paardsdemerstraat 10	1127	OLO to AGE
Herentals	Molenvest 13	1421	OLO to LEX
Huy	Rue du Vieux-Pont 16	85	OLO to LEX
Ieper	Vooruitgangsstraat 1	5720	OLO to LEX
Jemelle	Rue Delvigne 76	8421	OLO to LEX
Kortrijk	Doorniksestraat 61-65	5622	OLO to AGE
La Louvière	Rue de la Concorde 17	6422	OLO to LEX
Leuven	Vismarkt 17	1621	OLO to AGE
Libramont	Rue des alliés 1	6122	OLO to LEX
Liège - Centre	Rue de l'université 30	4223	OLO to AGE
Liège - Grétry	Rue d'Harscamp 17	4349	OLO to AGE
Mechelen	Stationstraat 58	1540	OLO to LEX
Mons	Rue des fosses 7	6533	OLO to AGE
Namur	Rue Marie-Henriette 60	8172	OLO to AGE
Namur	Rue Rogier 2	8123	OLO to AGE
Ninove	Groenmarkt 42	5433	OLO to LEX
Nivelles	Place Albert 1	6722	OLO to LEX
Oostende	Hendrik Serruyslaan 18 A	5970	OLO to LEX
Roeselare	H. Consciencestraat 3-5	5120	OLO to LEX
Ronse	Politieke Gevangenerstraat 14	5521	OLO to LEX
Stavelot	Cour de l'hôtel de ville 3	8088	OLO to LEX
Tournai	Rue de la Tête d'Or 9	6922	OLO to LEX
Verviers	Rue Thil Lorrain 6	8733	OLO to LEX
Veurne	Pannestraat 1	5831	OLO to LEX
Waremmme	Rue Joachim 67	1932	OLO to LEX
Wavre	Rue de la Limite 2	1022	OLO to LEX

4850 These prices are those stated in BIPT's advises on Backhaul. This advises are the object of requests for annulment before the "Council of State". Accordingly, Belgacom reserves its right to apply different prices, should these requests succeed.

1.3.7. Tariffs applicable for Belgacom-Sited Access Line

4951 For the tariffs applicable to Belgacom-Sited access line, reference is made to Belgacom Backhaul Leased Lines offer.

1.4. Tariffs applicable for the Ethernet Transport ([with shared VLAN's](#))

[52](#) [In section 1.4 the word "Broba over Ethernet" refers systematically to the service with shared VLAN's.](#)

1.4.1. Preamble

[5053](#) The Customer must be connected to at least one Service PoP in each Service area in which he wants to deliver the BROBA over Ethernet service.

[5154](#) Per service quality and per LEX where the Customer wants to deliver the BROBA over Ethernet service, the Customer must order at Belgacom one VLAN between this LEX and a Service PoP to which the Customer is connected, sited in the same Service Area as the LEX himself.

1.4.2. One-time fees

1.4.2.1. Fee for activation of VLAN

	Euro
Activation fee per VLAN	€49,40

1.4.2.2. Fee for change of VLAN Bandwidth

	Euro
Modification fee per VLAN	€30,28

1.4.2.3. Fee for de-activation of VLAN

	Euro
De-Activation fee per VLAN	€2,68

1.4.3. Monthly recurring fees

(*) Pending BIPT [decision-consultation](#) on [WBA VDSL2 rental fee](#) [Ethernet transport costs for BROBA and WBA](#), the monthly recurring fee applicable for the Ethernet transport will be aligned with the WBA VDSL2 Ethernet transport tariffs.

[5255](#) The prices are applicable per VLAN.

[5356](#) The price of the Ethernet Transport is differentiated based upon the requested Service Quality.

Service Quality	Price per Mbps (in €)
Best Effort (P=0)	(*)
Low Priority (P=1)	(*)

Medium Priority (P=3)	(*)
Highest Priority (P=5)	(*)

- 57 If the Bandwidth of a VLAN is expressed in Gbps, the following conversion rule applies: 1 Gbps = 1.000 Mbps.

1.5. Tariffs applicable for the Ethernet Transport (with dedicated VLANs)

58 In section 1.5, the word "Broba over Ethernet" refers systematically to the service with dedicated VLAN.

1.5.1. Preamble

59 The Customer must be connected to at least one Service PoP in each Service area in which he wants to deliver the Broba over Ethernet service.

60 Each dedicated VLAN is configured by Belgacom at the moment of the implementation of the end-user line, following specifications of the VLAN profile given by the Customer in the ADSL line ordering. The Customer is responsible for the choice and definition of each VLAN profile.

61 Each dedicated VLAN profile has following attributes:

- o Dwn Bwdth Pi = Maximum Downstream bandwidth for P=i
- o Up Bwdth Pi = Maximum Upstream bandwidth for P=i

where each bandwidth are expressed in Mbps, and where i belongs to {0;1;3;5}.

1.5.2. Monthly recurring fees

(*) Pending BIPT consultation on Ethernet transport costs for BROBA and WBA, the monthly recurring fee applicable for the Ethernet transport will be aligned with the WBA VDSL2 Ethernet transport tariffs.

62 The following formula allows to compute the monthly recurring fee per dedicated VLAN:

Max(Dwn Bwdth Pi, Up Bwdth Pi) * Price i

Where Price i is the price per Mbps of the Ethernet Transport, according to the requested Service Quality i.

<u>Service Quality</u>	<u>Price per Mbps (in €)</u>
<u>Best Effort (P=0)</u>	<u>*</u>
<u>Low Priority (P=1)</u>	<u>*</u>
<u>Medium Priority (P=3)</u>	<u>*</u>
<u>Highest Priority (P=5)</u>	<u>*</u>

1.6. Tariffs applicable for the OLO Access Line

1.4.4.1.6.1. Tariffs applicable for the 1GE Customer-Sited OLO Access Line

5563 For the tariffs applicable to the 1GE Customer-Sited OLO Access Line 1GE, reference is made to the BROTSOLL Ethernet pricing, namely to the Belgacom-Sited Gigabit Ethernet.

1.4.5.1.6.2. Tariffs applicable for the 1GE Belgacom-Sited OLO Access Line

Enquiry Fee : 112 €
Cable&Cable tray:
 Installation fee : 6,74 € per meter
 (with a minimum invoice equivalent to 20 meters)
 Monthly rental : 0,17 € per meter + 38,47 €
 (with a minimum invoice equivalent to 5 meters)
Small Building Works : case by case if necessary.

1.4.6.1.6.3. Tariffs applicable for the 1+1 GE / Belgacom + Customer-Sited OLO Access Line

5664 The tariffs applicable to the 1+1 GE / Belgacom + Customer-Sited OLO Access Line is the sum of the tariffs applicable to the 1GE Customer-Sited OLO Access Line and of the tariffs applicable to the 1GE Belgacom-Sited OLO Access Line.

1.5.1.7. Migration fees

5765 Those fees only refer to migrations towards a BROBA ADSL service. The tariffs for migrations

- towards a BROBA SDSL service are described in the Annex 6 of BROBA II SDSL.
- towards a BRUO service are set in the Annex H "Price List" of BRUO.

1.5.1.7.1. Single Line Migration fees

1.5.1.7.1.1. Conversion from BROBA II ADSL with voice towards BROBA II ADSL without voice (or conversely), for the same OLO

5866 The following tariffs are applicable for the conversion from BROBA II ADSL with voice towards BROBA II ADSL without voice (or conversely), for the same OLO.

	Euro
BROBA II with voice to BROBA II without voice and reverse, with/due to Number Portability Request asked by end-user	€0,00
BROBA II with voice to BROBA II without voice and reverse, asked by OLO	€5,28

5967 These fees include both the activation and the deactivation parts of the migration, and will be entirely invoiced to the Beneficiary.

1.5.1.2.1.7.1.2. Other Migration fees

6068 For ADSL and ADSL2 Reach Extended, the following Migration fees are applicable in the following cases:

- Change ownership: transfer of a line from Beneficiary 1 to Beneficiary 2.
- Convert: Product modification from any product to BROBA II ADSL or BROBA II ADSL2 Reach Extended (except cases listed in section 1.7.1.14.5.1.1)
- A combination of a. and b.

	Price
Change owner/Convert to BROBA II ADSL or ADSL2 Reach Extended with voice	€21,78
Change owner/Convert to BROBA II ADSL or ADSL2 Reach Extended without voice	€24,11

6169 For ADSL2+, the following Migration fees are applicable in the following cases:

- Change ownership: transfer of a line from Beneficiary 1 to Beneficiary 2.

- b. Convert: Product modification from any product to BROBA II ADSL2+ (except cases listed in section [1.7.1.1-5.1.1](#))
- c. A combination of a. and b.

	Price
Change owner/Convert to BROBA II ADSL2+ with voice	€36,30
Change owner/Convert to BROBA II ADSL2+ without voice	€38,30

[6270](#) The fees listed in [§6860](#) and [6961](#) include both the activation and the deactivation parts of the migration, and will be entirely invoiced to the destination Beneficiary.

[6371](#) For scenarios for which no specific Single Line migration process is developed (see list of active scenarios in Annex K Migrations), the provisioning will be realized in two steps, the first will be the deactivation of the previous situation and the second one the activation of the new situation. Therefore a deactivation fee will be invoiced to the Beneficiary of the previous situation and an activation fee will be billed to the Beneficiary of the new service. In case of product modification within the installed base of the same Beneficiary, this Beneficiary will be billed the deactivation fee and the activation fee.

[1.5.2.1.7.2.](#) Project Migration fees

[6472](#) Because of the specific character of the Project Migration, pricing will be proposed on a case-by-case quotation.

[1.5.3.1.7.3.](#) Mass Migration fees

[6573](#)

Migration Fee for Mass Migrations	Price
Physical Mass Migration to BROBA II ADSL	€45,50
Virtual Mass Migration to BROBA II ADSL	€8,45

[6674](#) For scenarios for which no specific Mass migration process is developed (see list of active scenarios in Annex K Migrations), the provisioning will be realized in two steps, the first will be the deactivation of the previous situation and the second one the activation of the new situation. Therefore a deactivation fee will be invoiced to the Beneficiary of the previous situation and an activation fee will be billed to the Beneficiary of the new service. In case of product modification within the installed base of the same Beneficiary, this Beneficiary will be billed the deactivation fee and the activation fee.

1.6.1.8. Use of e-tool and databases

1.6.1.8.1. Repair e-Tools

6775 The e-tool for repair BROBA and the repair line measurement

Repair e-Tools	Price
Repair and Line Measurement	Free of Charge

1.6.2.1.8.2. Street Information

6876 The Beneficiary will be invoiced for the KVD inquiry performed.

Received in one inquiry:	Price
First KVD Inquiry (1 KVD + 1 half hour for looking up the info)	€17,25
For every extra KVD	€0,59
For every extra 20' started A maximum of €17.25 * {# of requested KVD's} will be billed	€16,66

6977 The Network Street Relation Database can be obtained in MS Access format.

Network Street Relation Database	Price
Initial License Fee	€16.660
1 update/year annual fee	€2.000
6 updates/year annual fee	€5.000

2. Billing

2.1. Preliminary

- | ~~7078~~ Parties are defined in the present document as Belgacom a telecommunication operator in Belgium and Beneficiary, an undertaking authorized to practice the activities covered by this agreement under the Belgian regulatory framework.
- | ~~7179~~ The Belgacom billing process is based on a number of steps in which the two Parties have specific responsibilities. In order to implement this process, both Parties need to put in place (a) system(s) that will be used for the purposes of accounting and billing.
- | ~~7280~~ For each BROBA product, Belgacom will invoice Beneficiary accordingly
- | ~~7381~~ Belgacom shall record, store and process the Billing Data in accordance with Section 2 of this Document.
- | ~~7482~~ The "Billing Data" is the data that is necessary to ascertain the charges payable by Beneficiary under the Agreement. The Billing Data is recorded via the Billing System as described in Section 2.2 of this Document.
- | ~~7583~~ All information related to the Billing procedures between Belgacom and Beneficiary is covered by the obligation of confidentiality set out in the Agreement. Specifically, such information will be kept strictly confidential by the Parties and will only be used for the purposes of accounting, and invoicing between the Parties and will only be disclosed between the Parties, or as legally required or in the framework of formal dispute procedures. Belgacom will be under no obligation to provide to Beneficiary direct access to its Billing system nor to any other system or facility generating the Billing Data.
- | ~~7684~~ Belgacom reserves the right to modify the layout and the presentation of the invoice to the Beneficiary.

2.2. Recording and storage of billing data

7785 For each service chargeable under the Agreement, Belgacom shall record via its Billing System at least the following Billing Data:

- Product/service ID;
- Type of request
- Subscription date;
- End of month of Subscription date;
- Customer ID;
- Account ID;

7886 The general list of billing data indicated above is not exhaustive. Pricing is set in the Section 1 of this Annex.

7987 Billing Data shall be stored for 60 days after the due date of the related invoice. In case of a dispute on the Billing Data, Belgacom will use all reasonable effort to keep the storage of the concerned Billing Data. The storage of these detailed Billing Data shall be limited to the disputed amount of Billing Data.

2.3. Confirmation of charging principles

8088 All charges payable under this Agreement shall be calculated in accordance with the rules set out in the relevant provisions of this Agreement and its Annexes.

8189 For internal purpose, Belgacom will use 6 decimals in Euro. The use of decimals is set as follows:

- Per line items up to 4 decimals can be used in Euro.
- The revenues, VAT and the totals use decimals in Euro.

8290 All the non-recurring charges will be mentioned in the Invoice of the Billing Period covering the Bringing Into Service Date.

8391 The recurring charges for the product fees will be mentioned in the Invoice of the Billing Period which the Bringing In Service Date encompasses. The Charges will be calculated on the proportion of the Billing Period in which the product and service fee were operational

8492 Beneficiary amount of charges will be divided in the groups of one-time fees and recurring fees for the services described in the pricelist of this offer (Section 1 of this Annex)

2.4. Invoices

8593 Subject to the specific rules applying to specific types of Services as set out in Appendix A, Belgacom shall submit to the Beneficiary, invoice(s) for the charges under the Agreement during the applicable Billing Period.

8694 For each Billing Period, Belgacom shall provide to Beneficiary the Invoice described hereafter. The Invoice will be established in accordance with the following rules:

- Invoice Details: the Invoice will list all the services by product that are provided by Belgacom to the Beneficiary.
- The above-mentioned Invoice will be transmitted via ordinary mail to the representatives or departments of Beneficiary as listed in Appendix B Contact persons.

8795 Any invoice or credit note transmitted by Belgacom will contain the following information, in addition to any legally required mentions and information:

- relevant Billing Period;
- total net amount in Euro;
- due VAT amount;
- total amount due in Euro (including VAT);
- Due Date.

8896 Belgacom shall use its best endeavours to issue invoices as of the start of the applicable Billing Period. Though, in respect of the development of billing systems by both Parties and the sending of invoices, Belgacom cannot ensure that the invoicing for the products and services provided will be performed within specific delays. Delays in the production of invoices can occur under these circumstances following notification by the Billing Party. Neither party may construe any late billing by the other party as a renunciation to its right to payment of the said bills.

8997 Notwithstanding the foregoing, if an adjustment is required following a change in the referred Price List, a pending Dispute (for which the appropriate Dispute resolution mechanisms have been timely activated in accordance with this Agreement) or the outcome of commercial negotiations having a retroactive effect, the amount of such adjustment shall be established and Belgacom shall issue an invoice or a credit note as the case may be, within 30 days from the date of the relevant adjustment.

9098 All changes to amounts invoiced in accordance with this Section 4 will be effected through credit notes or additional invoices.

2.5. Payment

- | 9199 All charges due by Beneficiary to Belgacom under the Agreement shall be paid within 30 Calendar Days after issuance of the invoice (the "Due Date").
- | 92100 If Beneficiary has sent to Belgacom a Notice of Dispute related to an amount invoiced by Belgacom and if such Dispute has not been resolved by the Due Date the disputed amount may be withheld until the dispute is resolved provided that the remaining balance is payable on the Due Date.
- | 93101 Credit notes will be set off against any payments due of the next invoice and are refundable when there are no outstanding invoices.
- | 94102 If payment is not received by Belgacom on or before the Due Date, Belgacom will be entitled to an interest calculated on the basis of the legal interest rate + 2 percent points on the unpaid balance for late payment interests, administrative and recovery costs, but is only due if the dispute has been resolved in favour of Belgacom. This interest shall accrue from the Due Date until the date of payment in full of the amount to be paid. Such interest shall accrue day by day and shall not be compounded. In the event that a Dispute resolution procedure has been initiated by Belgacom as provided by the Agreement (including Section 2.6 of this Document), this interest shall be limited to the legal interest rate.
- | 95103 Value Added Tax as well as any other applicable taxes, if any, shall be added to all or any part of the charges due under this Agreement and shall be paid by the Beneficiary responsible for making such payment.
- | 96104 Any payments under this Agreement will be made in Euro and will be made by bank transfer on the bank accounts mentioned in the Invoice. Payment costs are born by the Beneficiary. Costs of credit notes are born by Belgacom.

2.6. Disputes

- | 97105 The Parties shall use their reasonable endeavours to resolve, pursuant to this Section 2.6 disputes related to the calculation and settlement of the charges invoiced or to be invoiced pursuant to this Document. Notwithstanding the foregoing, either Party will be allowed to trigger at any time the dispute resolution procedure provided under the main body of the Agreement provided that such Party reasonably believes that the Dispute at stake involves aspects of the Parties' rights and obligations broader than the mere calculation and settlement of charges pursuant to this Document. The fact that a Dispute involves aspects broader than the mere calculation and settlement of charges pursuant to this Document will not release the Disputing Party from its obligation to pay any undisputed amount pursuant to Section 2.5.
- | 98106 Any Dispute under this Section 2.6 will be triggered by a Notice of Dispute sent by registered letter by the Beneficiary to Belgacom before the Due Date. Such Notice of Dispute will indicate the disputed amounts, as well as a summary of the grounds for the Dispute and the position of the Disputing Party. Any

amount invoiced under the Agreement will be deemed accepted unless a Notice of Dispute has been sent in accordance with above.

99107 Upon receipt of the Notice of Dispute, the Parties shall exchange by ordinary mail any information necessary or useful for solving the Dispute.

100108 Within 15 Working Days from the date of the Notice of Dispute, Belgacom will provide, by registered mail, an answer ("Notice of Reply") to the Beneficiary. If Belgacom does not accept some or all the arguments of the Beneficiary, the Notice of Reply will contain a justified reply to the arguments of the Beneficiary. If Belgacom accepts all or some arguments of the Beneficiary, Belgacom will, together with the Notice of Reply, issue a credit note for the relevant amount.

101109 If, within 15 Working Days from the receipt of the Notice of Reply, the Beneficiary confirms its position in writing by registered letter, the Parties will escalate the Dispute within their respective organization as provided under Section 2.6. If the Beneficiary fails to confirm its position within 15 Working Days, from the date of the Notice of Reply, any outstanding amounts will be paid promptly and without delay and the Dispute will be deemed settled.

102110 If the Parties have been unable to settle the Dispute as provided under the foregoing provisions, they will refer the matter to Implementation Committee, which, if deemed necessary by either Party, will be organized for this specific purpose. If after such meeting, the Dispute remains, the Parties will follow such additional steps in the escalation procedure as provided in the main body of the Agreement, or, if requested by either Party, the Dispute will be submitted to a certified accountant to be either jointly appointed by the Parties, or, failing agreement between the Parties in this respect, to be appointed by "Belgisch Instituut voor Bedrijfsrevisoren"/"Institut Belge des Réviseurs d'Enterprise". This certified accountant will investigate and determine a solution for the Dispute, acting as an expert and not as an arbitrator. Unless there is evidence of a manifest error, decision of the certified accountant will be final in respect of those elements covered by the Dispute referred to him/her and will be binding on the Parties. The Parties will co-operate with this investigation. The costs of the certified accountant will be borne as determined by him/her in proportion to the outcome of the Dispute. Prior to undertaking his/her mission, the certified accountant will provide the Parties with an estimate of the relevant fees and costs. Upon final settlement of the Dispute, any necessary credit note will be issued and any outstanding amount will be paid promptly and without delay.

Appendix A: Billing parameters

103111 Product covered under this billing and accounting document:

104112 BROBA 2 (Data Connectivity Broba II)

105113 The general list of billing services below is not exhaustive, and may be adapted. Pricing is set in Section 1 of this Annex.

106114 Tariffs applicable for the End User line

- One time fees
 - Inquiry fee
 - Lex Length Check
 - Activation fee of ADSL Service on an End User line (activation of line profile).
 - VC Configuration Fee for ADSL Service on an End-User Line (activation of a VC deactivation of a VC, modification).
 - Additional fee for Telecom Installation.
 - De-activation fee of ADSL Service on an End User line (de-activation of the line profile and of the last VC is not included).
 - Modification of End-User line profile (Line profile)
 - Change Date fee.
 - Cancellation fee
 - Migration fee
 - Change Use fee (Convert)
 - Move from LDC to LEX
 - Pending due to useless end-user visit
 - Improved SLA
 - Small Network Adaptations.
 - Wrongful repair request
- Monthly recurring fee per End User line

107115 Tariffs applicable for the ATM Transport

- Monthly recurring fee for ATM Transport between DSLAM located in a specific Lex and Belgacom ATM Access Point to which the Beneficiary is connected. The monthly recurring fee is based on the total bandwidth (VCs and VPs) arriving at each ATM Access Point (No ventilation between connection to single and various ATM Access Points).
- One-time Fees
 - Fees for activation of VPs
 - Fees for change of ATM transport parameters (VP modification)
 - Bandwidth Rerouting Fees

108116 Tariffs applicable for the Ethernet Transport

- Monthly recurring fee for Ethernet Transport between GE_NT aggregator located in the Lex's where the Customer wants to connect Users and the Belgacom Service PoPs to which the Beneficiary is connected. The monthly recurring fee is invoiced per VLAN.
- One-time Fees
 - Fees for activation/deactivation of VLANs.
 - Fees for change of shared VLANs Bandwidth.
 - Fees for change of dedicated VLAN profile.

109117 Tariffs applicable for the Access Line or OLO Access Line

- Tariffs applicable for Customer-Sited Access Line or OLO Access Line
- Tariffs applicable for Belgacom-Sited Access Line or OLO Access Line

110118 Belgacom reserves its right to modify the lay out and the presentation of its invoice to the Beneficiary.

Appendix B: Contact Persons

The Invoices will be sent to the under mentioned contact persons:

Contact person in Belgacom

Name	
Division	National Wholesale
Address	Koning AlbertII-laan 27, 1030 Brussels
Tel	+32 2
Fax	+32 2
Bank Account	

Contact persons Beneficiary

Name	
Division	
Room	
Address	
Tel	
Fax	
Bank Account	

Billing address Beneficiary

Name	
Division	
Room	
Address	
Tel	
Fax	

BROBA II SDSL

Annex 6

Pricing and Billing

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Preliminary notes

All prices included in this Price List are expressed in Euro, VAT excluded.
Structure and prices of the below Price List are subject to further adaptations.

For prices related to ATM or Ethernet ~~in VP-switching mode~~transport, reference is made to the Belgacom Reference Offer for Bitstream Access - BROBA II ADSL Annex 6 – Pricing & Billing.

1. Pricing

1.1. Startup fee

1. The start-up fee is charged to Beneficiary, operator, consultant or other that requires explanations by Belgacom BROBA specialists (Product Management and/or Customer service) on the offer content (e.g. this fee is not charged for negotiation meetings). This fee is due until the first installation of the Beneficiary of a VP to a DSLAM.

Information on BROBA	Price
Rate per hour per Belgacom person	€ 99,49

1.2. Tariffs applicable for the end-user line

1.2.1. XML Inquiry Fee

2. The XML inquiry fee will be invoiced only in case the Beneficiary does not place a firm order within 45 working days after the inquiry has been proceeded by Belgacom. In such case, this Beneficiary will be invoiced the following amount for the work performed by Belgacom.

	Euro
Inquiry Fee	€9,94

1.2.2. LLU Inquiry Tool

3. The Beneficiary will be invoiced the following amount per inquiry done.

	Euro
Per inquiry done	€0,00

1.2.3. Activation fee of the SDSL service on an end-user line

Activation Fee per line	Euro
Activation fee for BROBA II SDSL (VC or VP-switching without customer visit	~~€121,855~~ <u>112,47</u>

4. The activation fees ~~are is inclusive~~exclusive the price of ~~the~~ activation of ~~the~~ first any VC on the End User Line.
5. For the Activation of a BROBA II SDSL without customer visit on an End User Line, the above-mentioned fee includes a certain percentage of the NTP installation and hardware costs, following allocation rules approved by the BIPT.
6. An activation fee for Broba II SDSL without customer visit will be created once the NTP process will be in place. In parallel, the activation fee for BROBA II SDSL with customer visit will be reviewed

1.2.4. Fees related to VCs

1.2.4.1. VC Configuration Fee on an End User Line

Fee per VC	Activation	Modification	De-activation
<u>Broba over ATM, VP switching mode</u>	<u>€7,69</u>	<u>€7,69</u>	<u>€7,69</u>
<u>Broba over ATM, VC switching mode</u>	<u>€11,08</u>	<u>€11,08</u>	<u>€11,08</u>
<u>Broba over ETH, with shared VLAN's</u>	<u>€7,69</u>	<u>€7,69</u>	<u>€7,69</u>
<u>Broba over ETH, with dedicated VLAN's</u>	<u>€41,61</u>	<u>€33,63</u>	<u>€12,21</u>

	Euro
~~Activation/Modification/De-activation fee per VC (in VC switching mode)~~	~~€11,08~~
~~Activation/Modification/De-activation fee per VC (in VP switching mode)~~	~~€7,69~~

7. ~~For the first VC activated together with the activation of the End-User Line, the above-mentioned fees are billed independantly of any other fee for the VC. Activation must not be added to the Activation Fee per line.~~
8. ~~For the last VC de-activated together with the de-activation of the End-User Line, the above-mentioned fees for the VC de-activation must not be added to the De-activation Fee per line.~~
- 9.8. The fees will also be applicable, ~~in VP switching mode,~~ per VC, in case of modification from ATM to Ethernet transport with shared VLAN (and vice-versa), for the same Beneficiary.

1.2.5. Modification of End-User Line Profile

	Euro
Modification of Line profile (in VC switching mode)	€11,08
Modification of Line profile (in VP switching mode)	€7,69

10.9. In case of simultaneous Modification of a Line Profile and of a VC of the same End-User Line, both fees will be invoiced.

1.2.6. De-activation Fee of the SDSL Service on an End User line

11.10. This is the fee that the beneficiary has to pay in case the beneficiary wants to stop an already activated service.

	Euro
De-activation fee	€ ~~10,45~~ <u>19,43</u>

12.11. The above-mentioned fee is ~~inclusive~~exclusive the price of ~~the~~ de-activation of ~~the last~~any VC on the End User Line.

1.2.7. Change Date Fee

13.12. When a Beneficiary (or Belgacom) requests to change the date of implementation, Belgacom (or the Beneficiary) will invoice this Beneficiary (or Belgacom) the following Change Date fee:

Change Date Fee	Euro
Change before DD-1 (12 pm)	€6,59

14.13. In case such change is requested after due date-1 (12 pm), the same fee will be paid by the Beneficiary (or Belgacom) up to the condition that the new activation date is within 20 working days.

1.2.8. Cancellation Fee

15.14. The Beneficiary requesting the cancellation of an order shall pay to Belgacom the administrative fee mentioned in the table below:

Cancellation Fee	Euro
Cancellation before DD-1 (12 pm)	€6,99

16.15. In case cancellation is requested after DD-1 (12 pm), half of the related activation fee and half of the de-activation fee (instead of the cancellation fee) will have to be paid by the Beneficiary (refer to point 1.2.3. of this section)

1.2.9. Pending order due to useless end-user visit

Pending order due to useless end-user visit	Euro
Per intervention	€20,04

17.16. This fee is due when an end-user of the Beneficiary is not present at his premises on the appointment date, if the validate message has been sent by Belgacom to the Beneficiary in the timing described in Annex 5 (SLA), so that the Beneficiary has had the opportunity to propose an alternative date-hour if necessary.

1.2.10. Improved SLA

18.17. One-time fee for configuration of systems and resources. The setup fee is to be paid one time only, for the first Improved SLA BROBA II (~~"Improved SLA Broba II ADSL & SDSL VP switching"~~ or ~~"Improved SLA SDSL VC switching"~~).

	One-time fee
Setup fee	€2.000,47

19.18. One-time fee per line for setup of ISLA in case of a new line.

	One-time fee
Activation fee	€8,23

20.19. One-time fee per line for change of the SLA from Basic to Improved (or reverse) in case of an existing line.

	Per local loop
Change SLA type fee	€8,23

21.20. Rental fee per local loop with the ISLA type in addition to the monthly fee.

	Monthly Rental
Extra Rental Fee	€8,74

22.21. Extra monthly rental fee for the ATM or Ethernet transport repair timer.

	Monthly Rental
Extra ATM Fee	€5,75 per VC

1.2.11. Small Network Adaptations

23.22. In case Belgacom needs to perform additional work, also called Small Network Adaptation, according to the terms and definitions as defined in this Offer, the following fee will apply in surplus of the installation fee.

	Euro
Small Network Adaptations	€441,66

24.23. This fee will only be billed after having given to the Beneficiary the proof of the effective need and execution (with number of pairs introduced) of the Small Network Adaptations. This has to be done in written form. If no proof is given, the relevant fee is not due by the Beneficiary. Only the number of pairs related to the request are due, on a pro-rata base.

1.2.12. Wrongful Repair request

25.24. In case of wrongful repair request by a Beneficiary, Belgacom will invoice this Beneficiary an administrative fee of 104,61 Euro.

26.25. If Belgacom has performed specific work due to this wrongful repair request made by Beneficiary, Belgacom will invoice these additional costs to Beneficiary.

27.26. In case of wrongfull repair request by a Beneficiary, the invoicing of 104,61€ is to be done only in accordance with the provisions of section 5 ("Wrongful Repair Requests") of the Annex 5, in either case. Belgacom will provide the following information to the Beneficiary as well as to the BIPT: detailed data about the relevant cases, the ticket numbers, the date and hour of opening and closing of the tickets, the identification numbers (e.g. directory numbers) and that's the reason why Belgacom's responsibility is not involved.

1.2.13. Monthly Recurring fee per End User line

Monthly Recurring Fee	Euro
BROBA II SDSL specific costs	€ 6,91
BRUO ~~2006~~ Raw Copper	Price applicable for the invoiced period
Total monthly rental fee	BRUO Raw Copper + BROBA II SDSL specific costs

1.3. Tariffs applicable for the ATM Transport (incl. Access Line)

| [28.27.](#) Reference is made to the Belgacom Reference Offer for Bitstream Access
BROBA II ADSL Annex 6 – Pricing & Billing.

1.4. Tariffs applicable for the Ethernet Transport (incl. OLO Access Line)

| [29.28.](#) Reference is made to the Belgacom Reference Offer for Bitstream Access
BROBA II ADSL Annex 6 – Pricing & Billing.

1.5. Migration fees

30.29. Those fees only refer to migrations towards a BROBA SDSL service. The tariffs for migrations

- towards a BROBA ADSL service are described in the Annex 6 of BROBA II ADSL.
- towards a BRUO service are described in the Annex H "Price List" of BRUO.

1.5.1. Single Line Migration fees

31.30. The Physical Migration fee is applicable in the following cases:

- a. Change ownership: transfer of a line from Beneficiary 1 to Beneficiary 2.
- b. Convert: Product modification from any product to BROBA II SDSL.
- c. A combination of a. and b.

Physical Migration fee	Price
Change owner/Convert to BROBA II SDSL	€ 63,98

- 2 The Physical Migration fee includes both the activation and the deactivation parts of the migration, and will be entirely invoiced to the destination Beneficiary.

32.31. For scenarios for which no specific Single Line migration process is developed (see list of active scenarios in Annex K Migrations), the provisioning will be realized in two steps, the first will be the deactivation of the previous situation and the second one the activation of the new situation. Therefore a deactivation fee will be invoiced to the Beneficiary of the previous situation and an activation fee will be billed to the Beneficiary of the new service. In case of product modification within the installed base of the same Beneficiary, this Beneficiary will be billed the deactivation fee and the activation fee.

1.5.2. Project Migration fee

33.32. Because of the specific character of the Project Migration, pricing will be proposed on a case-by-case quotation.

1.6. Use of e-tool and databases

1.6.1. Repair e-Tools

34.33. The e-tool for repair BROBA and the repair line measurement

Repair e-Tools	Price
Repair and Line Measurement	Free of Charge

1.6.2. Street Information

35.34. The Beneficiary will be invoiced for the KVD inquiry performed.

Received in one inquiry:	Price
First KVD Inquiry (1 KVD + 1 half hour for looking up the info)	€ 17,25
For every extra KVD	€ 0,59
For every extra 20' started A maximum of €17.25 * {# of requested KVD's} will be billed	€ 16,66

36.35. The Network Street Relation Database can be obtained in MS Access format.

Network Street Relation Database	Price
Initial License Fee	€ 16.660
1 update/year annual fee	€ 2.000
6 updates/year annual fee	€ 5.000

1.7. Billing

1.8. Preliminary

- | 37.36. Parties are defined in the present document as Belgacom a telecommunication operator in Belgium and Beneficiary, an undertaking authorized to practice the activities covered by this agreement under the Belgian regulatory framework.
- | 38.37. The Belgacom billing process is based on a number of steps in which the two Parties have specific responsibilities. In order to implement this process, both Parties need to put in place (a) system(s) that will be used for the purposes of accounting and billing.
- | 39.38. For each BROBA product, Belgacom will invoice Beneficiary accordingly
- | 40.39. Belgacom shall record, store and process the Billing Data in accordance with Section 2 of this Document.
- | 41.40. The "Billing Data" is the data that is necessary to ascertain the charges payable by Beneficiary under the Agreement. The Billing Data is recorded via the Billing System as described in Section 2.2 of this Document.
- | 42.41. All information related to the Billing procedures between Belgacom and Beneficiary is covered by the obligation of confidentiality set out in the Agreement. Specifically, such information will be kept strictly confidential by the Parties and will only be used for the purposes of accounting, and invoicing between the Parties and will only be disclosed between the Parties, or as legally required or in the framework of formal dispute procedures. Belgacom will be under no obligation to provide to Beneficiary direct access neither to its Billing system nor to any other system or facility generating the Billing Data.
- | 43.42. Belgacom reserves the right to modify the layout and the presentation of the invoice to the Beneficiary.

1.9. Recording and storage of billing data

44.43. For each service chargeable under the Agreement, Belgacom shall record via its Billing System at least the following Billing Data:

- Product/service ID;
- Type of request
- Subscription date;
- End of month of Subscription date;
- Customer ID;
- Account ID;

45.44. The general list of billing data indicated above is not exhaustive. Pricing is set in the Section 1 of this Annex.

46.45. Billing Data shall be stored for 60 days after the due date of the related invoice. In case of a dispute on the Billing Data, Belgacom will use all reasonable effort to keep the storage of the concerned Billing Data. The storage of these detailed Billing Data shall be limited to the disputed amount of Billing Data.

1.10. Confirmation of charging principles

47.46. All charges payable under this Agreement shall be calculated in accordance with the rules set out in the relevant provisions of this Agreement and its Annexes.

48.47. For internal purpose, Belgacom will use 6 decimals in Euro. The use of decimals is set as follows:

- Per line items up to 4 decimals can be used in Euro.
- The revenues, VAT and the totals use decimals in Euro.

49.48. All the non-recurring charges will be mentioned in the Invoice of the Billing Period covering the Bringing Into Service Date.

50.49. The recurring charges for the product fees will be mentioned in the Invoice of the Billing Period, which the Bringing In Service Date encompasses. The Charges will be calculated on the proportion of the Billing Period in which the product and service fee were operational

51.50. Beneficiary amount of charges will be divided in the groups of one-time fees and recurring fees for the services described in the pricelist of this offer (Section 1 of this Annex)

1.11. Invoices

52.51. Subject to the specific rules applying to specific types of Services as set out in Appendix A, Belgacom shall submit to the Beneficiary, invoice(s) for the charges under the Agreement during the applicable Billing Period.

53.52. For each Billing Period, Belgacom shall provide to Beneficiary the Invoice described hereafter. The Invoice will be established in accordance with the following rules:

- Invoice Details: the Invoice will list all the services by products that are provided by Belgacom to the Beneficiary.
- The above-mentioned Invoice will be transmitted via ordinary mail to the representatives or departments of Beneficiary as listed in Appendix B Contact persons.

54.53. Any invoice or credit note transmitted by Belgacom will contain the following information, in addition to any legally required mentions and information:

- relevant Billing Period;
- total net amount in Euro;
- due VAT amount;
- total amount due in Euro (including VAT);
- Due Date.

55.54. Belgacom shall use its best endeavors to issue invoices as of the start of the applicable Billing Period. Though, in respect of the development of billing systems by both Parties and the sending of invoices, Belgacom cannot ensure that the invoicing for the products and services provided will be performed within specific delays. Delays in the production of invoices can occur under these circumstances following notification by the Billing Party. Neither party may construe any late billing by the other party as a renunciation to its right to payment of the said bills.

56.55. Notwithstanding the foregoing, if an adjustment is required following a change in the referred Price List, a pending Dispute (for which the appropriate Dispute resolution mechanisms have been timely activated in accordance with this Agreement) or the outcome of commercial negotiations having a retroactive effect, the amount of such adjustment shall be established and Belgacom shall issue an invoice or a credit note as the case may be, within 30 days from the date of the relevant adjustment.

57.56. All changes to amounts invoiced in accordance with this Section 1.11 will be made through credit notes or additional invoices.

1.12. Payment

- | 58.57. All charges due by Beneficiary to Belgacom under the Agreement shall be paid within 30 Calendar Days after issuance of the invoice (the "Due Date").
- | 59.58. If Beneficiary has sent to Belgacom a Notice of Dispute related to an amount invoiced by Belgacom and if such Dispute has not been resolved by the Due Date the disputed amount may be withheld until the dispute is resolved provided that the remaining balance is payable on the Due Date.
- | 60.59. Credit notes will be set off against any payments due of the next invoice and are refundable when there are no outstanding invoices.
- | 61.60. If payment is not received by Belgacom on or before the Due Date, Belgacom will be entitled to an interest calculated on the basis of the legal interest rate + 2 percent points on the unpaid balance for late payment interests, administrative and recovery costs, but is only due if the dispute has been resolved in favor of Belgacom. This interest shall accrue from the Due Date until the date of payment in full of the amount to be paid. Such interest shall accrue day by day and shall not be compounded. In the event that Belgacom as has initiated a Dispute resolution procedure provided by the Agreement (including Section 1.13 of this Document), this interest shall be limited to the legal interest rate.
- | 62.61. Value Added Tax as well as any other applicable taxes, if any, shall be added to all or any part of the charges due under this Agreement and shall be paid by the Beneficiary responsible for making such payment.
- | 63.62. Any payments under this Agreement will be made in Euro and will be made by bank transfer on the bank accounts mentioned in the Invoice. Payment costs are born by the Beneficiary. Costs of credit notes are born by Belgacom.

1.13. Disputes

- | 64.63. The Parties shall use their reasonable endeavors to resolve, pursuant to this Section 6 disputes related to the calculation and settlement of the charges invoiced or to be invoiced pursuant to this Document. Notwithstanding the foregoing, either Party will be allowed to trigger at any time the dispute resolution procedure provided under the main body of the Agreement provided that such Party reasonably believes that the Dispute at stake involves aspects of the Parties' rights and obligations broader than the mere calculation and settlement of charges pursuant to this Document. The fact that a Dispute involves aspects broader than the mere calculation and settlement of charges pursuant to this Document will not release the Disputing Party from its obligation to pay any undisputed amount pursuant to Section 1.12.

65-64. Any Dispute under this Section 1.13 will be triggered by a Notice of Dispute sent by registered letter by the Beneficiary to Belgacom before the Due Date. Such Notice of Dispute will indicate the disputed amounts, as well as a summary of the grounds for the Dispute and the position of the Disputing Party. Any amount invoiced under the Agreement will be deemed accepted unless a Notice of Dispute has been sent in accordance with above.

66-65. Upon receipt of the Notice of Dispute, the Parties shall exchange by ordinary mail any information necessary or useful for solving the Dispute.

67-66. Within 15 Working Days from the date of the Notice of Dispute, Belgacom will provide, by registered mail, an answer ("Notice of Reply") to the Beneficiary. If Belgacom does not accept some or all the arguments of the Beneficiary, the Notice of Reply will contain a justified reply to the arguments of the Beneficiary. If Belgacom accepts all or some arguments of the Beneficiary, Belgacom will, together with the Notice of Reply, issue a credit note for the relevant amount.

68-67. If, within 15 Working Days from the receipt of the Notice of Reply, the Beneficiary confirms its position in writing by registered letter, the Parties will escalate the Dispute within their respective organization as provided under Section 1.13. If the Beneficiary fails to confirm its position within 15 Working Days from the date of the Notice of Reply, any outstanding amounts will be paid promptly and without delay and the Dispute will be deemed settled.

69-68. If the Parties have been unable to settle the Dispute as provided under the foregoing provisions, they will refer the matter to Implementation Committee, which, if deemed necessary by either Party, will be organized for this specific purpose. If after such meeting, the Dispute remains, the Parties will follow such additional steps in the escalation procedure as provided in the main body of the Agreement, or, if requested by either Party, the Dispute will be submitted to a certified accountant to be either jointly appointed by the Parties, or, failing agreement between the Parties in this respect, to be appointed by "Belgisch Instituut voor Bedrijfsrevisoren"/"Institut Belge des Réviseurs d'Enterprise". This certified accountant will investigate and determine a solution for the Dispute, acting as an expert and not as an arbitrator. Unless there is evidence of a manifest error, decision of the certified accountant will be final in respect of those elements covered by the Dispute referred to him/her and will be binding on the Parties. The Parties will co-operate with this investigation. The costs of the certified accountant will be borne as determined by him/her in proportion to the outcome of the Dispute. Prior to undertaking his/her mission, the certified accountant will provide the Parties with an estimate of the relevant fees and costs. Upon final settlement of the Dispute, any necessary credit note will be issued and any outstanding amount will be paid promptly and without delay.

Appendix A: Billing parameters

70.69. Product covered under this billing and accounting document:

71.70. The general list of billing services below is not exhaustive, and may be adapted. Pricing is set in Section 1 of this Annex.

72.71. Tariffs applicable for the End User line

- One time fees
 - Inquiry fee
 - Lex Length Check
 - Activation fee of SDSL Service on an End User line (including activation of the line profile)
 - VC Configuration Fee for SDSL Service on an End-User Line (activation of a VC, deactivation of a VC, modification).
 - De-activation fee of SDSL Service on an End User line (excluding de-activation of the line profile and of the last VC)
 - Modification of End-User line profile (Line profile)
 - Change Date fee.
 - Cancellation fee
 - Pending order due to useless end-user visit
 - Improved SLA
 - Small Network Adaptations.
 - Wrongful repair request
- Monthly recurring fee per End User line

73.72. Tariffs applicable for the ATM Transport

- Monthly recurring fee for ATM Transport between DSLAM located in a specific Lex and Belgacom ATM Access Point to which the Beneficiary is connected. The monthly recurring fee is based on the total bandwidth (VCs and VPs) arriving at each ATM Access Point (no ventilation between connection to single and various ATM Access Points).
- One-time Fees
 - Fees for activation of VPs
 - Fees for change of ATM transport parameters (VP modification)

3 Tariffs applicable for the Ethernet Transport

- Monthly recurring fee for Ethernet Transport between GE_NT aggregator located in the Lex's where the Customer wants to connect Users and the Belgacom Service PoPs to which the Beneficiary is connected. The monthly recurring fee is invoiced per VLAN.
- One-time Fees
 - Fees for activation/deactivation of VLANs.
 - Fees for change of shared VLANs Bandwidth.
 - Fees for change of dedicated VLAN profile.

74.73. Tariffs applicable for the Access Line or OLO Access Line

- Tariffs applicable for Customer-Sited Access Line or OLO Access Line
- Tariffs applicable for Belgacom-Sited Access Line or OLO Access Line

| 75.74. Belgacom reserves its right to modify the layout and the presentation of its invoice to the Beneficiary.

APPENDIX B: Contact Persons

The Invoices will be sent to the under mentioned contact persons:

Contact person in Belgacom

Name	
Division	National Wholesale
Address	Koning AlbertII-laan 27, 1030 Brussels
Tel	+32 2
Fax	+32 2
Bank Account	

Contact persons Beneficiary

Name	
Division	
Room	
Address	
Tel	
Fax	
Bank Account	

Billing address Beneficiary

Name	
Division	
Room	
Address	
Tel	
Fax	

APPENDIX C: Calculation methodology for bandwidth

Reference is made to the BELGACOM Reference Offer for Bitstream Access - Data Connectivity BROBA II ADSL Annex 6 – Pricing & Billing.

BROBA II ADSL/SDSL

Annex 7

Operational systems

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1. Introduction

1. This document describes in what way access to operational systems are developed for the Beneficiary in scope of BROBA 2. The exact procedures in using this are described in Annex 4 - Planning and Operations.

2. Order provisioning

2. All exchange of information between Belgacom and the Beneficiary will be done through an electronic system or by fax on choice of the Beneficiary. In case there is no XML procedure in place or if this procedure is neither sufficient nor effective for a particular process (e.g. migration) all orders can be given by fax, letter, e-mail. For more information on the back up procedure, reference is made to Annex 4 – Appendix D.
3. The communication process between the Beneficiary and Belgacom is based on SMTP Mail for the transfer, a ACK/NACK protocol and a message file in attachment with a predefined format.
4. The messages that are exchanged between the Beneficiary and Belgacom are encrypted and signed by the sender. Each message contains one order form in attachment that is coded in XML.
5. Only Beneficiary's who have signed the "Agreement for the provisioning of Bitstream Access in the local loops of Belgacom" will obtain the encryption keys in order to sign and encrypt the message. This will enable the Beneficiary to test the messaging system.
6. The Beneficiary prepares the file in the predefined XML format, signs it, encrypts it, attaches it to a mail and sends it to the mailbox of Belgacom. The e-mail address for ULL is WDC@belgacom.be.

3. Fault reporting request

7. All requests for repair of Broba II are introduced by e-mail or by phone or fax depending on the related repair. The e-mail address to be used by the Beneficiary is broba.repair@belgacom.be. The Beneficiary will send an excel file with the description of the problem to this address.
8. It is always the Beneficiary that receives own End Users' fault reports regarding the data access services before reporting faults to Belgacom except if these fault reports are related to the PSTN/ISDN services provided by Belgacom.

4. BROBA Inquiry Tool

9. The Beneficiary will obtain through the BROBA Inquiry web tool the confirmation whether the Broba II service is available. The BROBA Inquiry Tool is available on the public Internet and is accessible through multiple login's and password. The inquiry tool is fully separated from the ordering process.

BROBA II ADSL/SDSL

Annex 8

Prepayment Terms & Conditions

Prepayment Terms and Conditions

1. Belgacom will send on a monthly basis a pre-invoice at least on the 2nd working day after the starting of the month preceding the considered billing month. For Beneficiaries that are in service, the first pre-invoice shall be based on the average of the invoices for Services issued by Belgacom during the last three months. For Beneficiaries not yet in service and concluding a new Contract, the first pre-invoice shall be based on the valuation of the average of the invoices for Services to be issued by Belgacom within the first three months of services.
2. The amount of the pre-invoice shall be adapted on a quarterly basis, i.e. increased or lowered as the case may be, based on the amounts due by the Beneficiary for the Services provided under the Contract during the previous quarter.
3. The Beneficiary agrees to pay the amount of the pre-invoice at the latest the 10th calendar day from the date of the pre-invoice.
4. The amount of the pre-invoice shall be paid on a specific account number to be communicated. The interests generated by the amount of the pre-invoice paid on this account during the period starting from the date the pre-invoice is paid until the date the final invoice is paid shall be accrued to the Beneficiary.
5. Within 15 calendar days after sending the final invoice, Belgacom will send a credit note regarding the pre-invoice.
6. If for the same month the amount of the pre-invoice is higher than the amount of the final invoices, Belgacom shall reimburse the balance.
7. If for the same month the amount of the pre-invoice is lower than the amount of the final invoices, the Beneficiary will pay the surplus.
8. Within 15 days following the final invoice, the Beneficiary will make the payment by wire transfer. If payment is not received on this due date, Belgacom is entitled to the interest on the unpaid balance for late payment and administrative and recovery costs as defined in the Contract.
9. If the Beneficiary disagrees with an invoice received from Belgacom, it must notify in writing Belgacom thereof before the due date of such invoice in accordance with the relevant provisions of the Contract.
10. Without prejudice to other legal or contractual remedies and notwithstanding anything to the contrary in the Agreement, in the event the Beneficiary fails to pay on due time any undisputed amount due under the present Prepayment terms and conditions, Belgacom shall be entitled to:
 - Suspension of any SLA obligations that are not foreseen in the Basic SLA;
 - Refusal in writing of any new Services, including Migration Services.
 - Suspension of the existing Services in accordance with article 84 of the Annex 1 – General Terms and Conditions.

ESCALATION PROCEDURE BROBA II

By default, internal escalations are performed automatically when timers are passed. The target of departments is to limit the number of external escalations by launching pro-actively internal escalations as soon as timers are exceeded.

External escalation is done to level 1 after the defined timer has been passed. Further escalation can be requested to level 2 at day of first external escalation submitted + 1 day. Escalation to level 3 can be requested at day of first external escalation submitted + 2 days.

Immediately external escalation to Level 2 and Level 3 is accepted from persons at the same level in the Beneficiaries organization in case the Level 1 escalation is done before and the level 1 escalation shows structural problems or unavailability. Level 2 and 3 will first check whether lower escalation steps have been taken, before proceeding.

	Customer Service	Product Management	Account Management	Repair Management	Billing
Topics	Operational: Provisioning and Pre-Provisioning	Reference offer including all related documents and publications	Contracts, general problems, complaints handling	Repair Trouble Tickets	Questions regarding received bills
Level 1	Administrators llu.car@belgacom.be +32 78 15 22 32 (option 3) Account Telecom Consultant Depends on customer	Account Manager Depends on customer	Account Manager Depends on customer	Customer Support desk 0800/91 480 or e-mail: llu-escalations@belgacom.be Fax (only for confirmation of the request , if needed): +32 2 512 78 96	Billing & Collecting Contact listed on bill
Level 2	Back-end Manager gilbert.marechal@belgacom.be Tel: +32 2 202 18 36 Fax: +32 2 201 19 07	Product Manager christophe.mottiat@belgacom.be Tel: +32 2 202 18 36 Fax: +32 2 201 19 07	Account Line Manager Depends on customer	Customer Support desk 0800/91 480, option 2 or e-mail : llu-escalations@belgacom.be Ask to start an internal level 2 escalation procedure Fax (only for confirmation of the request , if needed): +32 2 512 78 96	Billing & Collecting Account cbu.billing@belgacom.be Tél: 00800 3550 3550 Fax: +32 2 203 09 32
Level 3	Director marc.meeuwens@belgacom.be Tel: +32 2 202 18 36 Fax: +32 2 201 19 07	Product Line Manager peter.vandermaesen@belgacom.be Tel: +32 2 202 18 36 Fax: +32 2 201 19 07	Sales Director patrick.bakowski@belgacom.be Tel: +32 2 202 18 36 Fax: +32 2 201 19 07	Customer Support desk 0800/91 480, option 2 or e-mail: llu-escalations@belgacom.be Ask to start an internal level 3 escalation procedure In case personal contact is needed: marc.meeuwens@belgacom.be Tel: +32 2 202 18 36 Fax: +32 2 201 19 07 Fax (only for confirmation of the request , if needed): +32 2 512 78 96	Billing & Collecting Manager Tel: +32 2 202 18 36 Fax: +32 2 201 19 07