

BIPT

Ter attentie van de **sector van de elektronische communicatie**

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Betreft : Voorafgaandelijke raadpleging betreffende het voorstel tot wijziging van de referentieaanbiedingen van Belgacom van 17 februari 2012

Op 17 februari 2012 heeft het BIPT van Belgacom **aanzienlijke wijzigingen aan de referentieaanbiedingen BRxx en WBA** ontvangen, waarmee Belgacom ingaat op de verplichtingen voortkomende uit de beslissing van de CRC van 1 juli 2011 betreffende de analyse van de breedbandmarkten en de beslissing van de Raad van het BIPT van 11 augustus 2011 betreffende de referentieaanbiedingen BRUO/BROBA/WBA VDSL2/BROTSoLL 2010. Belgacom heeft eveneens van de gelegenheid gebruik gemaakt om op vrijwillige basis nieuwe wijzigingen voor te stellen. Een lijst met al deze wijzigingen alsook een copie van de gewijzigde referentieaanbiedingen zijn als bijlage bij deze brief gevoegd.

Met deze brief, **nodigen wij u uit om te reageren op het voorstel** van Belgacom aangaande de wijziging van de referentieaanbiedingen **op volgende wijze** :

- via e-mail op het volgende adres : axel.palmaers@ibpt.be
- tot vrijdag **16 maart 2012 ten laatste 12u**
- omwille van technische redenen zijn de voorgestelde wijzigingen aan het BRUO, BROBA et WBA VDSL2 referentieaanbod afzonderlijk gepubliceerd op de website van het BIPT. Wij vragen u echter om uw reacties op de voorstellen te consolideren in één enkel document
- wij vragen u om in dit stadium nog geen opmerkingen te voorzien aangaande de bijzonderheden van de operationele processen zoals deze verduidelijkt worden via de *process flows* die voorzien worden in de bijlagen van de referentieaanbiedingen.

Axel Palmaers (+32 2 226 88 46) zal met plezier antwoorden op eventuele vragen die u hierover zou hebben.

Bijlage(s) :
1. Lijst met aanpassingen aan de referentieaanbiedingen
2. Lijst met documenten betreffende de referentieaanbiedingen in bijlage
3. Referentieaanbiedingen BRUO, BROBA et WBA VDSL2 aangepast op 17 februari 2012

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BIJLAGE 1 – LIJST MET AANPASSINGEN AAN DE REFERENTIEAANBIEDINGEN

Voornaamste wijzigingen

1. Het invoegen van een duidelijk **onderscheid** tussen de « **Ordering** » en de « **Provisioning** » processen.
2. **Gedetailleerde omschrijving van de operationele processen** op basis van « process flows » zoals voorgesteld in OWG/1106
3. De invoeging van een nieuwe **procedure voor verandering van de Tie cable** in het geval er een defect op een DSLAM poort van de OLO aanwezig is (enkel **BRUO**)
4. De invoeging van een **nieuwe procedure om met de meetresultaten van de alternatieve operatoren rekening te houden** in het geval van een vraag tot herstel en het opzetten van een gestandiseerde template (BRUO)
5. **De herintroductie van notificatietermijnen betreffende IT wijzigingen** gezien dit per ongeluk afgeschaft is geweest tijdens de vorige herziening van de referentieaanbiedingen
6. De invoeging van een **Backhaul GE aanbod** in de BROBA en WBA aanbiedingen
7. De invoeging van een **vergoeding** van het type « **pending order due to useless end-user visit** »
8. De invoeging van een **clausule** waardoor Belgacom een **niet redelijke vraag tot toegang** kan weigeren
9. Verbetering van de coherentie tussen een **Basic SLA en een Improved SLA voor wat betreft repair** in overeenstemming met de inhoud van de « ISLA Repair Information Session » zoals voorgesteld door Belgacom tijdens OWG/1105
10. **Verduidelijking van de aanbiedingen betreffende de berekening van de SLA's**, de geïndividualiseerde KPI verslagen en de mogelijke **compensaties** die daaruit kunnen voortvloeien
11. Verfijning van de SLA's aangaande de IT tools

Kleinere aanpassingen

12. Uniformisering van de termen « end-user » en « user » tussen de verschillende aanbiedingen

13. De beperking « if no further delay because of public domain obligations » zoals vermeld in het BRUO aanbod wordt uitgebreid naar de BROBA et WBA referentieaanbiedingen
14. De termijnen verbonden aan een aanvraag met betrekking Dedicated VLAN profielen in het BROBA aanbod zijn vanaf nu ook opgenomen in het WBA aanbod
15. De invoeging van een beschrijving van de bijlagen bij de referentieaanboden onder de titel « General Information » in de bijlage GT&C
16. De bijlagen bij het WBA aanbod zijn hernummerd
17. De bijlagen Pricing and Billing bevatten vanaf nu een samenvattende tabel met de prijzen
18. De verwijzingen naar de escalatieprocedures zijn verbeterd
19. ...

Compléments d'information

Voor wat betreft de afzonderlijke facturering van de activeringskosten, de desactiveringskosten en de kosten aangaande de configuratie zoals gevraagd door Belgacom in het kader van het BROBA Ethernet aanbod goedgekeurd door de beslissing van de Raad van het BIPT op 11 augustus 2011, heeft Belgacom aangegeven dat ze de oorspronkelijke situatie opnieuw ingevoerd heeft ondanks deze beslissing omwille van materiële redenen.

BIJLAGE 2 - LIJST MET DOCUMENTEN BETREFFENDE DE REFERENTIEAANBIEDINGEN

De documenten betreffende de referentieaanbiedingen die men terug kan vinden in bijlage 3 worden opgedeeld in de volgorde zoals hieronder weergegeven.

Voor technische redenen werden de voorstellen van wijzingen aan de referentieaanbiedingen BRUO, BROBA en WBA VDSL2 in 4 onafhankelijke delen gepubliceerd op de website van het BIPT. De URL's van deze 4 delen worden hieronder meegedeeld.

Deel 1A - BRUO

Deze documenten zijn op het volgende adres beschikbaar :

<http://ibpt.be/ShowDoc.aspx?objectID=3707>

Type	Document	Description
BRUO	Main Body	
BRUO	Annex A	General Terms and Conditions
BRUO	Annex C	Technical ecifications
BRUO RC	Annex D1	Billing and Accounting
BRUO SP	Annex D2	Billing and Accounting
BRUO	Annex D3	Billing and Accounting
BRUO	Annex E	Planning and Operations
BRUO	Annex F	OSS
BRUO	Annex G1	Basic SLA
BRUO	Annex G2	ISLA Repair
BRUO	Annex G3	ISLA Provisioning
BRUO	Annex H	Price List

Deel 1B - BRUO

Deze documenten zijn op het volgende adres beschikbaar :

<http://ibpt.be/ShowDoc.aspx?objectID=3708>

Type	Document	Description
BRUO RC	Annex B1.1	SD2010
BRUO RC	Annex B1.2	SD2030
BRUO RC	Annex B1.3	SD2035
BRUO	Annex B1.4 B2.4 Appendix A	
BRUO	Annex B1.4 B2.4 Appendix B	
BRUO RC	Annex B1.4	SD2040
BRUO RC	Annex B1.5	SD2015
BRUO RC	Annex B1.6	SD2045
BRUO RC	Annex B1.7	SD2050
BRUO	Annex B1.8	Multiple pairs ordering
BRUO SP	Annex B2.1	SD3010

BRUO SP	Annex B2.2	SD3030
BRUO SP	Annex B2.3	SD3035
BRUO SP	Annex B2.4	SD3040
BRUO SP	Annex B2.5	SD3015
BRUO SP	Annex B2.6	SD3045
BRUO	Annex Ja	Intro
BRUO	Annex Jb	NDA
BRUO	Annex Jc	Technical Spec Tie Cable
BRUO	Annex Jd	Type 1 Pair Selection
BRUO	Annex Je	Type 2 Pair Selection
BRUO	Annex Jf	Shared Pair Pair Selection
BRUO	Annex Jg	Technical Spec Cables
BRUO	Annex Jh	KVD streets
BRUO	Annex K	Migrations to BRUO/BROBA/WBA

Deel 2 - BROBA

Deze documenten zijn op het volgende adres beschikbaar :

<http://ibpt.be/ShowDoc.aspx?objectID=3709>

Type	Document	Description
BROBA ADSL	Main Body	
BROBA ADSL	Annex 2	Technical Spec
BROBA ADSL	Annex 6	Pricing and Billing
BROBA ADSL-SDSL	Annex 1	General Terms and Conditions
BROBA ADSL-SDSL	Annex 2	Technical Spec
BROBA ADSL-SDSL	Annex 3	Exchange of information
BROBA ADSL-SDSL	Annex 4	Planning and Operations
BROBA ADSL-SDSL	Annex 5	Basic SLA
BROBA ADSL-SDSL	Annex 5A	ISLA Repair
BROBA ADSL-SDSL	Annex 5B	ISLA Provisioning
BROBA ADSL-SDSL	Annex 8	Prepayment Terms Conditions
BROBA SDSL	Main Body	
BROBA SDSL	Annex 2	Technical Spec
BROBA SDSL	Annex 6	Pricing and Billing

Deel 3 - WBA VDSL2

Deze documenten zijn op het volgende adres beschikbaar :

<http://ibpt.be/ShowDoc.aspx?objectID=3710>

Type	Document	Description
WBA VDSL2	Main Body	
WBA VDSL2	Annex 1	General terms and conditions
WBA VDSL2	Annex 2	Technical Spec
WBA VDSL2	Annex 3	Planning and Operations
WBA VDSL2	Annex 4	Basic SLA
WBA VDSL2	Annex 4	ISLA Repair
WBA VDSL2	Annex 4	ISLA Provisioning

WBA VDSL2	Annex 5	Pricing and Billing
WBA VDSL2	Annex 6	Prepayment Terms Conditions
WBA VDSL2	Annex 7	OLO CPE (public version)

BIJLAGE 3 – REFERENTIEAANBIEDINGEN AANGEPAST OP 17 FEBRUARI

BROBA II

Belgacom Reference Offer for Bitstream Access

BROBA II ADSL (covering the technologies ADSL, Reach Extended ADSL2 and ADSL2+)

Main Body

Created on: 16 February 2012

belgacom





together
with



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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
- **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.
- **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~~Beneficiary 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. Unless specified otherwise, the word "VLAN" equally refers to a shared or to a dedicated VLAN.

- 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.

3 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;

4 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'.

5 Description of the Broba II ADSL, Reach Extended ADSL2 and ADSL2+ services in scope of the present R

5.1 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 with ATM transport (BROBA over ATM) and with Ethernet transport (BROBA over Ethernet). As from 01/01/2013, only Ethernet transport will remain available.
16. 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.
17. 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.

18. 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.

19. 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.

20. 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.

21. 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.

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 ADSL products is Alcatel. The Belgacom ADSL network is currently based on Alcatel A1000 and A7300 DSLAM's, version 4.x and 5.

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. 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.

27. 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. 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. 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.

30. 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.
31. 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 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.
 - The provision by Belgacom of ADSL, Reach Extended ADSL2, or ADSL2+ lines to the User.

32. 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 **CustomerBeneficiary** 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.
-

33. 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.

5.2 Transport over ATM backbone

5.2.1 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 B.
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.



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38. The Access Line is made of:

- A Patch Line as described in Section [5.2.1.15.2.1.1](#);
- A Data Link as described in Section [5.2.1.25.2.1.2](#);

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39. For information on the Technical Specifications of the Access Line, reference is made to Annex 2 (Section 2: Specifications of the Access Line).

5.2.1.1 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 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.

5.2.1.2 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.

5.2.2 Bandwidth between the Local Exchanges and the Belgacom ATM Access Point to which the Beneficiary equipment is connected

46. 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

¹ Only applicable to the DSLAMs listed on the Operator Personal Page of the CWS secured website.

DSLAM's in which the Beneficiary wants to connect Users and the Belgacom Access Point to which the Beneficiary is connected.

47. 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.
48. 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.
49. 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.

5.2.3 ATM Transport between the DSLAM and the Beneficiary Equipment

50. 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.
51. 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.
52. 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.

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.

- UBR+⁶

53. 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)

5.3 Transport over Ethernet backbone

5.3.1 OLO Access Line between a Belgacom Service PoP and the Beneficiary Equipment

54. 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.

55. 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.

56. The list of Belgacom Service PoPs is available in Appendix D.

57. 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, **or Backhaul**) offered by Belgacom in the scope of this agreement is described in the Appendix C of this document.

58. 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.

⁶ UBR+ is not specific to Belgacom equipment

59. 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".
60. 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 6: OLO Access Line and to WBA VDSL2 - Annex 2 - Technical specifications – Section [129](#): OLO Access Line.
61. 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 [129](#).3: Testing the OAL.
62. The same OLO Access Lines 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.

5.3.2 Ethernet Transport between the GE_NT aggregators and the Beneficiary Equipment

63. BROBA over Ethernet is offering an Ethernet connectivity between the OLO Access Lines and the GE_NT aggregators.
64. 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.
- Each OLO may configure up to 2 shared Vlan's per service quality per LEX and 1 dedicated Vlan's per service quality per end-user.
65. 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.
66. Shared and dedicated VLANs



- *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 8 VLANs - each dedicated to a specific service quality with a maximum of 2 VLAN's per 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.

- *Dedicated VLAN's*: per **CustomerBeneficiary's** user, each VC is mapped in one dedicated VLAN to a Service PoP where an Access Line of the **CustomerBeneficiary** is connected. This Service PoP has to be located in the same Service Area as the LEX of the **CustomerBeneficiary's** user.

67. 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.

5.3.3 Bandwidth between the Local Exchanges and the Belgacom Service PoP to which the Beneficiary equipment is connected

5.3.3.1 For shared VLAN's

68. 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.

69. 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.

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.



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Offered VLAN Bandwidth (Mbps)	P=0	P=1	P=3	P=5
2	Y	Y	Y	Y
4	Y	Y	Y	Y
6	Y	Y	Y	Y
8	Y	Y	Y	Y
10	Y	Y	Y	Y
12	Y	Y	Y	Y
14	Y	Y	Y	Y
16	Y	Y	Y	Y
18	Y	Y	Y	Y
20	Y	Y	Y	Y
30	Y	Y	Y	Y
40	Y	Y	Y	Y
50	Y	Y	Y	Y
60	Y	Y	Y	Y
70	Y	Y	Y	Y
80	Y	Y	Y	Y
90	Y	Y	Y	Y
100	Y	Y	Y	Y
120	Y	Y	Y	N
140	Y	Y	Y	N
160	Y	Y	Y	N
180	Y	Y	Y	N
200	Y	Y	Y	N
220	Y	Y	Y	N
240	Y	Y	Y	N
260	Y	Y	Y	N
280	Y	Y	Y	N
300	Y	Y	Y	N
320	Y	Y	N	N
340	Y	Y	N	N
360	Y	Y	N	N
380	Y	Y	N	N
400	Y	Y	N	N
420	Y	Y	N	N
440	Y	Y	N	N
460	Y	Y	N	N
480	Y	Y	N	N
500	Y	Y	N	N
600	Y	N	N	N
700	Y	N	N	N
800	Y	N	N	N
900	Y	N	N	N
1gig	Y	N	N	N

5.3.3.2 For dedicated VLAN's



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70. 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.
71. The Beneficiary can obtain up to 10 dedicated VLAN profiles, and may only use its own dedicated VLAN profiles.
72. 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.

5.4 Activation of ADSL, Reach Extended ADSL2, or ADSL2+ on a specific User line

73. 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.
74. 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 7676.
75. 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.
76. (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

⁸ ATM profiles: only for BROBA over ATM

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.
77. Only for BROBA over ATM: the QoS 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).
78. 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.
79. 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).
80. 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
81. 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.

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.

82. 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).
83. 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.
84. 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
85. 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.
86. Reach Extended ADSL2 is not supported for ISDN lines.
87. 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.
88. 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.

5.5 Small Network Adaptations

89. 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.
90. 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.

91. 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.
92. 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.
93. The certified technicians will never perform Small Network Adaptations.
94. 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.
95. 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.

5.6 Network Termination Point

96. The Network Termination Point is the first termination point of a loop at the User premises.
97. 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)
98. 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 Point¹². This intervention will be called Telecom installation.

99. 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.

100. 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

101. The Network Termination Point is a part of the Belgacom network.

102. The NTP makes part of the Belgacom public infrastructure. Belgacom is owner of this infrastructure and of this NTP.

5.7 Move from LDC to LEX

103. 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.

104. 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.

¹² 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 E: "NTP process for Provide New BROBA II without voice products".

105. 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.

106. If the Beneficiary asks to move back the line to its LDC, an activation fee will be invoiced to the Beneficiary.

5.8 Deployment rules

5.8.1 ADSL

107. ADSL is allowed for loops with attenuation at 800Hz less than 6,5dB.

108. 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.

ADSL deployment curves

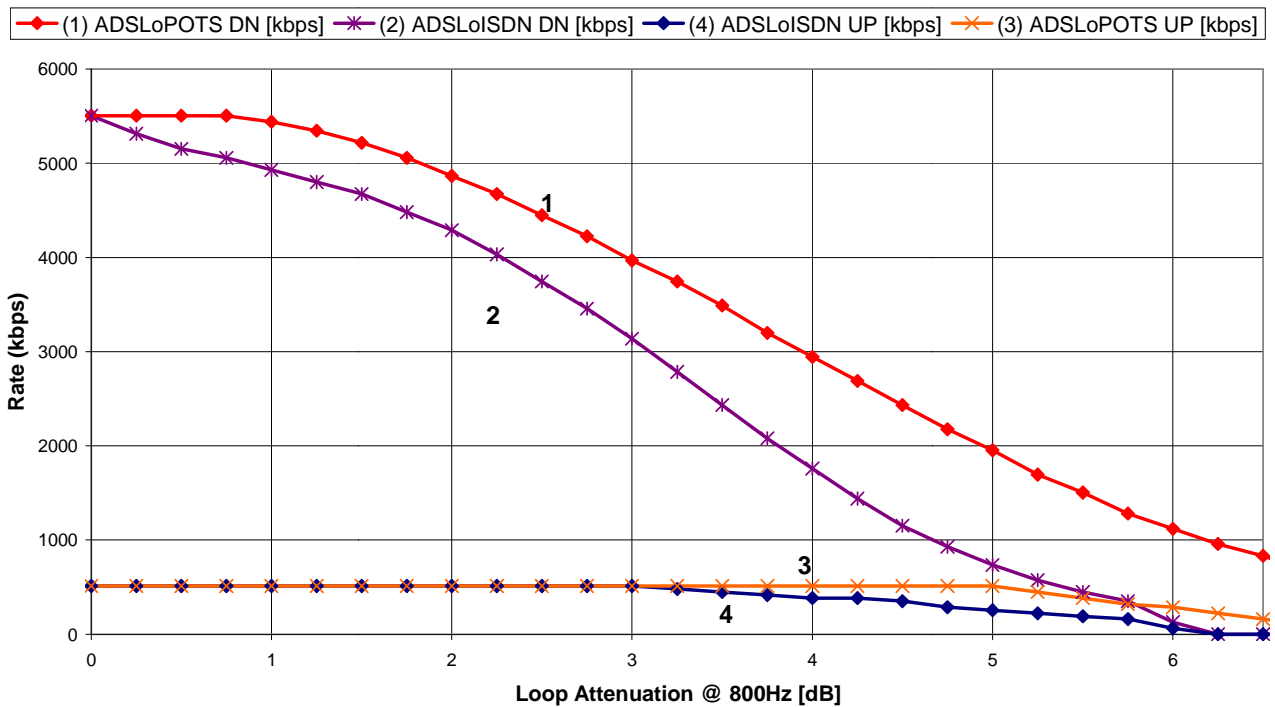


Figure 1

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.

109. 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]
6 0	7 512	8 5504	9 512	10 5504
11 0,25	12 512	13 5504	14 512	15 5312
16 0,5	17 512	18 5504	19 512	20 5152
21 0,75	22 512	23 5504	24 512	25 5056
26 1	27 512	28 5440	29 512	30 4928
31 1,25	32 512	33 5344	34 512	35 4800
36 1,5	37 512	38 5216	39 512	40 4672
41 1,75	42 512	43 5056	44 512	45 4480
46 2	47 512	48 4864	49 512	50 4288
51 2,25	52 512	53 4672	54 512	55 4032
56 2,5	57 512	58 4448	59 512	60 3744
61 2,75	62 512	63 4224	64 512	65 3456
66 3	67 512	68 3968	69 512	70 3136
71 3,25	72 512	73 3744	74 480	75 2784
76 3,5	77 512	78 3488	79 448	80 2432
81 3,75	82 512	83 3200	84 416	85 2080
86 4	87 512	88 2944	89 384	90 1760
91 4,25	92 512	93 2688	94 384	95 1440
96 4,5	97 512	98 2432	99 352	100 1152
101 4,75	102 512	103 2176	104 288	105 928
106 5	107 512	108 1952	109 256	110 736
111 5,25	112 448	113 1696	114 224	115 576
116 5,5	117 384	118 1504	119 192	120 448
121 5,75	122 320	123 1280	124 160	125 352
126 6	127 288	128 1120	129 64	130 128
131 6,25	132 224	133 960	134 0	135 0

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136	6,5	137	160	138	832	139	0	140	0
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Formatted After: 0,2 numbering stops: Not

Table 1: Table of ADSL deployment rules

110. 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).

140.1.15.8.2 Reach Extended ADSL2

111. Reach Extended ADSL2 is allowed for loops with attenuation at 800Hz comprised between 6,5 and 7,5dB.

112. Reach Extended ADSL2 is not allowed over ISDN loops.

113. 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.

140.1.25.8.3 ADSL2+

114. If the Beneficiary has chosen one of the 2 common ADSL2+ line profiles defined in § ~~7676~~, Belgacom will provision BROBA II ADSL2+ service on an end-user line in function of the following table:

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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:



together
with



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.

115. 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.

116. 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]

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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.

140-25.9 Termination of the voice subscription with Broba II with voice

117. 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.
118. 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.

140-35.10 Migration

119. For more information on migrations, reference is made to the Migrations Offer (BRUO Annex K).

~~1416~~ Operational Processes

~~141.16.1~~ Bandwidth and Access Line

120. 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.

121. 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.

122. 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

123. 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.

124. 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.

141.2.16.2 Activation of ADSL, Reach Extended ADSL2 or ADSL2+ on a specific User line

141.2.16.2.1 General

125. 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.

126. 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. 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.

141.2.16.2.2 Request for inquiry

127. 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.

128. 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.

141.2.36.2.3 Process

- **Graphic illustration**

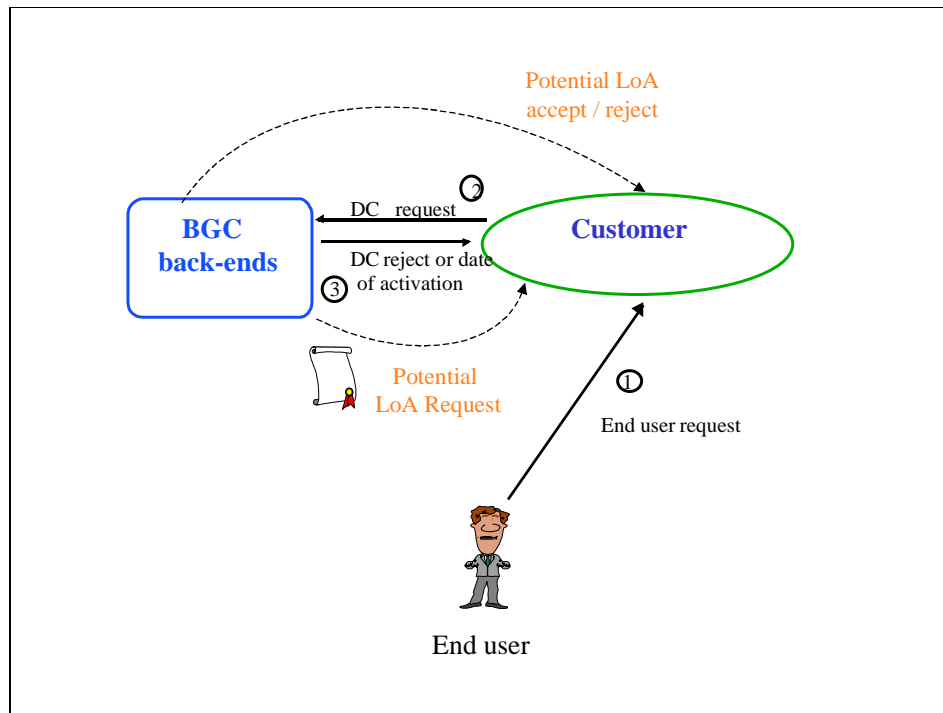


Figure 2

DC = Data Connectivity service (Broba II ADSL)

- **Description**

129. A commercial contract is signed between a user and the Beneficiary.

130. 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, contacts 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.

131. 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.

~~141.3~~ 16.3 Bandwidth Modification

~~141.3.16~~ 3.1 General

132. 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.

133. 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.

134. The Beneficiary will pay the corresponding fee for the modification of the Bandwidth ("Change of ATM transport parameters") as set forth in Annex 6.

¹⁶ Only applicable to the DSLAMs listed on the Operator Personal Page of the CWS secured website.

~~141.3.26.3.2~~ **Process**

135. 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.

136. For more information on processes, reference is made to Annex 4.

~~141.4.16.4~~ **Repair**

~~141.4.16.4.1~~ **General**

137. 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.

138. 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

139. 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.

~~141.4.26.4.2~~ **Repair on a specific User line**

140. 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.

141.4.36.4.3 **Repair for spectral issues reasons**

141. 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.
142. 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.
143. If the xDSL services offered by the Beneficiary appear to be the cause of a 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 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.

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

141.5.6.5 Billing

141.5.16.5.1 General

144. Principle: all Standard Fees as described in Annex 6, whenever relevant, will be invoiced to and are to be paid by the Beneficiary.

141.5.26.5.2 Process

- **Graphic illustration**

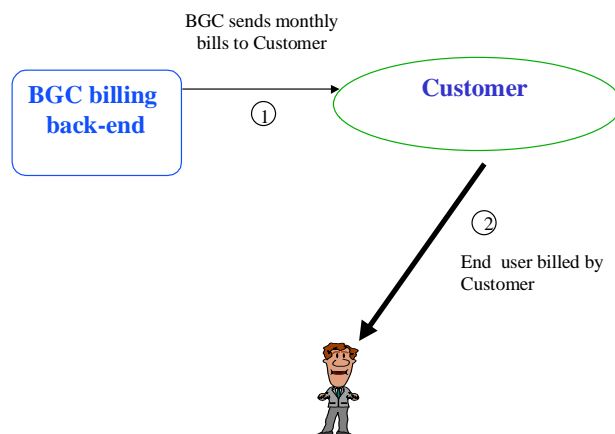


Figure 3

- **Description**

145. 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)



together
with



Appendix A: Access Line

142.7 Customer-Sited Data Link

142.17.1 Preliminary

146. 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".

147. 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.

142.27.2 Description

148. 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.

149. Belgacom will install the necessary transmission equipment at the premises of the Beneficiary.

150. The Customer-Sited Data Link Service consists of one (1) or more 2Mbit/s, 34 Mbit/s or STM-1 Systems.

151. 2Mbit/s, 34Mbit/s or STM-1 Systems provided under this Service Plan do not have Diversity of routing.

152. 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).

153. The Beneficiary Connection point is located at the Beneficiary's premises.



together
with



~~142.3~~7.3 Implementation

154. 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.

~~142.4~~7.4 General Conditions

155. 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.

156. 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.

157. All Belgacom transmission equipment shall comply with the appropriate Belgacom Technical Specifications provided in Annex 2 – Section 2: Technical Specifications of the Access Line.

~~142.5~~7.5 Prices

158. The Beneficiary shall pay to Belgacom the installation and rental fees provided in Annex 6 for Customer-Sited Data Link Service.

~~142.6~~7.6 Specific Conditions

159. 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.

~~143~~ 18 Belgacom-Sited Data Link

~~143.18.1~~ Preliminary

160. 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".
161. 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.
162. 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.
163. 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.

~~143.28.2~~ Description

164. Belgacom-Sited Data Link Service will only be available in Belgacom ATM Access Points.
165. 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.
166. 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.
167. 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.
168. 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.

143.38.3 Scheme

169. See below for a general scheme illustrating Belgacom-Sited Data Link (scheme valid for 2 Mbit/s and 34Mbit/s configurations):

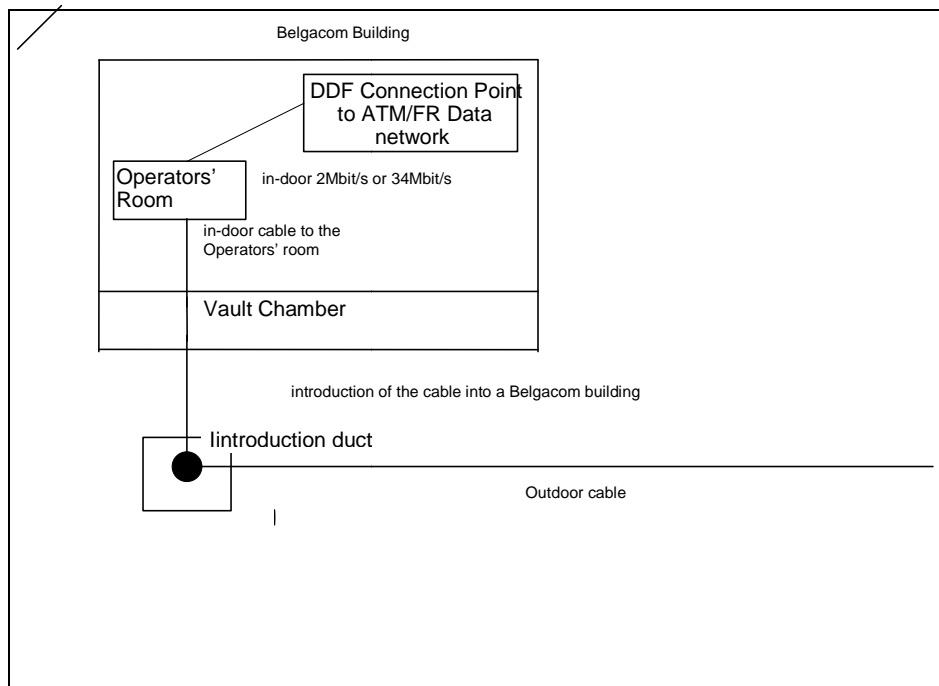


Figure 4

143.48.4 General Conditions

170. All Beneficiary transmission equipment shall comply with the Technical Specifications provided in Annex 2 – Section 2: Technical Specifications of the Access Line.

171. The Beneficiary shall provide to its employees full information regarding the content of the rules to be respected regarding Belgacom-Sited Data Links.

143.58.5 Procedures

172. 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.

~~143.6~~ 143.6.6 Prices

173. 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

1449 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

174. (*): 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.

14510 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 - Lebeaustraat 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 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

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Liège - Centre	Rue de l'université 30	4223	Formatted After: 0,2
Liège - Grétry	Rue d'Harscamp 17	4349	Formatted After: 0,2
Mechelen	Stationstraat 58	1540	Formatted After: 0,2
Mons	Rue des fosses 7	6533	Formatted After: 0,2
Namur	Rue Marie-Henriette 60	8172	Formatted After: 0,2
Namur	Rue Rogier 2	8123	Formatted After: 0,2
Ninove	Groenmarkt 42	5433	Formatted After: 0,2
Nivelles	Place Albert 1	6722	Formatted After: 0,2
Oostende	Hendrik Serruyslaan 18 A	5970	Formatted After: 0,2
Roeselare	H. Consciencestraat 3-5	5120	Formatted After: 0,2
Ronse	Politieke Gevangenerstraat 14	5521	Formatted After: 0,2
Stavelot	Cour de l'hôtel de ville 3	8088	Formatted After: 0,2
Tournai	Rue de la Tête d'Or 9	6922	Formatted After: 0,2
Verviers	Rue Thil Lorrain 6	8733	Formatted After: 0,2
Veurne	Pannestraat 1	5831	Formatted After: 0,2
Waremme	Rue Joachim 67	1932	Formatted After: 0,2
Wavre	Rue de la Limite 2	1022	Formatted After: 0,2



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Appendix C: Description of the OLO Access Line

175. The OLO Access Line is a point-to-point, high-speed data transfer service, offering a speed ~~of from~~ 1Gb, 100 or 10 Mbps (depending of the different versions defined further in this document), between your site and the Belgacom Ethernet network.
176. 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.
177. 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.).
178. The terms, conditions and requirements set out in this section determine the general framework between Belgacom and the CustomerBeneficiary 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 CustomerBeneficiary Equipment, in the framework of this service. This Service will be referred to hereafter as "OLO Access Line".
179. For the provision of OLO Access Line, the CustomerBeneficiary will subscribe a one (1) year contract, under which the OLO Access Line is made available to the CustomerBeneficiary 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 CustomerBeneficiary wishes to terminate the contract during the initial one-year term, the CustomerBeneficiary will pay to Belgacom a termination fee equal to the total of the rental fees until the end of such term.
180. The OLO may order **Customer-Sited OLO Access Lines**, in case the line terminates in the CustomerBeneficiary premises, outside any Belgacom ~~colocation~~collocation, or **Belgacom-Sited OLO Access Lines**, in case the line ~~must~~ terminates in its colocation in the same building as the Service PoP, or Backhaul OLO Access Lines, in case the line terminates in its colocation in another building than the Service PoP.

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1 Customer-Sited OLO Access Line

a. Description

181. Customer-Sited OLO Access Line is a connection system that is provided in its entirety by Belgacom between the CustomerBeneficiary Connection point at the CustomerBeneficiary premises, and a Belgacom Service Router.
182. Belgacom will install the necessary transmission equipment at the premises of the CustomerBeneficiary.
183. The Customer-Sited OLO Access Line Service consists of one (1) or more Gigabit Ethernet (GbE), 100 Mbps (FE) or 10 Mbps (E) systems.
184. The 1 GbE, 100 or 10 Mbps systems provided under this Service Plan do not have Diversity of routing.
185. The CustomerBeneficiary Connection point is located at the CustomerBeneficiary's premises.

b. Implementation

186. 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 129: OLO Access Line).

c. General Conditions

187. A Customer-Sited OLO Access Line Service can be ordered by the CustomerBeneficiary between a specified Belgacom Service PoP (Connection Point) and the specified CustomerBeneficiary's premises.
188. The CustomerBeneficiary shall provide and maintain, at its expense, the cabling from the Point of Connection in the CustomerBeneficiary Premises to the CustomerBeneficiary equipment including any cross connections that are required.
189. All Belgacom transmission equipment shall comply with the appropriate Belgacom Technical Specifications provided in the WBA VDSL2 offer, Annex 2, Technical Specifications – (Section 129: OLO Access Line).

d. Specific Conditions

190. Belgacom will identify each 1GbE Customer-Sited OLO Access Line provided pursuant to the conditions of this Section through attributing them a codification number.



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2 Belgacom-Sited OLO Access Line

a. Preliminary

191. A Belgacom-Sited OLO Access Line Service can be brought into service with regard to a specified site, and the CustomerBeneficiary can be entitled to install the equipment required to this effect in the Belgacom building concerned, if and only if the CustomerBeneficiary has prior to this time signed an appropriate Colocation Agreement with regard to the site concerned.
192. The Belgacom-Sited OLO Access Line Service can only be used for all connection purposes with Belgacom Ethernet data network.
193. For the sake of clarity, it is noted that OLO Access Lines covered by this document are 1 GbE OLO Access Lines.

b. Description

194. Belgacom-Sited OLO Access Line is a connection system that is provided in its entirety by Belgacom between a Belgacom Service Router and the Beneficiary Connection point sited in its colocation in the same building. Belgacom-Sited OLO Access Line Service will only be available in Belgacom Service PoP.
195. A "Belgacom-Sited OLO Access Line Service" is a connection service where Belgacom offers the possibility to a CustomerBeneficiary to provide the entire OLO Access Line including the customerBeneficiary transmission equipment that is installed in a Belgacom technical building. The CustomerBeneficiary 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.
196. The CustomerBeneficiary Point of Connection for this type of OLO Access Line is located in the Belgacom premises on the indoor cable connecting the CustomerBeneficiary's transmission equipment to the Belgacom DDF, at the place where that cable enters the collocation room.
197. In the event that Belgacom is caused to replace the collocation room in which the transmission equipment of the CustomerBeneficiary is to be installed, then both Parties will cooperate to find a mutually acceptable solution.
198. The CustomerBeneficiary shall install equipment in its colocation area and following the rules set out in the colocation agreement.

c. General Conditions

199. All CustomerBeneficiary transmission equipment shall comply with the Technical Specifications provided in the WBA VDSL2 offer, Annex 2 – (Section 129: OLO Access Line).



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200. The CustomerBeneficiary shall provide to its employees full information regarding the content of the rules to be respected regarding Belgacom-Sited OLO Access Lines.

d. Procedures

201. The CustomerBeneficiary is responsible for determining the number of Belgacom-Sited OLO Access Line Service that the CustomerBeneficiary 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 CustomerBeneficiary. 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.

201-

3 Backhaul OLO Access Line

a. Preliminary

202. A Backhaul OLO Access Line 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.

203. The Backhaul OLO Access Line Service can only be used for all connection purposes with Belgacom Ethernet data network.

204. For the sake of clarity, it is noted that OLO Access Lines covered by this document are 1 GbE OLO Access Lines.

205. The 1 GbE Systems provided under this Service Plan do not have Diversity of routing.

b. Description

206. Backhaul OLO Access Line is a connection system that is provided in its entirety by Belgacom between a Belgacom Service Router and the Beneficiary Connection point, sited in its colocation in another building than the one hosting the Belgacom Service Router

207. A "Backhaul OLO Access Line Service" is a connection service where Belgacom offers the possibility to a Beneficiary to provide the entire OLO Access Line including the Beneficiary 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 LEX (building) in which The Beneficiary colocation is located.

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208. The Beneficiary Point of Connection for this type of OLO Access Line 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.

209. 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.

210. The Beneficiary shall install equipment in its collocation area and following the rules set out in the collocation agreement.

c. General Conditions

211. All Beneficiary transmission equipment shall comply with the Technical Specifications provided in Annex 2 – (Section 12: OLO Access Line).

212. The Beneficiary shall provide to its employees full information regarding the content of the rules to be respected regarding Backhaul OLO Access Lines.

d. Specific Conditions

213. Belgacom will identify each 1GbE Backhaul OLO Access Line provided pursuant to the conditions of this Section through attributing them a codification number.

e. Procedures

214. The Beneficiary is responsible for determining the number of Backhaul OLO Access Line 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.

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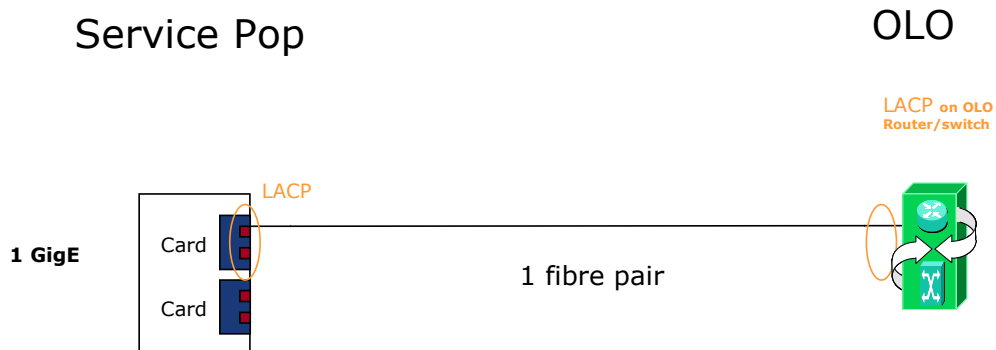
34 Product Options

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	-
10 Mbit/s Customer-sited	-
100 Mbit/s Customer-sited	-
1+1 GE BGC- and Customer-sited	Port + fibre + card in BGC Service Pop
<u>1 GE Backhaul</u>	

a. 1 GE / BGC sited

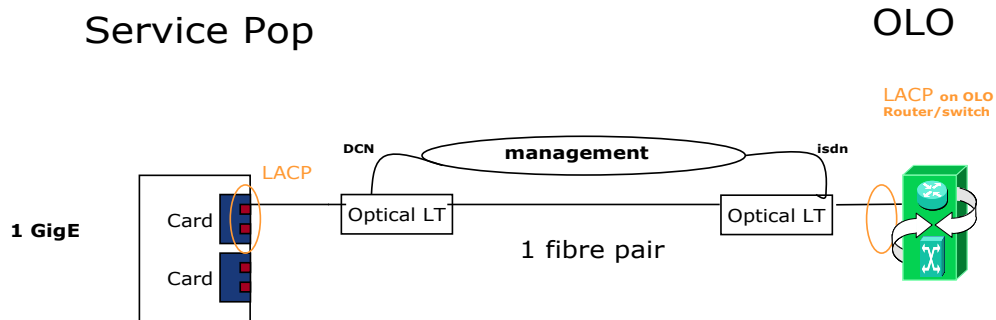
1GE / BGC sited



Graph 2: design of the OLO Access Line 1GE Belgacom-sited

b. 1GE/100Mbps/10Mbps Customer sited

1GE / Customer sited

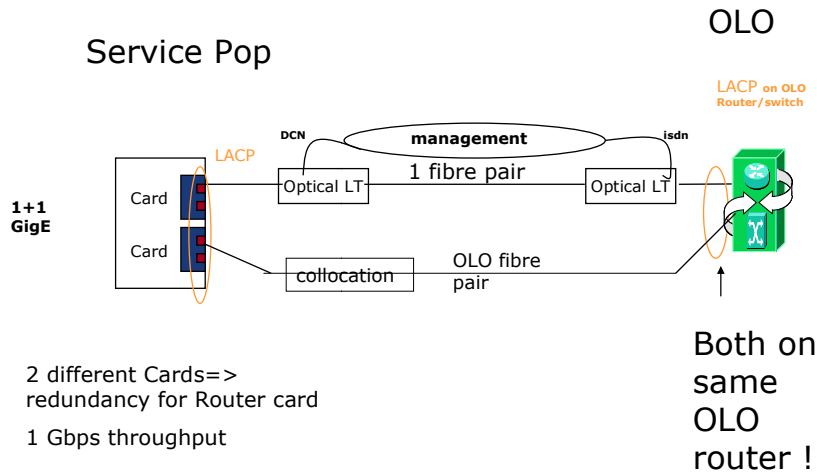


Graph 3: design of the OLO Access Line 1GE/100Mbps/10Mbps Customer-sited

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

d.1 GE Backhaul

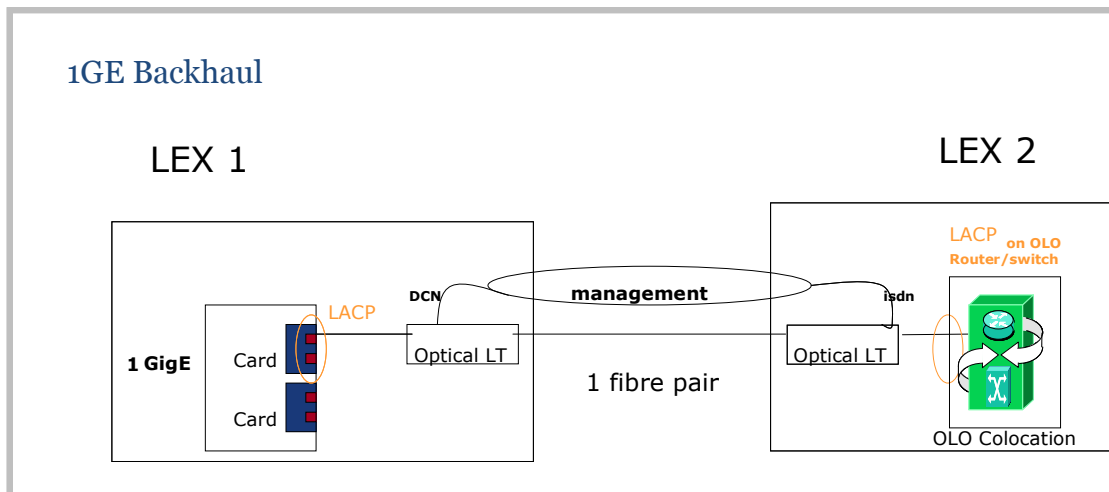


Figure 5: Design of the OLO Access Line 1 GE Backhaul

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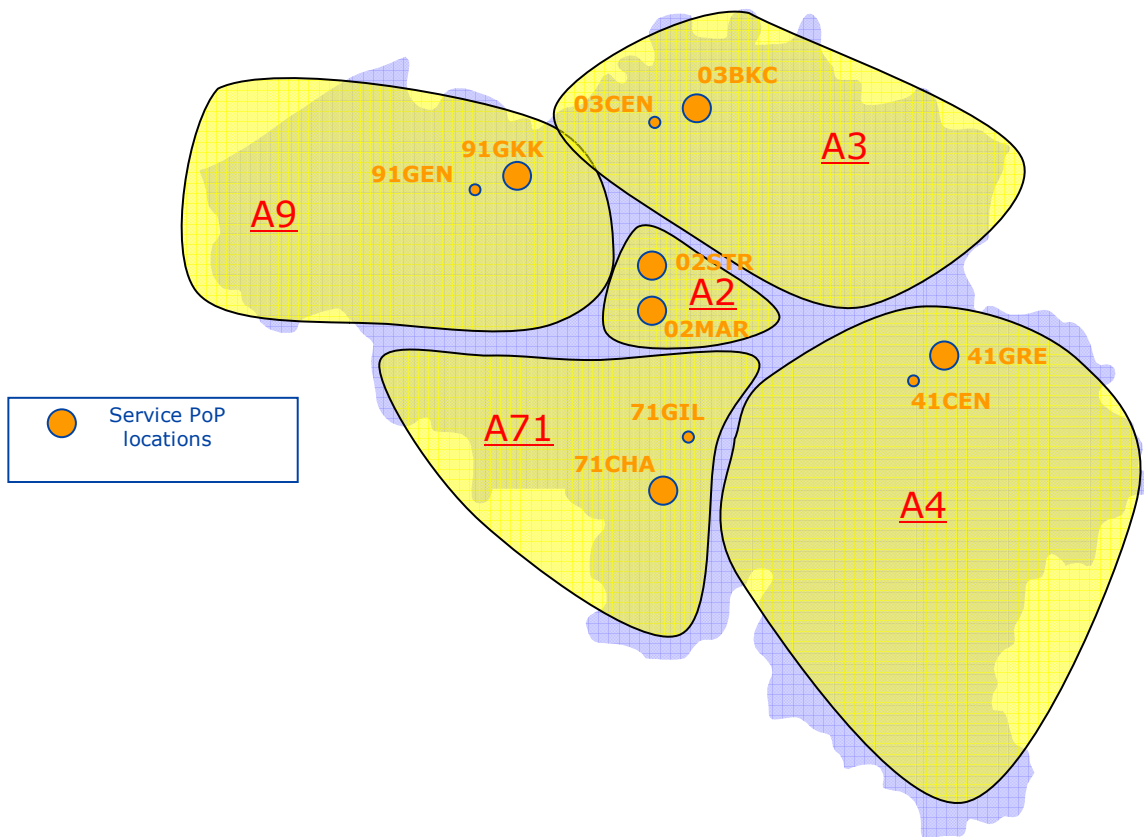
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Appendix D: List of Service Areas and Service PoPs

45 Overview

5 Service Areas and 10 Service PoPs



56 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

| ~~202-215.~~ (*) : 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.

67 List of Service PoPs

Area		City	Address	NCOW
A9	91GKK	Gent - Keizer Karel	Keizer Karelstraat 1	9265
A9	91GEN	Gent - Centrum	Sint Niklaasstraat 27	6.1.1 223
A3	6.1.2 3CEN	6.1.3 Antwerpen - Centrum	6.1.4 Lange Nieuwstraat 106	6.1.5 224
A3	6.1.6 3BKC	6.1.7 Antwerpen - Berchem	6.1.8 Karel Coggestraat 2	6.1.9 227
A2	6.1.10 2MAR	6.1.11 Brussels - Marais	6.1.12 Rue du Marais - Broekstraat 72-74	6.1.13 220
A2	6.1.14 2STR	6.1.15 Brussels - Paille	6.1.16 Rue Lebeau - Lebeustra 2	6.1.17 513
A71	6.1.18 1GIL	6.1.19 Charleroi - Gilly	6.1.20 Sentier de la Limite 80	6.1.21 141
A71	6.1.22 1CHA	6.1.23 Charleroi - Centre	6.1.24 Rue de la science 2	6.1.25 127
A4	6.1.26 1CEN	6.1.27 Liège - Centre	6.1.28 Rue de l'université 30	6.1.29 223
A4	6.1.30 1GRE	6.1.31 Liège - Grétry	6.1.32 Rue d'Harscamp 17	6.1.33 349

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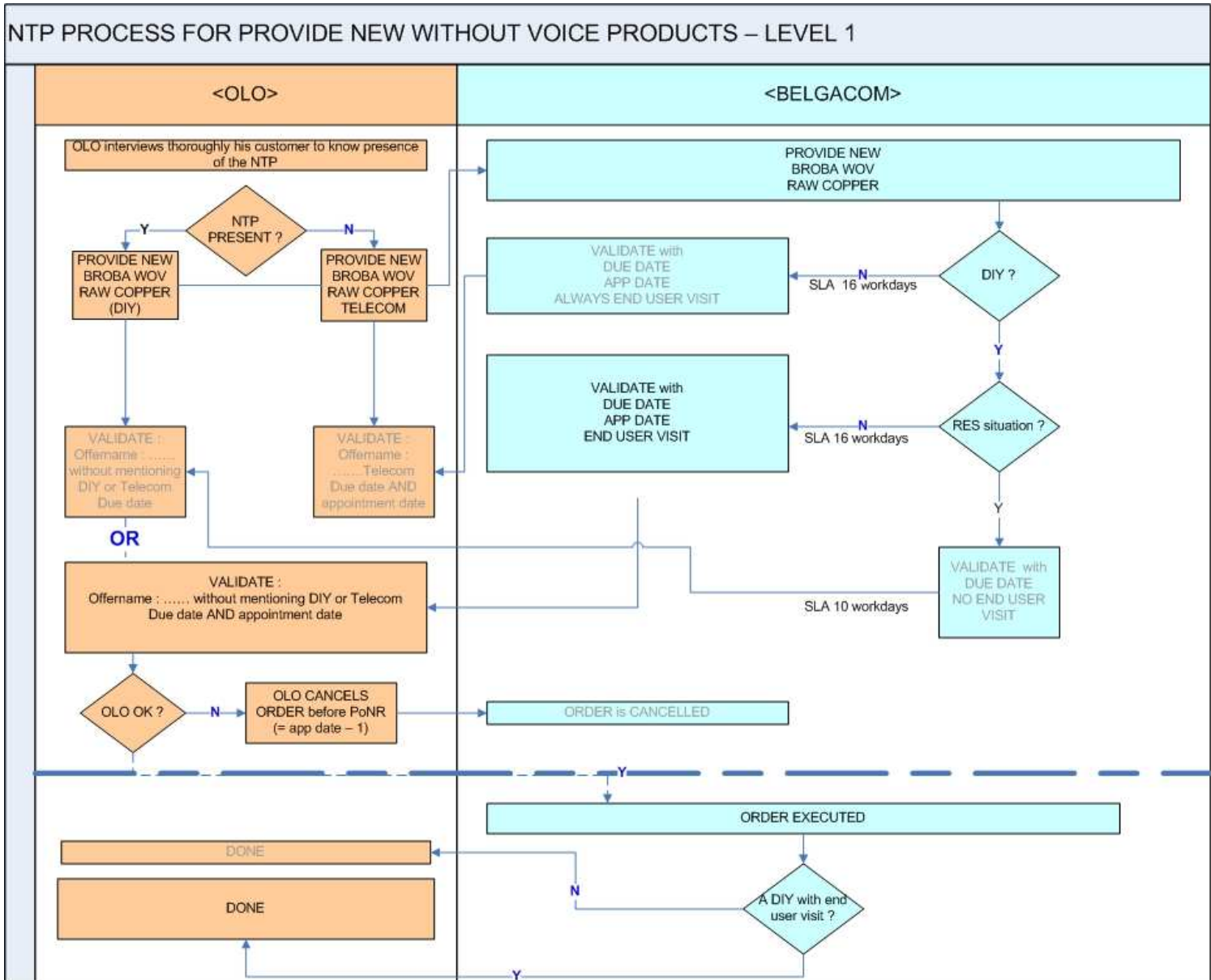
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Appendix E: NTP Process for Provide New BROBA II without voice



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Belgacom Reference Offer for Bitstream Access

BROBA II ADSL (covering the technologies ADSL, Reach Extended ADSL2 and ADSL2+)

Annex 2: Technical specifications of BROBA over ATM

Created on: 16 February 2012

belgacom

together with





together
with



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2 Scope

The purpose of this document is to describe the technical specifications of the BROBA over ATM service.

Note that additional information is available in the Main Body of this offer.

3 ATM NNI Tests for Belgacom Data Connectivity

3.1 General

3.1.1 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)

3.1.2 Planning: From ... to ...

2. Day 1: configuration checking and preparation of VBR VP connections
3. Day 2: VBR VP tests

3.1.3 Test locations

Belgacom

Address:

Telephone:

Beneficiary

Address:

Telephone:



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with



3.1.4 Contact persons for NNI tests

Operator	Belgacom
name1		
Telephone	+32	
Fax	+32	
Email	@Belgacom.be	
name2		
Telephone	+32	
Fax	+32	
Email	@Belgacom.be	

3.2 ATM NNI TESTS on E1 (2 Mbps), E3 (34 Mbps) and STM1 (155 Mbps)

3.2.1 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.

3.2.2 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

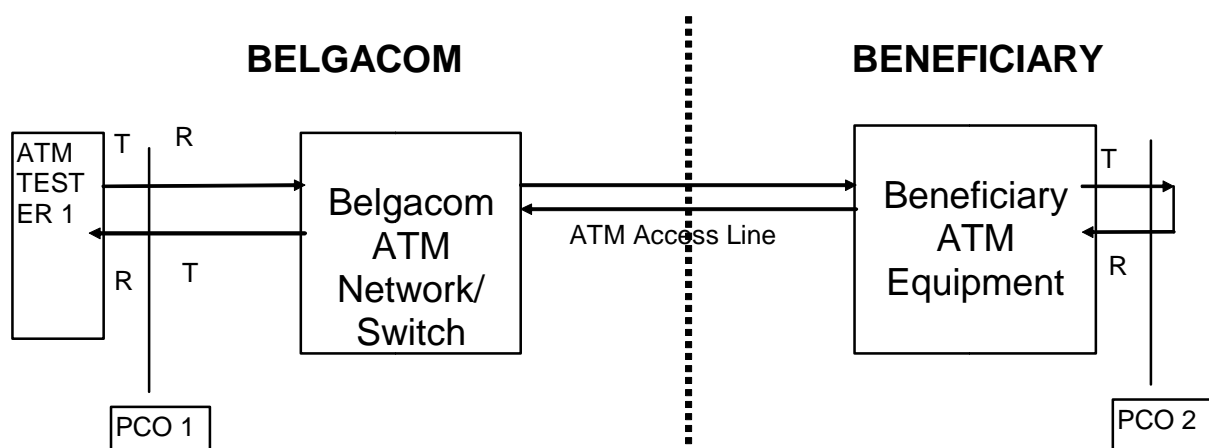


Fig. 1

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

3.2.2.1 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	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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		
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3.2.2.2 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	<ul style="list-style-type: none"> - configure the PVP connection mentioned here above between PCO 1 and PCO 2. - The PVP will be policed according to the GCRA algorithm. 	<p>config accepted = pass</p> <p>otherwise fail</p>		

2a	<p>- 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.</p> <p>- configure ATM TESTER 1 to receive traffic in the respective VPI and count lost cells.</p> <p>- start sending traffic and continue for 1 hour</p>	<p>no lost cells = Pass</p> <p>otherwise fail</p>		
----	---	---	--	--

3.2.2.3 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

4 Technical Specifications of the Access Line

4.1 2 Mbit/s

4.1.1 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.

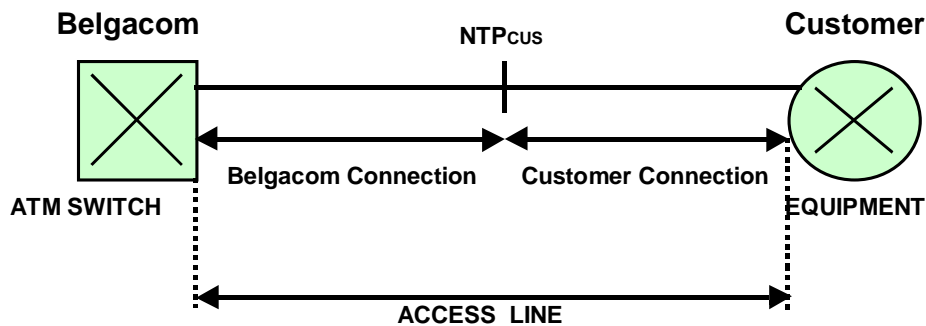


Fig. 2

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.

4.1.2 Connection characteristics

4.1.2.1 Transfer rate

4.1.2.1.1 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.

4.1.2.1.2 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.

4.1.2.1.3 Information transfer susceptance

25. The Belgacom connection of WDC 2 Mbit/s access line is capable of transferring unrestricted digital information.

4.1.2.2 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.

4.1.2.3 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.

4.1.2.4 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.

4.1.2.5 **Connection configuration**

29. The Belgacom connection configuration is point-to-point.

4.1.2.6 **Network performance**

4.1.2.6.1 **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.

4.1.2.6.2 **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.

4.1.2.6.3 **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.

4.1.2.6.4 **Performance level**

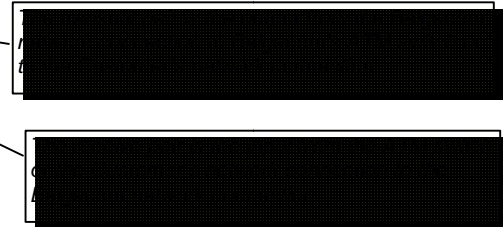
33. Basically, Belgacom and the Beneficiary have to co-operate in order to be able to guarantee the overall end-to-end error performance level of the WDC 2048kbit/s access line as specified in paragraph 5.1.7.4 of ETS 300 247. The method of apportionment for the end-to-end error impairments between The Beneficiary and Belgacom shall be based on the model mentioned in ITU-T Recommendation G.826.

4.1.2.7 **Network interface presentation**

4.1.2.7.1 **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



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 NTPcus 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.

4.1.2.7.2 Electrical characteristics

37. The electrical characteristics of the NTPcus of the 2 Mbit/s WDC access line are in accordance with paragraph 4.2 of ETS 300 418.

4.1.2.7.3 Safety

38. Regarding the safety, the NTPcus complies with paragraph 4.3 of ETS 300 418.

4.1.2.7.4 Overvoltage protection

39. Regarding the overvoltage protection, the NTPcus complies with paragraph 4.4 of ETS 300 418.

4.1.2.7.5 ElectroMagnetic Compatibility (EMC)

40. The network interface presentation fulfils to the EMC requirements which are imposed under the EMC Directive 89/336/EEC.

4.1.2.8 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

4.1.2.9 Definitions, Symbols and Abbreviations

4.1.2.9.1 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.

4.1.2.9.2 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.

ITU: International Telecommunication Union.

NTP Network Termination Point.

ppm: Parts per million

RGIE: Règlement Général des Installations Electriques.

SES: Severely Errored Seconds.

UI: Unit Interval.

4.2 34 Mbit/s

4.2.1 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.

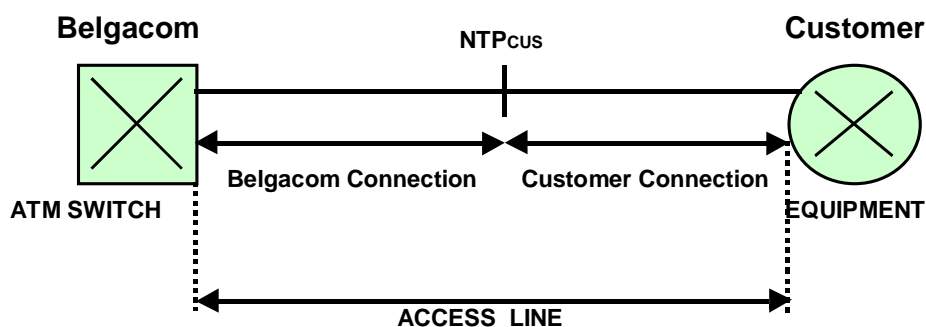


Fig. 3

53. The connection of Belgacom is presented to the Beneficiary's network connection via the Beneficiary's Network Termination Point (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 34 Mbit/s Access Line of the WDC service, the NTU is considered as being contained within the Belgacom connection.

4.2.2 Connection characteristics

4.2.2.1 Transfer rate

4.2.2.1.1 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.

4.2.2.1.2 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.

4.2.2.2 Information transfer susceptance

56. The Belgacom connection of WDC 34 Mbit/s access line is capable of transferring unrestricted digital information.

4.2.2.3 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.

4.2.2.4 **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.

4.2.2.5 **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.

4.2.2.6 **Connection configuration**

60. The Belgacom connection configuration is point-to-point.

4.2.3 **Network performance**

4.2.3.1 **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.

4.2.3.2 **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.

4.2.3.3 **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.

4.2.4 **Network interface presentation**

4.2.4.1 **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.

4.2.4.2 **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).

4.2.4.3 **Safety**

66. Regarding the safety, the NTPcus complies with paragraph 4.3 of ETS 300 418.

4.2.4.4 **Overvoltage protection**

67. Regarding the overvoltage protection, the NTPcus complies with paragraph 4.4 of ETS 300 418.

4.2.4.5 **ElectroMagnetic Compatibility (EMC)**

68. The network interface presentation fulfils to the EMC requirements which are imposed under the EMC Directive 89/336/EEC.

4.2.5 **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.

4.2.6 **Definitions, Symbols and Abbreviations**

4.2.6.1 **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.

³ RGIE: Règlement Général des Installations Electriques

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.

4.2.6.2 **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>	Réglement Général des Installations Electriques.

SES: Severely Errored Seconds.

UI: Unit Interval.

4.3 STM-1

4.3.1 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.

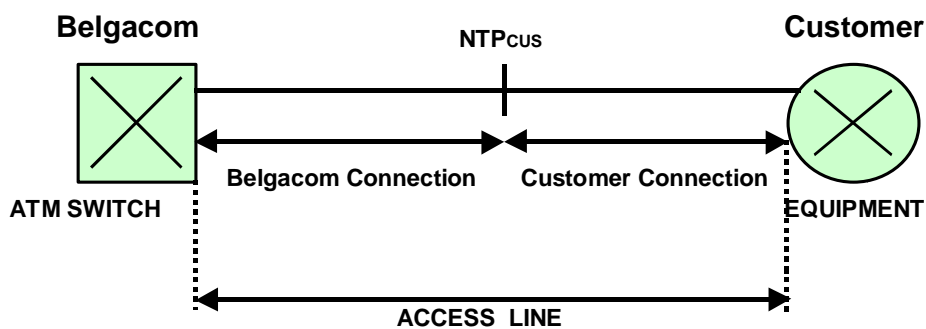


Fig. 4

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.

4.3.2 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.

4.3.3 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.

4.3.4 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.

4.3.5 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.

4.3.5.1 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.

5 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.

5.1 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.

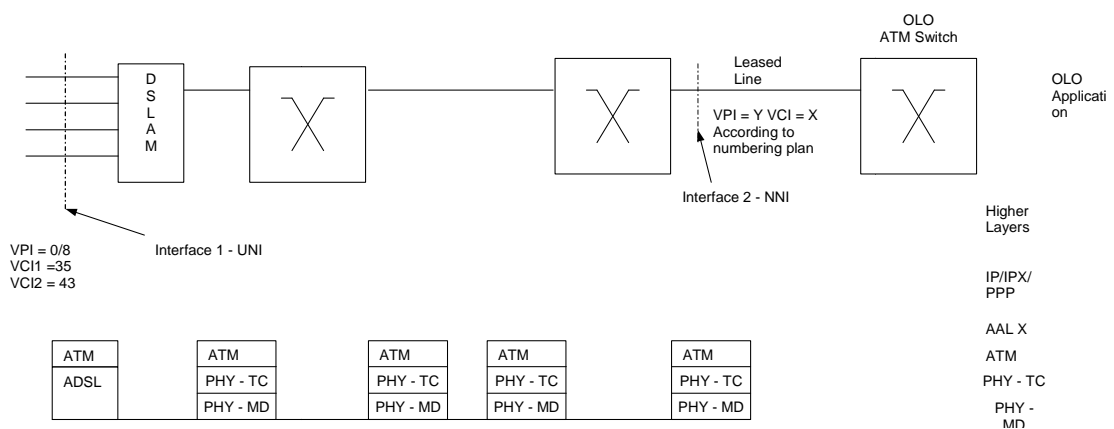


Fig. 5

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".

5.1.1 Interface 1 Specification – UNI

5.1.1.1 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 fourth 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 With the exception of the CBR context

⁵ With the exception of the CBR context

5.1.2 Interface 2 Specification – NNI

100.VP is configured in ATM Switch with following parameters:

5.1.2.1 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 +
- 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



together
with



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 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

⁶ With the exception of the CBR context

⁷ With the exception of the CBR context



together
with



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



together
with



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



together
with



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

5.2 Appendix – SDH interface

This chapter describes SDH interface.

5.2.1 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.

5.2.2 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.

5.2.3 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

5.2.4 SDH card connectors

117. The BNC connection is through a BNC MAU that connects to the back of the card.

5.2.5 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

6 Characteristics of Cabling - Transmission properties of the access network

6.1 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.

6.2 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.

6.3 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.

Belgacom Reference Offer for Bitstream Access

BROBA II ADSL (covering the technologies ADSL, Reach Extended ADSL2 and ADSL2+)

Annex 6: Pricing and Billing

Created on: 16 February 2012

belgacom

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.

1 Prices overview

This section presents an summary of the prices of the BROBA II offer. It contains no more information than the following sections, which present additional information on the prices. In case of inconsistency between the prices in the overview and the following sections, the latter will prevail.

1.1 End user line

Rental fees

<u>ADSL/ADSL2+/ ReADSL With voice</u>	<u>ATM</u>	<u>ETH Shared VLANs</u>	<u>ETH Dedic. VLANs</u>	<u>ATM and ETH (Shared VLANs)</u>	<u>ATM and ETH (Dedic. VLANs)</u>	<u>ATM and ETH (Shared and Dedic. VLANs)</u>	<u>ETH (Shared and Dedic. VLANs)</u>
<u>Monthly Rental</u>	<u>€5.50</u>	<u>€4.88</u>	<u>€5.04</u>	<u>€6.12</u>	<u>€6.28</u>	<u>€6.28</u>	<u>€5.04</u>

<u>ADSL/ADSL2+/ ReADSL Without voice</u>	<u>ATM</u>	<u>ETH Shared VLANs</u>	<u>ETH Dedic. VLANs</u>	<u>ATM and ETH (Shared VLANs)</u>	<u>ATM and ETH (Dedic. VLANs)</u>	<u>ATM and ETH (Shared and Dedic. VLANs)</u>	<u>ETH (Shared and Dedic. VLANs)</u>
<u>Monthly Rental</u>	<u>€12.97</u>	<u>€12.35</u>	<u>€12.51</u>	<u>€13.59</u>	<u>€13.75</u>	<u>€13.75</u>	<u>€12.51</u>

Activation

<u>DIY</u>	<u>With voice</u>	<u>Without voice</u>
<u>New installation - installed by Belgacom - installed by CT</u>	<u>46.09</u> =	<u>40.98</u> <u>9.20</u>
<u>Telecom</u>		
<u>New installation - Installed by Belgacom - Installed by CT</u>	<u>84.97</u> =	<u>99.62</u> <u>9.20</u>



together
with



<u>Migration to ADSL/ReADSL</u> <u>- installed by Belgacom</u> <u>- installed by CT</u>	<u>21,78</u> =	<u>24,11</u> <u>10,29</u>
<u>Migration to ADSL2+</u> <u>- installed by Belgacom</u> <u>- installed by CT</u>	<u>36,30</u> =	<u>38,30</u> <u>10,29</u>
<u>Others</u>		
<u>De-activation of an end-user line</u>	<u>4,35</u>	<u>4,51</u>
<u>Rush order</u>	<u>2 x Activation fee</u>	
<u>SNA – Small Network Adaptations</u>	<u>441,66</u>	

Configuration

<u>Activation/modification/de-activation per VC</u>	<u>3,21</u>
<u>Modification end-user line profile</u>	<u>3,21</u>

1.2 ATM transport and access line

Reference is made to section 2.5 of the offer.

1.3 Ethernet transport

Rental fees

<u>Monthly fee (€ per Mbps)</u>	<u>Shared VLAN</u>	<u>Dedicated VLAN</u>
<u>Best Effort (p=0)</u>	<u>1,96</u>	<u>Pp0=2,45</u>
<u>Low Priority (p=1)</u>	<u>2,61</u>	<u>Pp1=3,26</u>

Medium Priority (p=3)	3.27	Pp3=4.09
Highest Priority (p=5)	3.92	Pp5=4.90

One-time fees

Activation per VLAN	49.40	=
Modification per VLAN	30.28	=
De-activation per VLAN	2.68	=

1.4 Ethernet access line (OAL)

<u>Customer-Sited OAL</u>	<u>See BROTSOLL Ethernet pricing</u>
<u>1GE Belgacom-Sited OAL</u> - <u>Enquiry</u> - <u>Cable and tray installation</u> - <u>Small building Works</u> - <u>Monthly rental: cable and tray</u>	<u>112</u> <u>6,74 per meter (min 20m)</u> <u>Case by case (if necessary)</u> <u>38,47 + 0,17 per meter (min 5m)</u>
<u>1+1 GE Belgacom / Customer-Sited OAL</u>	<u>Sum of tariffs applicable to both OALs.</u>
<u>1 GE Backhaul OAL</u>	<u>See BROTSOLL Ethernet pricing</u>

1.5 SLA and ISLA

Basic SLA

<u>Basic SLA fee</u>	<u>0</u>
<u>SLA documented reports (unit price per report)</u>	<u>25.14</u>

<u>ISLA on repair</u>	
<u>Setup fee (paid once for the first ISLA: shared or dedicated VLAN)</u>	<u>2000,47</u>
<u>Setup fee (on a new line)</u>	<u>8,23</u>
<u>Change SLA type (SLA to ISLA or ISLA to SLA)</u>	<u>8,23</u>
<u>Monthly fee per end user</u>	<u>8,74</u>

<u>ISLA on provisioning</u>	
<u>Per customer visit</u>	<u>10</u>

1.6 Others

Other fees related to activation

	<u>With voice</u>	<u>Without voice</u>
<u>Coordinated move</u>	<u>50,44</u>	<u>=</u>
<u>Conversion PSTN/ISDN</u>	<u>35,74</u>	<u>=</u>
<u>Incorrect installation by CT (additional fee for repair)</u>	<u>=</u>	<u>123,33</u>
<u>Incorrect ADSL migration by CT (additional fee for repair)</u>	<u>=</u>	<u>46,72</u>
<u>Incorrect ADSL2+ migration by CT (additional fee for repair)</u>	<u>=</u>	<u>60,91</u>
<u>End user visit detected during repair (if installed by Belgacom) (additional to activation fee without end-user visit)</u>	<u>0</u>	<u>91,54</u>
<u>Change on Belgacom Voice Service</u>		
- with > without voice (asked by OLO)	<u>5,28</u>	
- with > without voice (others)	<u>0</u>	
- without > with voice	<u>0</u>	



together
with



<u>Change implementation date (before DD-1 12PM)</u>	<u>6.59</u>
<u>Cancel order (before DD-1 12PM)</u>	<u>6.99</u>
<u>Useless end-user visit</u>	<u>20.04</u>
<u>Wrongful repair request</u>	<u>104.61</u>
<u>Compensation for Non First Time Right Installation (paid by Belgacom)</u>	<u>=Activation fee of BROBA service on this line</u>
<u>BROBA startup: rate per hour of Belgacom person</u>	<u>99.49</u>

1.7 Databases use

Street information

<u>First KVD</u>	<u>17.75</u>
<u>Extra KVD</u>	<u>0.59</u>
<u>For every extra 20' started</u>	<u>16.16</u> <u>A maximum of 17.25 * [# of requested KVD's] will be billed</u>

Network Street relation database

<u>Initial License Fee</u>	<u>16 660</u>
<u>1 update/year (annual fee)</u>	<u>2 000</u>
<u>6 updates/year (annual fee)</u>	<u>5 000</u>

2 Pricing

2.1 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

2.2 Tariffs applicable for the End User line

2.2.1 One time fees

2.2.1.1 Request for inquiry Fee

- 2 A Request for inquiry is an XML message that is used to make specific requests for feasibility for a given address. These feasibility inquiries are treated by a specific Belgacom service.
- 3 The Request for 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
Request for inquiry Fee for BROBA II ADSL (with or without voice)	€9,94

2.2.1.2 LLU Inquiry Tool

- 4 The Beneficiary will be invoiced the following amount per inquiry done (either by Web interface or by XML).

	Euro
Per inquiry done	€0,00

2.2.1.3 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

- 5 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

- 6 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.
- 7 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.
- 8 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

- 9 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.
- 10 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.

- 11 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

2.2.1.4 **Rush Order**

- 12 When Rush order has been requested the standard activation fee will be doubled.

2.2.1.5 **VC Configuration Fee on an End User Line**

	Euro
Activation/Modification/ De-activation fee per VC	€3,21

- 13 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.
- 14 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.
- 15 This fee will also be applicable per VC, in case of modification from ATM to Ethernet transport (and vice-versa), for the same Beneficiary.



together
with



2.2.1.6 Modification of End-User Line Profile

	Euro
Modification (per modified Line Profile)	€3,21

- 16 In case of simultaneous Modification of a Line Profile and of a VC of the same End-User Line, both fees will be invoiced.

2.2.1.7 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

- 17 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.

2.2.1.8 Conversion PSTN/ISDN

- 18 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

2.2.1.9 De-activation fee of an End User line

- 19 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

- 20 The above-mentioned fees are inclusive the price of the de-activation of the last VC on the End User Line.

2.2.1.10 Change Date Fee

- 21 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

- 22 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.

2.2.1.11 Cancellation Fee

- 23 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

- 24 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.

2.2.1.12 Move from LDC to LEX

- 25 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

2.2.1.13 Pending order due to useless end-user visit

Pending order due to useless end-user visit	Euro
Per intervention	€20,04

- 1 This fee is due when the technician performs a useless end-user visit on the appointment date, and if the installation is performed by Belgacom. A useless end-user visit can happen for the following reasons:



together
with



- End-user refuses the installation.
- End-user is absent.
- End-user is not ready for the installation.
- End-user cancels the order. 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.

2.2.1.14 Improved SLA on repair

- 2 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

- 3 One-time fee per line for setup of ISLA in case of a new line.

	One-time fee
Activation fee	€8,23

- 4 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

- 5 Rental fee per local loop with the ISLA type in addition to the monthly fee.

	Monthly Rental
Extra Rental Fee	€8,74

2.2.1.15 Improved SLA on provisioning

- 6 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



together
with



2.2.1.16 Small Network Adaptations

- 7 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. The following fee will apply in surplus of the Activation fee relevant to an installation by Belgacom.

	Euro
Small Network Adaptations	€441,66

- 8 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.

2.2.1.17 Wrongful repair request

- 9 In case of wrongful repair request by a Beneficiary, Belgacom will invoice this Beneficiary an administrative fee of 104,61 Euro
- 10 If Belgacom has performed specific work due to this wrongful repair request made by Beneficiary, Belgacom will invoice these additional costs to Beneficiary.
- 11 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.

2.2.2 Monthly Recurring fee per End User line

BROBA ADSL/ADSL2+/ ReADSL With voice	ATM	ETH Shared VLANs	ETH Dedic. VLANs	ATM and ETH (Shared VLANs)	ATM and ETH (Dedic. VLANs)	ATM and ETH (Shared and Dedic. VLANs)	ETH (Shared and Dedic. VLANs)
BRUO Shared Pair (excl. Splitter maintenance cost)	€0,56						
Active part	€3,70						
Transport Rental ATM	€1,24	N.A.	N.A.	€1,24	€1,24	€1,24	N.A.
Transport Rental ETH	N.A.	€0,62	€0,78	€0,62	€0,78	€0,78	€0,78
Total Monthly Rental	€5,50	€4,88	€5,04	€6,12	€6,28	€6,28	€5,04

BROBA ADSL/ADSL2+/ ReADSL	ATM	ETH Shared VLANs	ETH Dedic. VLANs	ATM and ETH (Shared	ATM and ETH (Dedic.	ATM and ETH (Shared and Dedic.	ETH (Shared and Dedic.

Without voice				VLANs)	VLANs)	VLANs)	VLANs)
BRUO Raw Copper	€8,03						
Active part	€3,70						
Transport Rental ATM	€1,24	N.A.	N.A.	€1,24	€1,24	€1,24	N.A.
Transport Rental ETH	N.A.	€0,62	€0,78	€0,62	€0,78	€0,78	€0,78
Total Monthly Rental	€12,97	€12,35	€12,51	€13,59	€13,75	€13,75	€12,51

2.3 SLA documented reports

- 12 Belgacom is entitled to invoice the Customer for the production of the SLA documented reports described in the Annex 5, Basic SLA, section 7 “Documented reports”. The unit price per report amounts 25,14 €.

2.4 Compensation for Non First Time Right Installation

- 13 In cases that a BROBA II line is brought into service by Belgacom and that a repair ticket is created for this line by the Beneficiary within 14 calendar days after provisioning closure date, giving a fault located on Belgacom access network, and caused by Belgacom or a third party working for Belgacom, the Beneficiary will be entitled for this line to a compensation for “Non first time Right Installation”.
- 14 The compensation due by Belgacom per Non First Time Right Installation related to a specific BROBA II line is equal to the Activation Fee of the BROBA II Service on this End User line, as defined in § 55 to 77 of this document.
- 15 Compensations for Non First Time Right Installation will be settled through a Beneficiary’s invoice without VAT.
- 16 Together with this invoice, the Beneficiary must provide Belgacom with the necessary information to claim for Non First Time Right Installation. 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 for Non First Time Right Installation, refunding will be done by Belgacom.
- 17 This necessary information will be provided to Belgacom under the form of a structured file (Excel or CSV format), and will include at least the following data’s for each Non First Time Right Installation:
- Beneficiary, Circuit Id, Ready For Service Date, Belgacom repair ticket nr, Belgacom repair ticket opening date, Belgacom repair ticket closure date, number of the Belgacom invoice of the claimed Non First Time Right Installation and total activation fee, as mentioned in the invoice, of the claimed Non First Time Right Installation (HTVA).

Each invoice of The Beneficiary related to Non First Time Right Installation claims will group the cases of one or several complete months, based on the Belgacom repair ticket closure date.

2.5 Tariffs applicable for the ATM Transport

2.5.1 Preamble

- 18 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.
- 19 Pricing is differentiated based upon the requested “quality of service” and the fact whether local or non-local ATM tariffs do apply.
- 20 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.

- 21 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.
- 22 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 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.

2.5.2 Formulas

- 23 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.

2.5.2.1 Formula for non-Local ATM

- 24 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).

$$\text{ATM_NL tariff} = \text{MIN}(\text{ATM_NL_LOW}, \text{ATM_NL_HIGH})$$

$$\text{ATM_NL_LOW} = 12,683 + \text{QoSFIX_LOW}_{q,ni} + \text{BWNL}_{r,q} * (30,002 + \text{QoSVAR_LOW}_{q,ni}) * \text{PCR}_r$$

$$\text{ATM_NL_HIGH} = 37,503 + \text{QoSFIX_HIGH}_{q,ni} + \text{BWNL}_{r,q} * (9,2634 + \text{QoSVAR_HIGH}_{q,ni}) * \text{PCR}_r$$

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 .
- $\text{QoSFIX_LOW}_{q,ni}$, $\text{QoSFIX_VAR}_{q,ni}$, $\text{QoSFIX_HIGH}_{q,ni}$ and $\text{QoSFIX_HIGH}_{q,ni}$: correction factors for QoS q in non-local ATM transport.

- 25 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%

- 26 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

2.5.2.2 Formula for Local ATM

27 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:

- $\text{BWN}_{Lr,q}$: 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 §2559 above).
- $\text{QoSFIX_LOW}_{q,l}$, $\text{QoSFIX_VAR}_{q,l}$, $\text{QoSFIX_HIGH}_{q,l}$ and $\text{QoSVAR_HIGH}_{q,l}$: correction factors for QoS q in local ATM transport (see §2651 above).

28 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.

2.5.3 One-time Fees

2.5.3.1 Fees for activation of VPs

	Euro
Activation fee per VP	€38,51

29 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.

2.5.3.2 Fees for change of ATM Transport parameters (VP modification)

	Euro
Modification fee per VP	€19,01

2.5.3.3 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

2.5.3.4 Fees for de-activation of VPs

	Euro
De-Activation fee per VP	€19,44

2.5.4 Documentation of the VPs billing

30 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.

2.5.5 Tariffs applicable for the Access Line

31 It should 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.

32 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.

33 For the tariffs applicable to Customer-Sited Access Line, reference is made to the BROTSoLL offer, type "Belgacom-external".

34 These prices are those stated in BIPT's advises on BROTSoLL of. These advises are the object of requests for annulment before the Court of Appeal of Brussels. Accordingly, Belgacom reserves its right to apply different prices, should these requests succeed.

35 For the tariffs applicable to Belgacom-Sited access line, reference is made to Belgacom Backhaul Leased Lines offer.

3536 For the tariffs applicable to the Backhaul OLO Access Line 1GE, reference is made to the BROTSoLL Ethernet pricing, namely to the BROTSoLL Ethernet Dual Belgacom-sited).



together
with



2.6 Tariffs applicable for the Ethernet Transport (with shared VLAN's)

3637 In section ~~2.62-6~~ the word “Broba over Ethernet’ refers systematically to the service with shared VLAN’s.

2.6.1 Preamble

3738 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.

3839 Per LEX where the Customer wants to deliver the BROBA over Ethernet service, the Customer must order at Belgacom at least one VLAN and maximum 2 VLANs per QoS between this LEX and a Service PoP to which the Customer is connected, sited in the same Service Area as the LEX himself.

2.6.2 One-time fees

2.6.2.1 Fee for activation of VLAN

	Euro
Activation fee per VLAN	€49,40

2.6.2.2 Fee for change of VLAN Bandwidth

	Euro
Modification fee per VLAN	€30,28

2.6.2.3 Fee for de-activation of VLAN

	Euro
De-Activation fee per VLAN	€2,68

2.6.3 Monthly recurring fees

3940 The prices are applicable per shared VLAN.

4041 The price of the Ethernet Transport is differentiated based upon the requested Service Quality.

Service Quality	Price per Mbps
-----------------	----------------

	(in €)
Best Effort (P=0)	€ 1,96
Low Priority (P=1)	€ 2,61
Medium Priority (P=3)	€ 3,27
Highest Priority (P=5)	€ 3,92

442 If the Bandwidth of a VLAN is expressed in Gbps, the following conversion rule applies: 1 Gbps = 1.000 Mbps.

2.7 Tariffs applicable for the Ethernet Transport (with dedicated VLANs)

~~4243~~ In section ~~2.72-7~~, the word “Broba over Ethernet” refers systematically to the service with dedicated VLAN.

2.7.1 Preamble

~~4344~~ 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.

~~4445~~ 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 BROBA over Ethernet line ordering. The Customer is responsible for the choice and definition of each dedicated VLAN profile.

~~4546~~ 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

2.7.2 Monthly recurring fees

~~4647~~ The following formula allows to compute the monthly recurring fee per dedicated VLAN:

$$\text{Max}(\text{Dwn Bwdth } p_0, \text{Up Bwdth } p_0) * P_{p0} + \text{Max}(\text{Dwn Bwdth } p_1, \text{Up Bwdth } p_1) * P_{p1} + \text{Max}(\text{Dwn Bwdth } p_3, \text{Up Bwdth } p_3) * P_{p3} + \text{Max}(\text{Dwn Bwdth } p_5, \text{Up Bwdth } p_5) * P_{p5}$$

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 = € 2,45
Low Priority (P=1)	Pp1 = € 3,26
Medium Priority (P=3)	Pp3 = € 4,09
Highest Priority (P=5)	Pp5 = € 4,90

2.8 Tariffs applicable for the Customer-Sited OLO Access Line

⁴⁷⁴⁸ For the tariffs applicable to the Customer-Sited OLO Access Line 1GE (resp. 100 or 10 Mbit/s), reference is made to the BROTSOLL Ethernet pricing, namely to the Belgacom-Sited Gigabit Ethernet (resp. Fast Ethernet 100 or Ethernet 10 Mbit/s).

2.8.1 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.

2.8.2 Tariffs applicable for the 1+1 GE / Belgacom + Customer-Sited OLO Access Line

⁴⁸⁴⁹ 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.

2.9 Migration fees

- 4950 This section only refers to migrations towards a BROBA ADSL service. The tariffs for migrations
- towards a WBA VDSL2 service are described in Annex 6 of WBA VDSL2
 - towards a BROBA SDSL service are described in Annex 6 of BROBA II SDSL.
 - towards a BRUO service are set in Annex H “Price List’ of BRUO.

2.9.1 Single Line Migration fees

- 5051 The migration fee includes both the activation and the deactivation parts of the migration, and will be entirely invoiced to the party requesting for migration.

- 5152 The migration fee is applicable in the following cases:

- Change of ownership:** transfer of a line from Beneficiary 1 to Beneficiary 2. The fee is invoiced to the party requesting for transfer (i.e Beneficiary 2).
- Convert:** Product modification from any product to BROBA II ADSL, BROBA II ADSL2 Reach Extended or BROBA II ADSL2+. The line remains at the ownership of the Beneficiary (no transfer of ownership). The fee is invoiced to the party requesting for conversion.
- A combination of a. and b.**

2.9.1.1 Conversion resulting in change on the Belgacom Voice service (from BROBA II xDSL with voice towards BROBA II xDSL without voice, or conversely), for the same BROBA II xDSL product

- 5253 The following tariffs are applicable to the OLO requesting for conversion from BROBA II xDSL with voice towards BROBA II xDSL without voice (or conversely) in accordance with the scenario of conversions presented in the following table.

Conversion fees with change on the Belgacom Voice service for the same BROBA II xDSL product	Price
BROBA II with voice to BROBA II without voice asked by Belgacom following a request of the end-user to cease/port his Belgacom voice service	€ 0
BROBA II with voice to BROBA II without voice and reverse asked indirectly by OLO through a Number Portability request	€ 5.28



together
with



BROBA II without voice to BROBA II with voice

€ 0

2.9.1.2 Migration fees to ADSL or ADSL2 Reach Extended (change of owner and conversions)

5354 The following tariffs are applicable to the OLO requesting for migration in accordance with the scenario of migration to BROBA II ADSL or ADSL2 Reach Extended presented in the following table (except cases in [2.9.1.12-9.1.1](#)).

Migration fees to ADSL or ADSL2 Reach Extended	Price
Change of owner/Convert to BROBA II ADSL or ADSL2 Reach Extended with voice	€ 21.78
Change of owner/Convert to BROBA II ADSL or ADSL2 Reach Extended without voice, installed by Belgacom	€ 24.11
Change of owner/Convert to BROBA II ADSL or ADSL2 Reach Extended without voice, installed by certified technician	€ 10.29

2.9.1.3 Migration fees to ADSL2+ (change of owner and conversions)

5455 The following tariffs are applicable to the OLO requesting for migration in accordance with the scenario of migration to BROBA II ADSL2+ presented in the following table (except cases in [2.9.1.12-9.1.1](#)).

Migration fees to ADSL2+	Price
Change of owner/Convert to BROBA II ADSL2+ with voice	€36.30
Change of owner/Convert to BROBA II ADSL2+ without voice, installed by Belgacom	€ 38.30



together
with



Change of owner/Convert to BROBA II ADSL2+ without voice, installed by certified technician

€ 10.29

5556 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

5657 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.

2.9.2 Project Migration fees

5758 Because of the specific character of the Project Migration, pricing will be proposed on a case-by-case quotation.

2.9.3 Mass Migration fees

Migration Fee for Mass Migrations	Price
Physical Mass Migration to BROBA II ADSL	€45,50
Virtual Mass Migration to BROBA II ADSL	€8,45

5859 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.

2.10 Use of e-tool and databases

2.10.1 Repair e-Tools

5960 The e-tool for repair BROBA and the repair line measurement

Repair e-Tools	Price
Repair and Line Measurement	Free of Charge

2.10.2 Street Information

6061 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	

6162 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

2.11 Training and certification costs of certified technicians

- | ~~6263~~ 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.

- | ~~6364~~ 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.

- | ~~6465~~ The cost of a theoretical training module, or of an updating session, of an half day is: € 79,00 per certified technician.

- | ~~6566~~ The cost of a practical training module of an half day is: € 68,00 per certified technician.

- | ~~6667~~ The cost of the test is: € 53,00 per certified technician.

- | ~~6768~~ 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.

- | ~~6869~~ 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.

3 Billing

3.1 Preliminary

~~69~~⁷⁰ 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.

~~70~~⁷¹ 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.

~~71~~⁷² For each BROBA product, Belgacom will invoice Beneficiary accordingly

~~72~~⁷³ Belgacom shall record, store and process the Billing Data in accordance with Section 2 of this Document.

~~73~~⁷⁴ 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.

~~74~~⁷⁵ 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.

~~75~~⁷⁶ Belgacom reserves the right to modify the layout and the presentation of the invoice to the Beneficiary.

3.2 Recording and storage of billing data

7677 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

7778 The general list of billing data indicated above is not exhaustive. Pricing is set in the Section 1 of this Annex.

7879 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.

3.3 Confirmation of charging principles

7980 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.

8081 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.

8182 All the non-recurring charges will be mentioned in the Invoice of the Billing Period covering the Bringing Into Service Date.

8283 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

8384 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)

3.4 Invoices

8485 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.

8586 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.

8687 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.

8788 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.

8889 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.

8990 All changes to amounts invoiced in accordance with this Section 4 will be effected through credit notes or additional invoices.

3.5 Payment

9091 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”).

9192 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.

9293 Credit notes will be set off against any payments due of the next invoice and are refundable when there are no outstanding invoices.

9394 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.

9495 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.

9596 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.

3.6 Disputes

9697 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.

9798 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.

9899 Upon receipt of the Notice of Dispute, the Parties shall exchange by ordinary mail any information necessary or useful for solving the Dispute.

~~99~~100 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.

~~100~~101 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.

~~101~~102 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

~~102~~103 Product covered under this billing and accounting document:

~~103~~104 BROBA 2 (Data Connectivity Broba II)

~~104~~105 The general list of billing services below is not exhaustive, and may be adapted. Pricing is set in Section 1 of this Annex.

~~105~~106 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

~~106~~107 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

~~107~~108 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 VLANs Bandwidth.



| ~~108~~109 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

| ~~109~~110 Belgacom reserves its right to modify the lay out and the presentation of its invoice to the Beneficiary.



together
with



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	

Belgacom Reference Offer for Bitstream Access

BROBA II ADSL & SDSL (covering the technologies ADSL, Reach Extended ADSL₂, ADSL₂₊ and SDSL)

Annex 1: General Terms & Conditions

Created on: 16 February 2012

belgacom

together with



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. 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

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 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, Prepayment Conditions, Guaranteed Positions 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 Main Body and Annexes of the Bitstream Access Offer, as they are approved by BIPT and applicable at the time of consultation. These are available on Belgacom's Internet site. The other Annexes are available on the Secured website of Belgacom and may be consulted further to the signature of a non-disclosure Agreement. Other documents which are referenced in the Main Body](#)

or Annexes are available on the Secured website of Belgacom (Personal Page of Belgacom Wholesale) and may be consulted further to the signature of a non-disclosure Agreement.

~~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	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.	Contract	negotiations between Belgacom and the Beneficiary on the basis of the present General Terms and Conditions, 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.
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.	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.
BROBA II Reference Offer	Has the meaning set out in the General Information.	Contract	As the case may be a contract for a BROBA 2 ADSL line or BROBA 2 SDSL line.
Request	The Beneficiary's demand concerning the delivery of a BROBA 2 ADSL or BROBA 2 SDSL Service as described in this Reference Offer.	Bitstream Access Services	All the Services described in the Belgacom Reference Offer for Bitstream Access Services that are ordered by the Beneficiary.
BROBA 2 SDSL	Any agreement concluded between Belgacom and a Beneficiary following the	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 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.

f) the Customer's request for access to the Bitstream Service is unreasonable (as stipulated in the CRC decision of July 1st, 2011 regarding the analysis of the broadband markets) on the basis of other grounds than the ones listed hereabove.
e)

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 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. 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 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. 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 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, 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 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 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.
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.
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)

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.

28. Belgacom shall respect all service levels, timers and other guarantees mentioned in the SLA-document or otherwise shall conform to the applicable penalties.

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.

(respectively: BROBA over Ethernet), repair on the ATM Virtual Path (respectively: on the VLAN).

Bitstream Access – Data connectivity - SDSL (BROBA 2 -SDSL)

Obligations of the Beneficiary

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 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.

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 , for BROBA over ATM

32. 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.

33. 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

34. 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.
35. 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.
36. 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:
- 36.1. SDSL is not technically feasible over existing facilities;
- 36.2. 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)

- 36.3. 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)

37. 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.

38. Belgacom shall respect all service levels, timers and other guarantees mentioned in the SLA-document or otherwise shall conform to the applicable penalties.
39. 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

40. 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.
41. Employees of Beneficiary and employees of Beneficiary's subcontractor may qualify as Certified Technician, if they fulfil the conditions described in the document Specific

Terms and Conditions relating to Certified Technician, available on the Personal Page of Belgacom Wholesale. In order to be certified, they will successfully follow training by Belgacom and sign the necessary confidentiality agreements.

42. 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. 78).
43. 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.
44. 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.
45. 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.
46. 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).
47. 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, available on the Personal Page of Belgacom Wholesale.
48. 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, available on the Personal Page of Belgacom Wholesale;
 - 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.
49. 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.

Financial Conditions

Billing and Payments

50. 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

51. 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.
52. 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 99 hereafter.

Sufficient Creditworthiness

53. This monthly pre-payment will not be required in the following circumstances.
54. 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.

55. 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

56. 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.
57. 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 ten (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, 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.

58. 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 ten (10) working days. Upon 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, 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

59. 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.
60. 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

61. 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.
62. Beneficiary shall offer telecom services to ~~End~~-Users under its own brand without any use of, or reference to Belgacom's brands.
63. 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.

64. 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

65. 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' Users or as providing to Belgacom any right to consult the contracts signed between Beneficiary and its Users.

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

66. Beneficiary shall bear all the consequences of the breach of the above obligation.

Coordination between the Parties

Single Points of Contact

67. 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.
68. 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.
69. Each Party will be authorized to replace its SPOC by notice sent to the other Party. Such notice will have immediate effect.

Working Group

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

Liability

General rules

71. 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.
72. 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 73;
 - 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 ~~permitted~~ 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 73.
73. 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.

74. 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.

75. 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

76. 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").

77. 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.

78. 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. For the sake of clarity, in case of parallel claims against the Beneficiary and Beneficiary's subcontractor, Belgacom can only once recover indemnification of its total damage.

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

79. 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”).

80. 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.

81. 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.

82. 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

83. 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.

84. 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, available on the Personal Page of Belgacom Wholesale). 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

85. 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 Annex2 and 2A “Technical Specifications” and the operational rules and procedures contained in the Annex 4 “Planning and Operations”.

86. 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.

87. 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.

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.

Essential Requirements

88. 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.
89. 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.
90. 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.
91. The conditions for and restrictions on use applying at any time appear from the Annexes 2 and 2A, the "Technical specifications" Document.
92. 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

Amendments and Revisions

General Principles

93. 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.

Termination and Suspension

94. 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^o 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.
95. 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.
96. 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.
97. 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 fifteen (15) 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.

98. 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.

99. Without prejudice to article 52, in the event that Beneficiary fails to pay outstanding invoice (invoice, preinvoice or final invoice) for any amount due under the BROBA II Reference Offer, Belgacom shall be entitled, after having duly informed the BIPT,

- to suspend all BROBA Services without further notice if the total amount due has not been paid within a period of fifteen (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.

100. Article 99 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.

101. 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.

102. 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.

103. 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.

104. 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.

105. 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.

106. 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, Applicable Law and Jurisdiction, shall remain in full force and effect after the termination.

Confidentiality

Confidential Information

107. 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.

108. 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.

109. 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

110. 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.

111. 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.

112. 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

113. 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 an obligation of confidentiality in respect of the

Confidential Information, which is at least equivalent to the confidentiality obligation set forth in the Contract.

114. 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.
115. 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.
116. 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

117. 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.

118. 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 of 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

119. 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.
120. 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.
121. 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 120. The Parties may, at any given escalation level, agree to extend the time limits described in this article and in

article 120 when they consider it necessary in order to facilitate that an agreement be concluded on the subject-matter of the dispute.

122. 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.
123. 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

124. The BROBA II Reference Offer and the contract and its Annexes shall be governed by Belgian law.
125. 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

126. 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.

127. 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

128. 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:

made under the Contract without requesting the other Party's consent.

***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

129. 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.
130. 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

131. 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

132. 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

133. 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 cooperate 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).

134. 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

135. 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.

136. 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 or representatives shall engage in any acts which may lead any person to believe that such Party is an employee, agent, representative or subcontractor of the other Party. Nothing in the Contract shall be deemed to constitute a partnership between the Parties.

Belgacom Reference Offer for Bitstream Access

BROBA II ADSL & SDSL (covering the technologies ADSL, Reach Extended ADSL2, ADSL2+ and SDSL)

Annex 2A: Technical Specifications of BROBA over Ethernet (with Shared VLAN or Dedicated VLAN)

Created on: 16 February 2012

belgacom

together with





together
with



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2 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”.

This document is updated for “two VLANs per Qos”

3 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>new additional</i> 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 “shared VLAN” or to a “dedicated VLAN”.
VLL	Virtual Leased Line
WBA VDSL2	Wholesale Broadband Access VDSL2. It may refer to the service with shared VLANs or with dedicated VLAN's.

4 Overall Network architecture for “shared vlan”

4.1 End-to-End view

4.1.1 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, maximum two 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 figure 1.

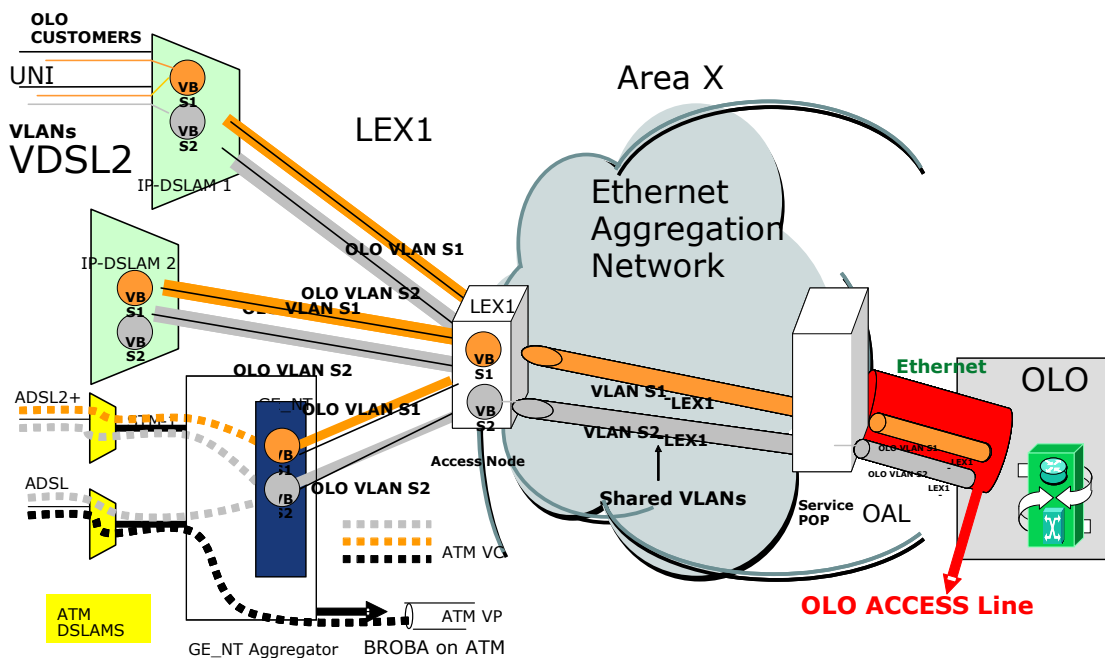


Figure 1: end to end overview

In the following sections we walk from left (xDSL side) to right (Ethernet OAL) through Figure 1.

4.1.2 (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 Figure 1),
- by ATM VP connections as in the BROBA over ATM offer (black dotted line in Figure 1).

On the same ATM DSL line, a mix of two services 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)

4.1.3 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 ⇔ Ethernet p-bit).
- Relation Qos ⇔ 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

Eight 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 (two bridges)
- P=1 : low priority (two bridges)

- P=3 : medium priority (two bridges)
- P=5 : highest priority (two bridges)

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 below).

Relation QoS ⇔ 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

4.2 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 8 bridges (p0, p1, p3, p5, p0bis, p1bis, p3bis, p5bis) 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 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 40Mbps per GE_NT aggregator.
- P3 or P5 VLAN: shaped to 20Mbps per GE_NT aggregator.

4.3 Protocol architecture

4.3.1 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.

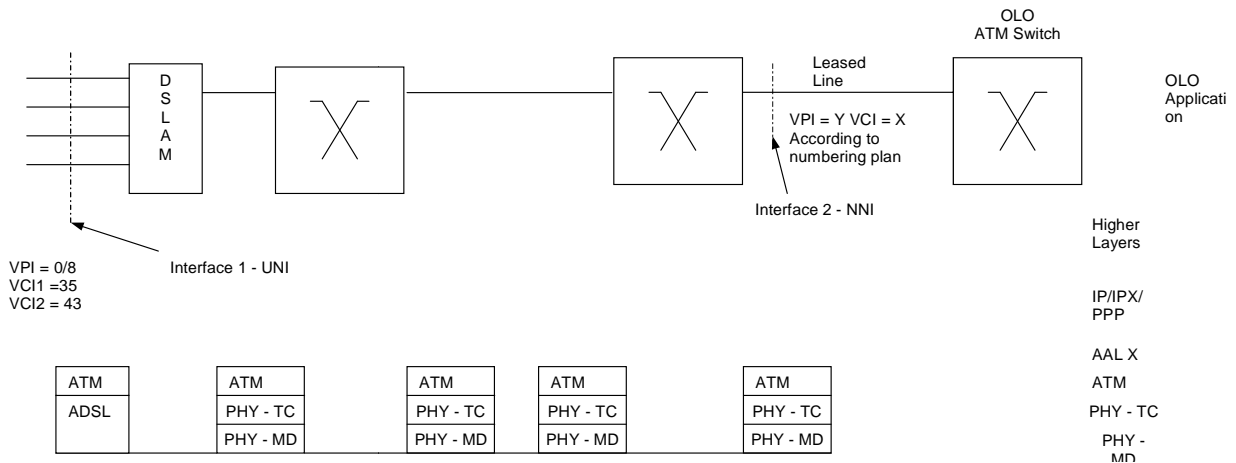


Figure 2: BROBA over ATM protocol stack

4.3.2 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 has 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.

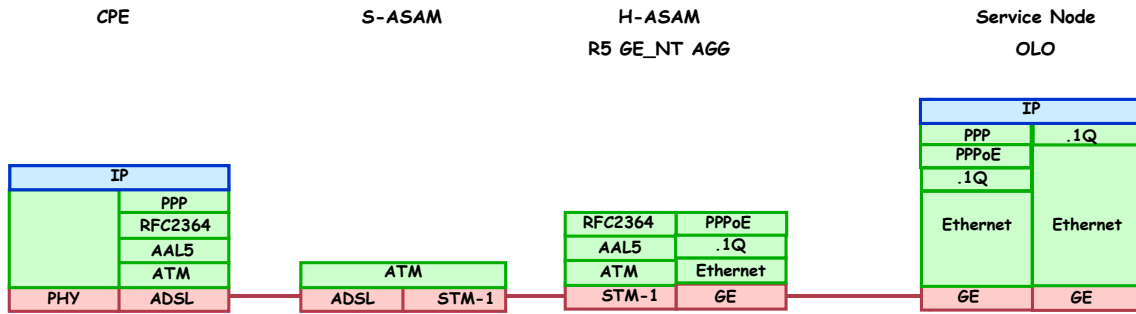


Figure 3: BROBA over Ethernet (with PPPoA) protocol stack

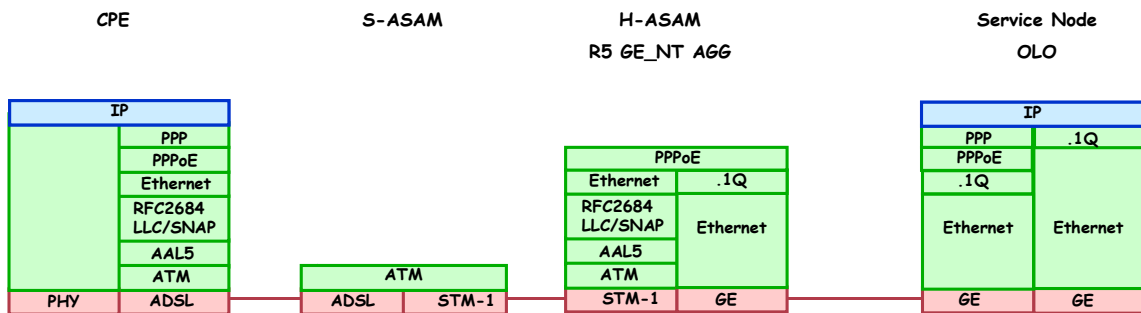


Figure 4: BROBA over Ethernet (with PPPoE) protocol stack

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.

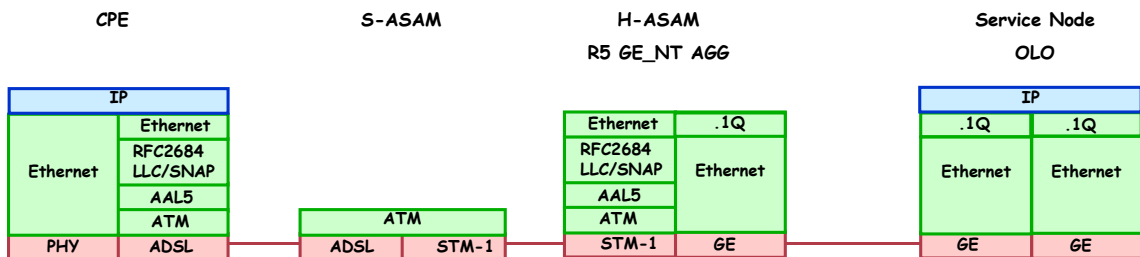


Figure 5: BROBA over Ethernet (with IPoE) protocol stack

- 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 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.

4.3.3 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.

5 Overall Network architecture for “Dedicated VLAN”

5.1 End-to-End VIEW

5.1.1 Architecture

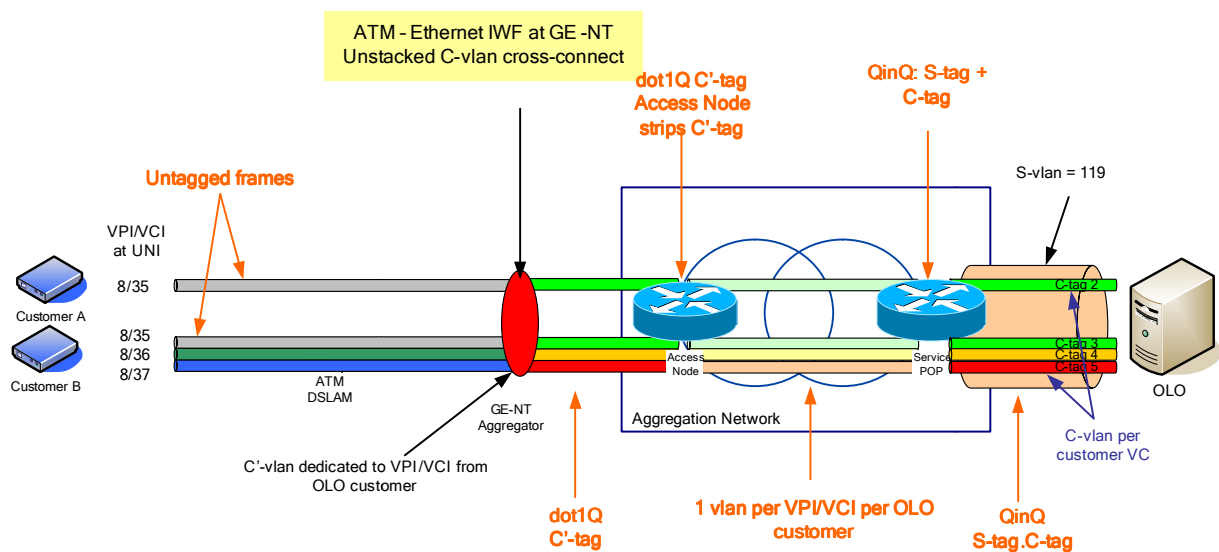


Figure 1: E2E Architecture

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 a S-tag 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.

5.1.2 Encapsulation

Protocol stack - IPoE

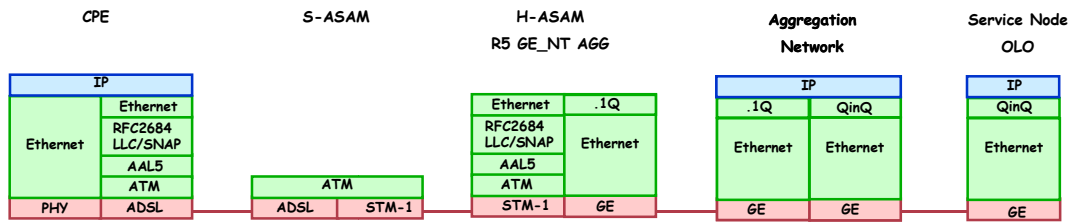


Figure 2: Protocol Stack

Limitations to protocol stacks:

See chapter 4.3.3.

5.1.3 Quality of Service

5.1.3.1 Layer 2 QoS

5.1.3.1.1 Layer 2 QoS upstream

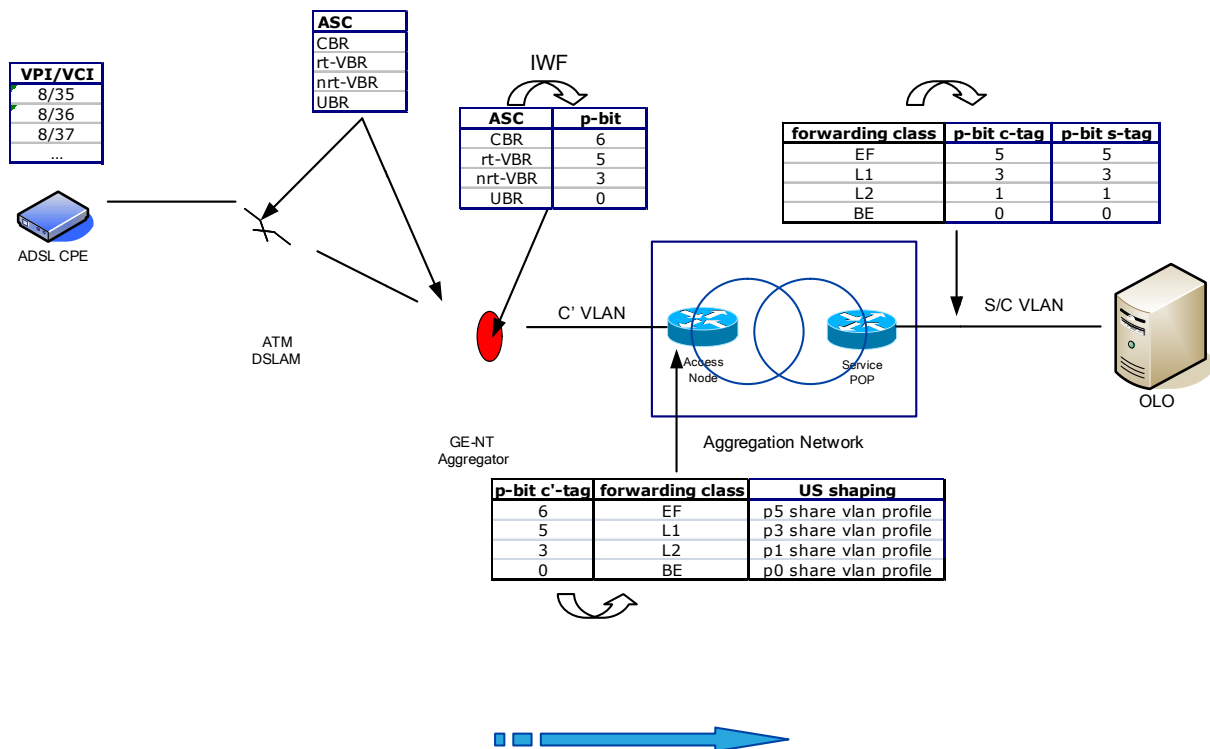


Figure 3: Layer 2 QoS upstream Un-stacked C-VLAN with S-VLAN at OAL

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 S- and C-vlan @ OAL
UBR	0
Nrt-VBR	1
Rt-VBR	3
CBR	5

Example:

User A

UNI		OAL	
VPI/VCI@UNI	ATM profile	C-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

5.1.3.1.2 Layer 2 QoS downstream

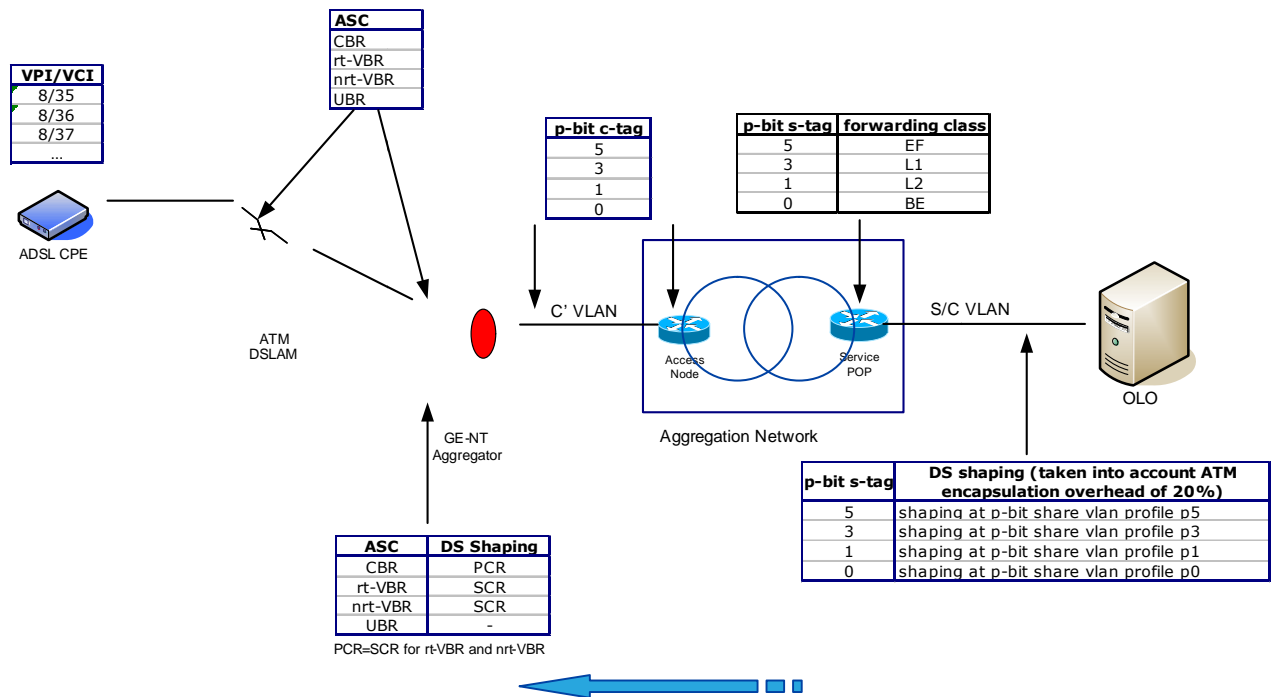


Figure 4: Layer 2 QoS downstream Un-stacked C-vlan with S-vlan at OAL

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



together
with



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%)

5.1.3.2 Layer 3 QoS

5.1.3.2.1 Layer 3 QoS upstream

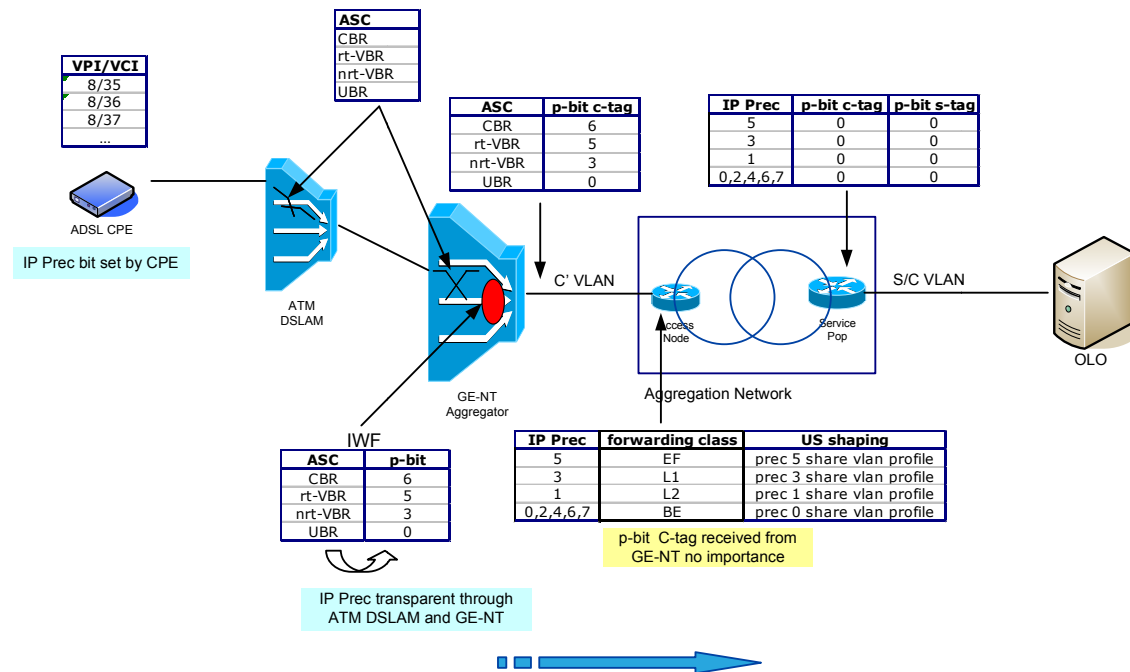


Figure 5: Layer 3 QoS upstream Un-stacked C-VLAN with S-VLAN at OAL

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		precedence	S/C-tag + p bit
		upstream	down		
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

5.1.3.2.2 Layer 3 QoS downstream

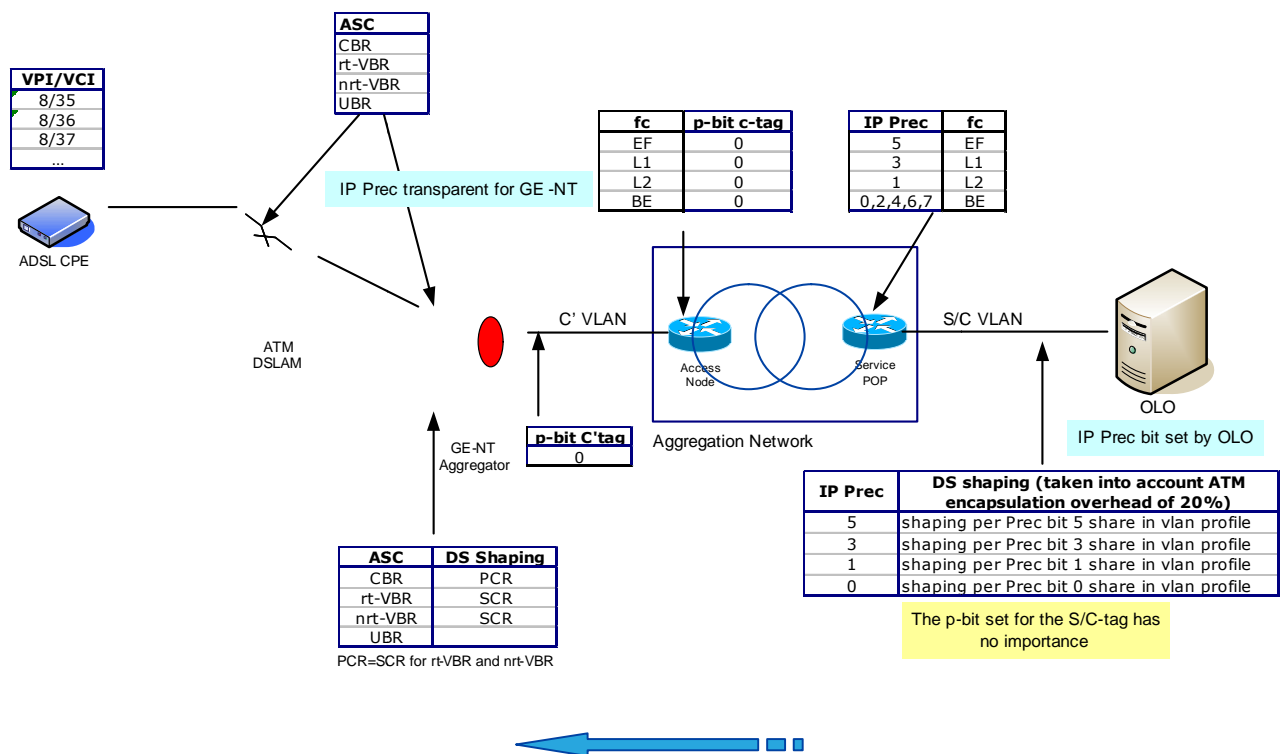


Figure 6: Layer 3 QoS downstream Un-stacked C-VLAN with S-VLAN at OAL

User	VP/VC	ATM profile		OAL	
		upstream	down	precedence	S/C-tag + p bit



together
with



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.

5.2 (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).”

5.3 GE-NT Aggregator

The subtended ATM DSLAM NT is connected via a STM-1 link to the LT of a “GE-NT Aggregator”.

5.3.1 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.

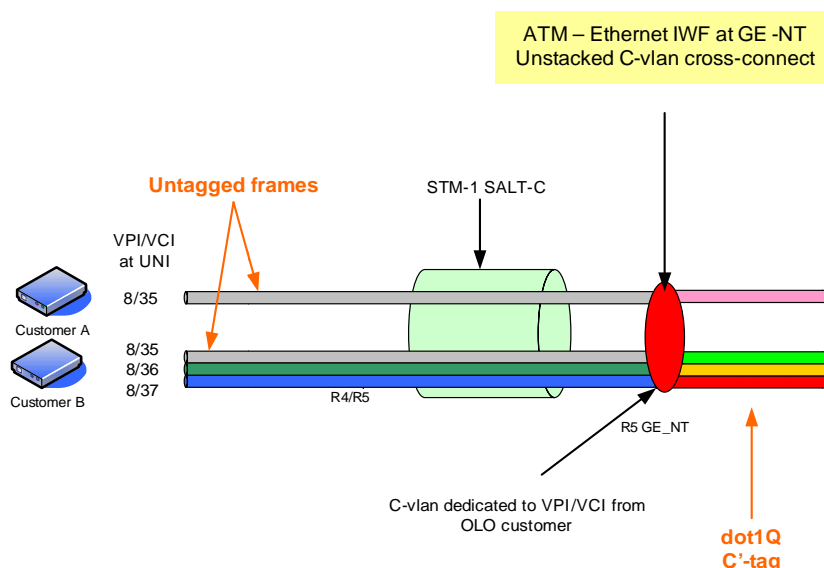


Figure 7: GE-NT unstacked C-vlan model



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

5.3.2 Quality of Service

5.3.2.1 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.

5.3.2.2 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
111 110	High
101 100	Medium
011 010	Low
001 000	Lowest

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).

5.4 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.

6 UNI

Unless specified otherwise, the section 4 equally refers to the two types of service: with shared or with dedicated VLANs.

6.1 *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.

6.2 *NTP & Splitters*

Same as for BROBA over ATM.

6.3 *DSL profiles at uni (Layer 1)*

The ADSL & ADSL2+ line profiles are the same as in BROBA over ATM.

6.4 *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: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, except for UBR

6.5 AAL (ATM Adaptation Layer)

AAL 5 only.

RFC 2684 bridged mode & PPPoE.

RFC2364 in case of PPPoA. . (Shared VLAN only AND for po/UBR)

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).

6.7 Security

6.7.1 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 cannot be disabled. The duplicate MAC is removed after ageing timer. It is not possible to clear the duplicate MAC.

6.7.2 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,...).

7 Modem

7.1 *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).

7.2 *ATM pings*

Interworking between I.610 F5 loopback end to end to IEEE 802.1ag (CFM) is not supported by GE_NT.

7.3 *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".

8 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”.

8.1 “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.

Offered VLAN Bandwidth (Mbps)	P=0	P=1	P=3	P=5
2	Y	Y	Y	Y
4	Y	Y	Y	Y
6	Y	Y	Y	Y
8	Y	Y	Y	Y
10	Y	Y	Y	Y
12	Y	Y	Y	Y
14	Y	Y	Y	Y
16	Y	Y	Y	Y
18	Y	Y	Y	Y
20	Y	Y	Y	Y
30	Y	Y	Y	Y
40	Y	Y	Y	Y
50	Y	Y	Y	Y
60	Y	Y	Y	Y
70	Y	Y	Y	Y
80	Y	Y	Y	Y
90	Y	Y	Y	Y
100	Y	Y	Y	Y
120	Y	Y	Y	N



together
with



140	Y	Y	Y	N
160	Y	Y	Y	N
180	Y	Y	Y	N
200	Y	Y	Y	N
220	Y	Y	Y	N
240	Y	Y	Y	N
260	Y	Y	Y	N
280	Y	Y	Y	N
300	Y	Y	Y	N
320	Y	Y	N	N
340	Y	Y	N	N
360	Y	Y	N	N
380	Y	Y	N	N
400	Y	Y	N	N
420	Y	Y	N	N
440	Y	Y	N	N
460	Y	Y	N	N
480	Y	Y	N	N
500	Y	Y	N	N
600	Y	N	N	N
700	Y	N	N	N
800	Y	N	N	N
900	Y	N	N	N
1gig	Y	N	N	N

8.1.1 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) .

8.2 “Dedicated VLAN”

8.2.1 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

8.2.2 Line identification

The customer is identified via the S+C-tag.

8.2.3 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:

Equivalence of Layer 2 qos / Layer 3 qos		
	Layer 2 qos (p-bits)	Layer 3 qos (precedence bits)
Best effort	0	0
Low priority	1	1
Medium priority	3	3
Highest priority	5	5

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.

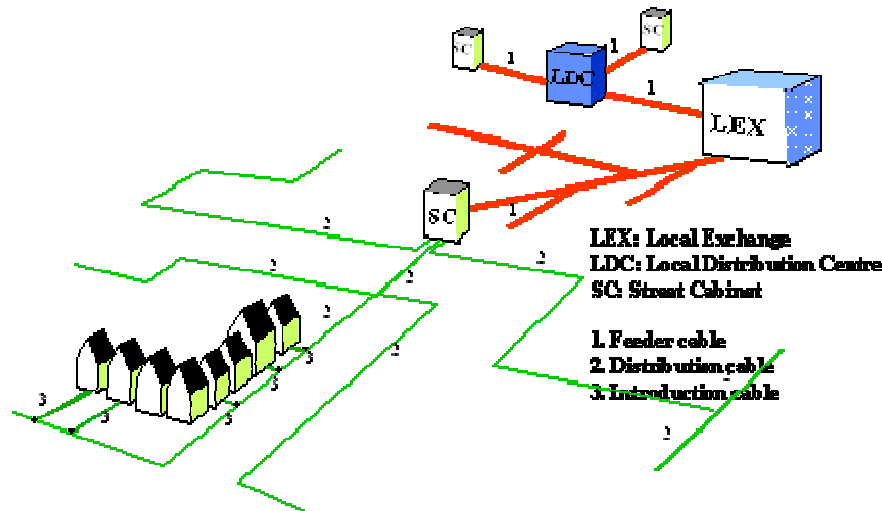
Shaping at the Olo customer CPE in upstream direction, shall take into account:

- 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

9 Characteristics of Cabling - Transmission properties of the access network

9.1 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.

9.2 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.



together
with



9. The plastic cables are in the majority of the cases longitudinally waterproof.

9.3 *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 ◆◆◆◆◆

Belgacom Reference Offer for Bitstream Access

**BROBA II ADSL & SDSL (covering the technologies ADSL, Reach
Extended ADSL₂, ADSL₂₊ and SDSL)**

Annex 3: Exchange of Information

Created on: 16 February 2012

belgacom



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2 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

3 Required information by both parties

3.1 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 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 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, 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.
 - 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.

3.2 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.

4 Processes

4.1 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.

4.2 Ordering Access Line

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 Area¹.
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.

¹ For BROBA over ATM: Access Area. For BROBA over Ethernet: Service Area.

4.3 Ordering Bandwidth

4.3.1 In VP switching mode or with Shared Vlan's

11. Before the Beneficiary can submit an order for the activation of ADSL or SDSL on a specific End User line, Virtual Paths² need to be in service between each DSLAM³ located in the Lex (LDC, KVD, if any) from which the End User depends and the Belgacom ATM Access Point⁴ to which the Beneficiary is connected.

4.3.1.1 Bandwidth Allocation

12. Once the Access Line¹ is in place, the Beneficiary will be able to order bandwidth between each DSLAM⁵ 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.

4.3.1.2 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).

² For BROBA over ATM: Virtual Path. For BROBA over Ethernet: VLAN.

³ Only applicable to the DSLAMs listed on the Operator Personal Page of the NWS secured website.

⁴ For BROBA over ATM: ATM Access Point. For BROBA over Ethernet: Service PoP.

⁵ Only applicable to the DSLAMs listed on the Operator Personal Page of the NWS secured website.

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.

4.3.2 In VC switching mode or with Dedicated Vlan's

4.3.2.1 General

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.

4.3.2.2 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.

4.4 Ordering ADSL on a specific End User line

26. Once the Access Line¹ and the VPs³ are in place, the Beneficiary will be able to send orders to Belgacom to activate ADSL or SDSL on a specific End User Line.
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.
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.
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.

4.5 Repair

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.
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
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).
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.
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
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4.6 Inquiries

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.

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.

5 Points of contact

37. See escalation procedure on the Broba II web site.

Belgacom Reference Offer for Bitstream Access

**BROBA II ADSL & SDSL (covering the technologies ADSL, Reach
Extended ADSL2, ADSL2+ and SDSL)**

Annex 4: Planning & Operations

Created on: 16 February 2012

belgacom

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2 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.

3 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	Symmetric Digital Subscriber Line
SOR	Statement Of Requirements
SPOC	Single Point Of Contact
VLAN	Virtual Local Area Network
VP	Virtual Path

4 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.

4.1 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.

4.2 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.

4.3 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.

5 Transport over ATM backbone

5.1 Ordering Access Line

5.1.1 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.

5.1.2 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.

5.2 Ordering Bandwidth in VP switching mode

5.2.1 Bandwidth Allocation

5.2.1.1 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., 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, 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.

5.2.1.2 Prerequisites

20. An access line with sufficient available capacity has to be implemented between a Belgacom ATM Access Point and the Beneficiary equipment.

5.2.1.3 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, ..)”.

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 D](#) 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.

22. 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*”).
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.

5.2.2 Capacity Change

5.2.2.1 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. 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, 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.

5.2.2.2 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).

5.2.2.3 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.

5.2.3 Capacity Cancellation

5.2.3.1 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. 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, 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.

5.2.3.2 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.

5.2.3.3 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*).

5.3 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.

6 Transport over Ethernet backbone

6.1 Ordering OLO Access Line

6.1.1 General

48. Before ~~The Customer~~ Beneficiary can submit an order for the activation of 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.
49. Firm orders of OLO Access Line, between a BGC Service PoP 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.
50. 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.

6.1.2 Ordering procedure

51. The 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 E). Together with the firm order, the Beneficiary includes the date when he wants the OLO Access Line to be ready.
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
53. In the event that difficulties or problems arise in this respect, the Parties will use all necessary cooperation and consultation with a view to developing appropriate and workable solutions subject to agreement between the Parties.
54. 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.

55. When the installation of the OLO Access Line is complete, Belgacom will confirm it to the Beneficiary.

6.2 Ordering Bandwidth (with shared VLAN's)

6.2.1 Bandwidth Allocation

6.2.1.1 General

56. The Beneficiary will order bandwidth between each LEX in which the Beneficiary wants to connect End Users and the Belgacom Service PoP to which the 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 Beneficiary equipment, on behalf of the Beneficiary.
57. Firm orders of bandwidth per LEX shall be done through the use of an XML order as described in the Broba II ADSL & SDSL 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, reference is made to the Belgacom Wholesale secured website – Regulatory information – BROBA - Information on ordering, and in the corresponding Broba II ADSL & SDSL XML content description documents. There is one request per XML order. XML with encrypted XML files is the standard procedure.
58. 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 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.

6.2.1.2 Prerequisites

59. An OLO Access Line with sufficient available capacity has to be implemented between a Belgacom Service PoP and the Customer equipment.

6.2.1.3 Ordering procedure

60. The ~~Customer-Beneficiary~~ 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, ...).
61. 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").
62. When ~~The Customer-Beneficiary~~ sends an order to activate the Broba II ADSL or SDSL on an End User line, Belgacom will provide ~~The Customer-Beneficiary~~ 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.

63. The Customer Beneficiary is requested to deliver Belgacom with a technical Customer contact for the synchronization in setting up VLAN's.

6.2.2 Capacity Change

6.2.2.1 General

64. The Customer Beneficiary 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
65. Firm orders of bandwidth modification shall be done through the use of an XML order as described in the Broba II ADSL & SDSL 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 – BROBA - Information on ordering, and in the corresponding Broba II ADSL& SDSL XML Content Description document. There is one request per XML order.
66. 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.

6.2.2.2 Prerequisites

67. The order is relative to an existing VLAN and must contain its correct identification (cfr all informations specified in the Broba II ADSL & SDSL XML content description document for VLAN ordering).

6.2.2.3 Ordering procedure

68. The Customer Beneficiary 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.
69. 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*).
70. When a VLAN is modified by Belgacom, The Customer Beneficiary will be provided with all the necessary information in order to configure the related VLAN at his side of the network.

6.2.3 Capacity Cancellation

6.2.3.1 General

71. The ~~Customer~~Beneficiary can request the cancellation of an existing VLAN.
72. Firm orders of bandwidth cancellation shall be done through the use of an XML order as described in the 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. 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, and in the corresponding Broba II ADSL & SDSL XML content description document. There is one request per XML order.
73. Belgacom reserves the right to reject orders if the volumes requested by ~~T~~the CustomerBeneficiary are not in line with reasonable market demands. In the event of such a rejection, Belgacom will provide ~~the~~The CustomerBeneficiary 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.

6.2.3.2 Prerequisites

74. The order is relative to an existing VLAN and must contain its correct identification.
75. A ~~e~~ustomerBeneficiary 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~~Beneficiary in this LEX.

6.2.3.3 Ordering procedure

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.
77. 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*).

6.3 Ordering Bandwidth (with dedicated VLAN's)

6.3.1 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 dedicated VLAN profile given by the Customer Beneficiary in the VC ordering.

80. -The Beneficiary is responsible for the choice and definition of each dedicated VLAN profile.

81. For any demand of new dedicated Vlan profiles, the Beneficiary must specify to Belgacom the number of profiles (in line with rules on number of profiles defined in BROBA II ADSL Main Body §71) needed and their 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.

82. Belgacom will provide for approval to The Beneficiary the monthly recurrent fees corresponding to the requested dedicated Vlan profiles, in function of the applicable tariffs for Ethernet transport with dedicated Vlan's.

83. Conditional to the availability of sufficient resources for IT implementation, the creation of additional profiles in the Belgacom systems is expected to be possible 4 months after approval of the tariffs by The Beneficiary, in the subsequent Belgacom IT release at the earliest, or in any subsequent release. In any event these delays do not contain a commitment of Belgacom. Same timing are applicable for own and common profiles.

6.3.2 Modification of dedicated VLAN profile

~~79-84.~~ The Beneficiary can request a change of the dedicated VLAN profile of a specific Broba II ADSL or SDSL with dedicated VLAN line.

~~80-85.~~ 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. 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, and in the corresponding Broba II ADSL or SDSL XML Content Description document. There is one request per XML order.

~~81-86.~~ 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.

~~82-87.~~ 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 information specified in the Broba II ADSL or SDSL XML content description document).

~~83-88.~~ 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*).

| ~~84.89.~~ When a dedicated VLAN profile is modified by Belgacom, on demand of the Beneficiary, the Beneficiary will be provided with all the necessary information in order to configure the related dedicated VLAN at his side of the network.

7 Inquiries

- | ~~85-90.~~ 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 logins 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.

- | ~~86-91.~~ 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.

- | ~~87-92.~~ 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.

- | ~~88-93.~~ The Beneficiary can also request a check of an individual End User line prior to the request for activation. This request is called an "Request for Inquiry". The exchange of information between Belgacom and the Beneficiary follows the rules defined in the Section 7 of this document.

8 Ordering ADSL or SDSL on a specific End User

8.1 Introduction

94. The Ordering process of a specific ADSL or SDSL End User line covers the activities of The Beneficiary and of Belgacom, between the submission of an Order to Belgacom by The Beneficiary until validation or rejection of this Order to The Beneficiary by Belgacom.

8

8.18.2 Ordering via the Open Calendar Interface

~~89-95.~~ 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 work orders 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 end user 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.

~~90-96.~~ The follow-up of the order is performed by use of the Hold, Cancel, Amend, Reject and Done messages exchanged via the classical XML interface as described in the chapter Ordering via XML. Amend messages can also be performed by the Open Calendar interface for orders introduced by the Open Calendar Interface.

~~91-97.~~ 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

8.28.3 Ordering via xml

8.2.18.3.1 General

~~92-98.~~ All exchange of information between Belgacom and the Beneficiary will be done through an electronic system. In case of problems of the electronic 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,

~~93-99.~~ 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.

~~94-100.~~ 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.

~~95-101.~~ 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.

~~96-102.~~ 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.

~~97-103.~~ 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.

~~98-104.~~ In the framework of BROBA with voice an existing end-to-end PSTN or ISDN line with Belgacom is a prerequisite.

8.2.28.3.2 Definitions

8.2.28.3.2.1 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

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.

8.2.28.3.2.2 Acknowledge Messages

~~99-~~105. 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.

~~100-~~106. NACK is sent if decryption or signature check does fail. NACK will contain the reason of rejection.

~~101-~~107. 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.

~~102-~~108. 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.

8.2.28.3.2.3 Order Messages

~~103-~~109. 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.

(add/remove/delete VC – change line profile – change ATM Profile - change switching mode – change Vlan profile).

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.

~~8.2.2.4~~ **8.3.2.4 Action Messages**

~~104-110~~ 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

~~105-111~~ These action messages apply only on pending orders sent by the Beneficiary to Belgacom.

8.2.2.58.3.2.5 Answer Messages

~~106-112~~ 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.

The list of pending orders which cause a reject is available and documented on the Belgacom secured Personal Page website.

- **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

8.2.38.3.3 Description of specific ordering procedures

~~107-113~~ A working day for order purposes is considered as being from: 8h00 - 16h30, excluding Saturday, Sunday, Belgian and Belgacom holidays.

~~108-114~~ 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.

~~8.2.4~~8.3.4 **Small Network Adaptations (detected during order validation)**

~~109-115.~~ 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 [ordering or](#) provisioning phase.

~~116.~~ In case the order is not flagged 'SNA not allowed', [and that a Small Network Adaptation need is detected during the order validation, the process is as follows:](#)

~~116.~~

~~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.

9 Provisioning of ADSL or SDSL on a specific End User line

9.1 Introduction

117. The Provisioning process of a specific ADSL or SDSL End User line covers the activities of Belgacom, between notification of the validation of an Order by Belgacom to The Beneficiary until the moment the Order completion has been communicated by Belgacom to The Beneficiary.

9.2 General

118. After validation of an order by Belgacom (“Validate” message), the field interventions will be performed by a Belgacom Technician or, when allowed and requested via the Open Calendar interface, 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 DSLAM or the KVD.
- The installation at End-User location.
- The testing of the End-User line.

Belgacom will perform the remote intervention tasks, including:

- The realization of the necessary documentation to track that the end-user line of the Beneficiary carries ADSL or SDSL technology.
- The remote configuration of the End-User line.
- After order completion, once all remote and fields activities have been performed, the sending of a delivery message (“Done” message) to The Beneficiary.

9.3 End-User Appointment fixing and rebooking

119. In case a visit at End-User premises is needed for installation of the ADSL or SDSL End-User line and in order to reduce the absence of the End-Users, Belgacom will contact directly the End-User to ensure that the appointment date fits him well. In case the appointment date does not fit the End-User, Belgacom gives him the opportunity to reschedule it at his best convenience. Belgacom will contact the End-User according to following timing:

- Belgacom calls the End-User 2 days before appointment date,
- Belgacom calls the End-User approximately 30 min before intervention,
- Belgacom calls the End-User after the appointment, if the End-User was absent when the technician wanted to intervene.

The procedure used by Belgacom in these cases, and the information sent by Belgacom to The Beneficiary, in function of the different possible situations, is available on the Customer Personal Page on the Belgacom Wholesale secured website.

9.4 Small Network Adaptations (detected during the order provisioning)

120. The 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 (ordering or) provisioning phase.

121. In case the order is not flagged 'SNA not allowed', and that a SNA need is detected during provisioning, Belgacom will create a HOLD message where a new appointment date will be proposed and in the remark type SmallNetworkAdaptations the word "NEEDED" will be indicated.

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.

8.2.59.4.1 Rush provisioning

~~111-122.~~ 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).

~~112-123.~~ 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.

~~113-124.~~ Rush Provisioning will be always during working hours.

~~114-125.~~ 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

~~115-126.~~ 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)

~~116-127.~~ 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.

Specific remark on the use of the circuit ID: whenever there is a modification on the installation of a line, the circuit id identifying the line could change. The BROBA II XML Content Description, available on the Customer's personal page on the CWS secured site, summarises the cases where the circuit id change or remain unchanged.

~~117-128.~~ Per line for which rush provisioning is requested, the installation fee is doubled.

8.2.69.4.2 Escalations

~~118-129.~~ An escalation can be requested in case of Belgacom Fault (e.g. Missed Appointment)

~~119-130.~~ The Beneficiary will in a first phase call (phone) Belgacom to prioritize the order and confirm by e-mail to Car_LLU (flu.car@belgacom.be). Belgacom will verify this request, and handle it in a manual escalation mode if the request for escalation is justified.

131. An escalation order has no additional cost.

~~120-~~ All information on escalations can be found in the BROBA Annex "Basic SLA".

10 Ordering and Provisioning Process flows

132. The Process Flows describing the Ordering and Provisioning Business Process of the BROBA offer at level 1, 2 and 3 can be found on the OLO Personal Page of the Belgacom Wholesale website. In case of conflict between the Process Flows and the BROBA II Offer, the Offer prevails.

133. The following table summarizes the parts of the Ordering and Provisioning Business Process described in these flows, and their level of description:

<u>Process Flows</u>	<u>Level of description</u>	<u>Level of ordering or provisioning</u>
<u>I. Provide new</u>	<u>Level 1</u>	<u>End-User, VP, Shared Vlan , Dedicated Vlan profiles and (OLO) Access Line</u>
<u>Order Intake at OLO</u>	<u>Level 2 & 3</u>	<u>End-User, VP, Shared Vlan , Dedicated Vlan profiles and (OLO) Access Line</u>
<u>Order Consistency Check</u>	<u>Level 2 & 3</u>	<u>End-User, VP, Shared Vlan and (OLO) Access Line</u>
<u>Order Intake at Belgacom</u>	<u>Level 2 & 3</u>	<u>End-User, VP, Shared Vlan , Dedicated Vlan profiles and (OLO) Access Line</u>
<u>Design</u>	<u>Level 2 & 3</u>	<u>End-User, VP, Shared Vlan , Dedicated Vlan profiles and (OLO) Access Line</u>
<u>PEC</u>	<u>Level 3</u>	<u>End-User</u>
<u>Configuration</u>	<u>Level 2 & 3</u>	<u>End-User, VP, Shared Vlan , Dedicated Vlan profiles and (OLO) Access Line</u>
<u>Plan Installation</u>	<u>Level 2 & 3</u>	<u>End-User and (OLO) Access Line</u>
<u>Site Survey</u>	<u>Level 3</u>	<u>(OLO) Access Line</u>
<u>End-User Installation</u>	<u>Level 2 & 3</u>	<u>End-User</u>
<u>SNA</u>	<u>Level 3</u>	<u>End-User</u>
<u>OAL Installation</u>	<u>Level 2 & 3</u>	<u>(OLO) Access Line</u>
<u>II. Amend Due Date</u>	<u>Level 2 & 3</u>	<u>End-User</u>
<u>III. Auto-Convert</u>	<u>Level 1</u>	<u>End-User</u>
<u>Order Intake end-user & Consistency Check</u>	<u>Level 2 & 3</u>	<u>End-User</u>

Order Handling	Level 2 & 3	End-User
Design & De-Design	Level 2 & 3	End-User
Configuration	Level 2 & 3	End-User
Plan Installation	Level 2 & 3	End-User
Installation	Level 2 & 3	End-User
IV. Auto-Move	Level 1	End-User
Order Intake end-user & Consistency Check	Level 2 & 3	End-User
Order Intake at Belgacom	Level 2 & 3	End-User
Design & De-Design	Level 2 & 3	End-User
Configuration	Level 2 & 3	End-User
Plan Installation	Level 2 & 3	End-User
Installation	Level 2 & 3	End-User
V. Cancel	Level 1	End-User
Order Intake at OLO	Level 2 & 3	End-User
Order Consistency Check	Level 2 & 3	End-User
Order Intake at Belgacom	Level 2 & 3	End-User
VI. Cease	Level 1	End-User
Order Intake at OLO	Level 2 & 3	End-User
Order Consistency Check	Level 2 & 3	End-User
Order Intake at Belgacom	Level 2 & 3	End-User
De-Design	Level 2 & 3	End-User
De-Configuration	Level 2 & 3	End-User
Position to re-use	Level 2 & 3	End-User
VII. Change	Level 1	End-User
Order Intake at OLO	Level 2 & 3	End-User

Order Consistency Check	Level 2 & 3	End-User
Order Intake at Belgacom	Level 2 & 3	End-User
Configuration	Level 2 & 3	End-User
VIII. Provide Change Owner	Level 1	End-User
Order Intake at OLO	Level 2 & 3	End-User
Order Consistency Check	Level 2 & 3	End-User
Order Intake at Belgacom	Level 2 & 3	End-User
Design & De-Design	Level 2 & 3	End-User
De-Configuration & Configuration	Level 2 & 3	End-User
Plan Installation	Level 2 & 3	End-User
Position to re-use	Level 2 & 3	End-User
Installation	Level 2 & 3	End-User
IX. Escalation OLO	Level 3	End-User, VP, Shared Vlan and (OLO) Access Line
X. Rush Provisioning	Level 3	End-User
XI. Provide Convert	Level 1	End-User
Order Intake at OLO	Level 2 & 3	End-User
Order Consistency Check	Level 2 & 3	End-User
Order Intake at Belgacom	Level 2 & 3	End-User
Design & De-Design	Level 2 & 3	End-User
De-Configuration & Configuration	Level 2 & 3	End-User
Plan Installation	Level 2 & 3	End-User
Position to re-use	Level 2 & 3	End-User
Installation	Level 2 & 3	End-User

9.11 Forecasting of orders

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

~~10.12~~ Fault Reporting and Repair

~~121-134~~. This section describes the responsibilities of Belgacom and The Beneficiary in fault reporting and repair.

~~122-135~~. 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.

~~123-136~~. 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.

~~10.112.1~~ Points of Entry for Complaint

~~124-137~~. 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.

~~10.212.2~~ Fault Reporting on Broba II ADSL or SDSL

~~125-138~~. 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.

~~126-139~~. It is the Beneficiary's responsibility to check that there is sufficient ground to assume that the fault is with Belgacom.

~~127-140~~. 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.

~~10.312.3~~ Beneficiary's liabilities in connection with fault reporting

~~128.141.~~ 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

~~129.142.~~ The Beneficiary will test the concerned faultive 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

~~130.143.~~ 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:

- 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).

~~131.144.~~ 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.

~~132.145.~~ 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.

~~133-146~~. 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.

~~10.4~~12.4 Belgacom’s liability in connection with fault reporting

~~147~~. Belgacom starts the fault localization and performs repair activities during working hours.

~~148~~. If The ~~Customer~~Beneficiary has communicated to Belgacom measurements from equipment on the Beneficiary's side that could help in solving the fault, Belgacom will analyze and verify them, and integrate them in its diagnostic process. In this event, Belgacom will only be entitled to close the repair request, possibly qualifying it as “Wrongful Repair”, after analysis and verification of those measurements. The results of these will be made available to The Beneficiary through the E-tool for repair tickets.

~~134-149~~. 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.

~~135-150~~. Belgacom reports the result of the repair activities to the Beneficiary immediately upon repair;

~~136-151~~. 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;

~~137-152~~. In any case of planned maintenance and repair that can affect the Broba II ADSL Service, Belgacom shall inform the Beneficiary.

~~138-153~~. In case the Beneficiary contacts Belgacom by phone about an ongoing repair action, Belgacom will inform the Beneficiary of the current repair status.

~~10.5~~12.5 Special conditions in connection with Repair

~~139-154~~. 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.

~~140-155~~. 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.

~~141-156~~. 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.

~~10.6.1~~ **12.6 Repair Request and Feedback**

~~10.6.1~~ **12.6.1 For BROBA over ATM: VP and access line level**

~~142-157~~. 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.

~~143-158~~. 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.

~~10.6.2~~ **12.6.2 For BROBA over Ethernet: VLAN and OLO Access Line level**

~~144-159~~. The Beneficiary'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.

~~145-160~~. 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.

~~10.6.3~~ **12.6.3 End User level**

~~146-161~~. 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.

~~147-162~~. 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.

Specific remark on the use of the circuit ID: whenever there is a modification on the installation of a line, the circuit id identifying the line could change. The BROBA II XML Content Description, available

on the Customer's personal page on the CWS secured site, summarises the cases where the circuit id change or remain unchanged.

~~148-163.~~ 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.

~~149-164.~~ 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.

~~150-165.~~ The escalation procedure document for the repair can be found on the Broba II web site.

~~10.7~~ 12.7 Wrongful repair request

166. 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.

12.8 Repair Process flows

167. The Process Flows describing the Repair Business Processes of the BROBA offer at level 1, 2 and 3 can be found on the OLO Personal Page of the Belgacom Wholesale website. In case of conflict between the Process Flows and the BROBA II Offer, the Offer prevails.

168. The following table summarizes the parts of the Repair Business Process described in these flows, and their level of description:

<u>Process Flow</u>	<u>Level of description</u>	<u>Level of repair</u>
<u>Trouble to resolution</u>	<u>Level 0, 1 & 2</u>	<u>End-User, VP, Shared Vlan and (OLO) Access Line</u>
<u>OLO trouble intake & analysis</u>	<u>Level 3</u>	<u>End-User, VP, Shared Vlan and (OLO) Access Line</u>
<u>BGC ticket intake</u>	<u>Level 3</u>	<u>End-User, VP, Shared Vlan and (OLO) Access Line</u>

Ticket update and dispatch	Level 3	End-User, VP, Shared Vlan and (OLO) Access Line
Remote intervention	Level 3	End-User, VP, Shared Vlan and (OLO) Access Line
Field intervention	Level 3	End-User, VP, Shared Vlan and (OLO) Access Line
BGC ticket closure	Level 3	End-User, VP, Shared Vlan and (OLO) Access Line
OLO trouble closure	Level 3	End-User, VP, Shared Vlan and (OLO) Access Line
Billing	Level 3	End-User
Escalation	Level 3	End-User, VP, Shared Vlan and (OLO) Access Line

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~~11.13~~ Phases in the provisioning of the Broba II or SDSL Service

~~152-169.~~ 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.

~~11.13.1~~ Friendly User Testing Phase

~~153-170.~~ 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.

~~154-171.~~ 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.

~~155-172.~~ 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.

~~156-173.~~ 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.

~~11.213.2~~ Full Commercial Phase

~~174.~~ 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.

14 Information on IT projects

175. For any changes initiated by Belgacom which may have a **significant impact** on the IT systems of the Beneficiaries (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.

176. For **smaller changes** (additional values in existing fields), 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.

177. The BIPT will be informed in any case.

~~157-178.~~ Concerning the periods of notice, the BIPT can allow exceptions.

Appendix A: Statement of requirements, template for the Beneficiary

1. General

~~158-179.~~ 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

~~159-180.~~ 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

~~160-181~~ 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

~~161-182~~. 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.

~~162-183~~. Beneficiaries are guaranteed that Belgacom will set-up the necessary resources for the period concerned to meet its market needs.

~~163-184~~. The forecasted volumes (new lines, change owner and convert included) are established by sub-area/area 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 or a subcontractor (only for Beneficiaries using the quickwin process) 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

~~164-185~~. For the three first series of forecasts of a new Beneficiary, both Parties will enter into good faith discussions about the submitted forecasts and the feasibility to implement the forecasts concerned.

2. Processing of Forecasts

~~165-186~~. Belgacom will propose an individual forecast to each Beneficiary, based on the mathematical average of the actual ordered volumes of the Beneficiary over the last 6 months. By the 10th of each month at the latest, Belgacom will download on the dedicated e-libraries of each Beneficiary the individual forecast proposal. This forecast will be elaborated per month, per customer visit / no customer visit (all products BRUO, BROBA and WBA combined) and per subarea.

~~166-187~~. The Beneficiary is responsible for the accuracy of the forecast. Therefore, the Beneficiary is requested to confirm or modify this forecast by e-mail (to cws.forecasting@belgacom.be), at the latest one month prior to the first forecasted period in time. Forecast modifications or confirmation 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.

~~167-188~~. If no confirmation or modification is received by that time, Belgacom will consider the proposed forecasted volumes as confirmed. Once confirmed, 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.

E.g.:

By 10th September, Belgacom downloads the OLO X forecast of November 2011 to January 2012 on its dedicated e-library (forecasted volume=mathematical average of the monthly volumes ordered by OLO X between March and August 2011);

OLO X may send a modified forecast by e-mail to Belgacom (cws.forecasting@belgacom.be) until 30 september 2011.

Belgacom will implement the OLO X modified forecast (or by default the Belgacom proposal) in its systems, and use it to determine global overrun and monthly deviations.

3. Deviations between successive forecasts

~~168-189~~. The globalized volumes forecasted by the entire market 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 %.

4. Deviations between forecasted volumes and actual volumes

5.1 Underrun

~~169-190~~. 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.

~~170-191~~. 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.

E.g.: The proposed volume for all OLO's for month X is 1000 (=average of the actual ordered volumes of the last 6 months.). Some OLO's send a modification of their forecasted volume via CWS.forecasting@belgacom.be and the forecasted volume for all OLO's is confirmed at 1500. The realised volume for month X is finally lower than 1200 (1500-20%=underrun). If among the OLO's that had sent a modification, the realised volumes are more than 20 % under the modified volumes, they will be identified as responsible of the underrun and won't have the possibility to modify the proposed forecasting during the following 3 months.

5.2 Overrun

~~171-192~~. 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.

~~172-193~~. 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'. For any order in 'overrun', no guarantee on Slot Availability will be offered and they will be carried out by Belgacom as soon as possible, according to the remaining capacity available.

Appendix C: Forecasting templates for BRUO, BROBA and WBA End User Line orders

173-194. 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:

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										

Appendix D: XML Back-up procedure

1. General

~~174-195~~. 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.

~~175-196~~. 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'.

~~176-197~~. 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

~~177-198~~. The back-up procedure consist out of different steps:

Phase 1: Assignment of Beneficiary and Belgacom SPOCs for back-up procedure

~~178-199~~. 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

~~179-200~~. A 'general system error' is detected in the normal operational mode by at least one of the parties.

~~180-201~~. 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.

~~181-202~~. 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.

~~182-203~~. 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.

~~183-204~~. 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

~~184-205~~. 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.

~~185-206~~. During trouble resolution both SPOCs will closely stay in contact with each other to follow up progress of solution.

~~186-207~~. If the fault is resolved within the agreed timing, normal operational mode will be resumed after the needed testing (see phase 6).

~~187-208~~. 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

~~188-209~~. After expiration of the agreed time during phase 3 without trouble resolution, SPOCs will get in contact to start up phase 4, i.e.:

~~189-210~~. Start-up the a-normal 'back-up' operational mode for message exchange, based on e-mail with non-encrypted order in XML format.

~~190-211~~. 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.

~~191-212~~. SPOCs will closely stay in contact during this phase in order to follow up operational performance, action plan and trouble solving.

~~192-213~~. 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

~~193-214~~. 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.

~~194-215~~. 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.

~~195-216~~. The Fax numbers will be communicated between parties when applicable.

Phase 6: test and resume normal operation

~~196-217~~. 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:

~~197-218~~. 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. Order templates

1.1 End User line

~~198-219.~~ 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.

1.2 Bandwidth

~~199-220.~~ 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.

~~200-221.~~ 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.

~~201-222.~~ 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.

~~202-223.~~ 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'.

~~203-224.~~ 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	Date at which the Beneficiary would like the Access Line ¹ to be in service
NEW Order date	
DSLAM	Coordinate of the DSLAM where the VP must terminate
VP type	Type of the VP
Remark	

| ~~2047225~~. 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

| ~~205-226~~. This document concerns the ordering of a virtual path in the framework of the Belgacom Broba II (Broba II ADSL) offer.

| ~~206-227~~. 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/SCR	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/LDC 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
							Old	New	Old	New	Old	New	Old	New						
1																				
2																				
3																				
4																				
...																				
12																				



together
with



1.3 Access Line

1. General

~~207-228~~. This document concerns the ordering of an access line in the framework of the Belgacom Broba II (Broba II ADSL) offer.

~~208-229~~. 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 Annex 2 , 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



1.4 OLO Access Line

~~209:230~~. This document concerns the ordering of an Ethernet OLO Access Line in the framework of the Belgacom BROBA II offer.

~~210:231~~. 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
- 100 Mb/s Customer sited
- 10 Mb/s Customer sited
- 1+1 GE / BGC / Customer sited
- [1GE / Backhaul](#)

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 “BROBA II” .

Drawn up at....., on.

Name and title of applicant.....

Signature,

Belgacom Reference Offer for Bitstream Access

**BROBA II ADSL & SDSL (covering the technologies ADSL, Reach
Extended ADSL2, ADSL2+ and SDSL)**

Annex 5: Basic Service Level Agreement

Created on: 16 February 2012

belgacom





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2 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 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 the SLA on Slot Availability for orders submitted via the Open Calendar ordering interface and of the SLA on Total Provisioning Timer for orders submitted via the XML ordering interface 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 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.

3 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. 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.

4 Prerequisites

9. Both parties agree to respect the content of this document and to offer services as described in this document.
10. 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.
11. 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 uniform 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.
12. 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.
13. 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.
14. Timer violations outside the working hours are not logged as such and shall not be used to claim service shortage.
15. The Service Level Agreement is not valid in situations of “Force Majeure” as defined in the “General Terms of Conditions”.
16. Timers that are delayed due to Beneficiary are not valid within this Basic Service Level Agreement.

5 Timers

17. 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.
18. The timers included below are binding and a revision of these ~~last-timers~~ is possible after BIPT approval.

5.1 Provisioning

5.1.1 Provisioning of End User Line

19. 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.
20. In scope of provisioning, 5 indicators to measure the Belgacom performance are identified:
 - Validation xml Timer
 - Done xml Timer
 - ~~Total Provisioning Timer (XML ordering interface) or Slot Availability (Open Calendar ordering interface)~~
 - ~~Slot Availability~~
 - Appointment Kept
 - Due Date Respected
21. Vocabulary
 - a. Order: assembly of all work orders 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

5.1.1.1 Validation xml Timer

22. 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 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.
23. 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, a reject message will be sent to the Beneficiary and the rejection reasons will be communicated with the respective message.

24. Belgacom will publish globalized measures of Validation XML timer, applicable to the entire market as a whole, aligned with the globalized system of Forecasting (see Annex 4 – Planning & Operations). Beneficiaries are entitled to request individual reports in order to monitor Belgacom’s performance towards them. Each individual report requested will be charged at a fix fee (see Annex 6: Pricing and Billing).

24.25. Based on the current experience on similar data products, the validation timer is set at:

Validation/ <u>Rejection</u> Timer	Percentage of orders validated <u>or rejected</u> within the corresponding validation timer
30 minutes	50%
2 working days	95%
5 working days	99%

25.26. Bi-monthly computation is as follows:

Number of orders for which the Validate (or reject) XML is sent within timer j (1)

% XML Validate j = -----

Total Number of orders (2)

With $j = \{30 \text{ minutes}; 2 \text{ working days}; 5 \text{ working days}\}$

(1) Total number of orders, for the considered bi-monthly period, having the validate or reject XML sent within the i timer.

(2) Total number of orders confirmed or rejected during the considered bi-monthly period.

26.27. For every order submitted to Belgacom via the Open Calendar ordering interface, and validated by Belgacom, the Due Date of the order may only be adapted by Belgacom when, during the installation, the end-user was directly the cause of the change (e.g.: Customer Absent) or after payment by Belgacom to the OLO of the Change Date Fee mentioned in the Annex 6 Pricing and Billing.

5.1.1.2 Done xml Timer

28. 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. Each closure of an order triggers computation of the done timer. Done timer per order is computed as the elapsed time between actual completion date and Ready for Service Date passed to the Customer via Done XML. This timer includes the number of days the requested Ready for Service Date was passed.

29. Belgacom will publish globalized measures of Done XML Timer, applicable to the entire market as a whole, aligned with the globalized system of Forecasting (see Annex 3 – Planning & Operations). Beneficiaries are entitled to request individual reports in order to monitor Belgacom’s performance towards them. Each individual report requested will be charged at a fix fee (see Annex 6: Pricing and Billing).

~~2-~~30. The Done xml timer is set at **1 working day for 98% of the orders.**

~~3-~~31. Bi-monthly computation is as follows:

Number of orders for which the Done (reject) XML is sent within timer

% XML Done = -----

Total Number orders

5.1.1.3 Slot Availability

~~4-~~32. Slot Availability is only available for ordered products introduced via the Open Calendar interface.

33. Belgacom will publish globalized measures of Slot Availability, applicable to the entire market as a whole, aligned with the globalized system of Forecasting (see Annex 4 – Planning & Operations). Beneficiaries are entitled to request individual reports in order to monitor Belgacom’s performance towards them. Each individual report requested will be charged at a fix fee (see Annex 6: Pricing and Billing).

~~5-~~ 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)

~~6-~~34. If a SNA is required, then it will be planned between Belgacom and Beneficiary within 20 working days as from receipt of the BROBA end-user line order if no further delay because of public domain obligations. These cases fall out of the application of SLAs.

~~7-~~35. This indicator will not apply for all lines installed by a certified technician.

~~8-~~36. Slot availability will be measured in two (2) parts:

- for ordered products not exceeding volume forecast.
- ordered products exceeding the volume forecast.

Only the ordered products within the forecasted volumes are subject to SLA.

~~9-~~37. For each work order of an ordered product not exceeding the volume forecast, the first timeslot proposed must be within the following timer.

Type	%	Slot Availability Without Visit In Working days	Slot Availability With Visit In Working days
------	---	---	--

95%	9	11
99 %	19	22
100 %	45	45

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.

~~10-38.~~ Bi-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 timers are defined in table of § ~~3735~~.

~~11-39.~~ For every order submitted to Belgacom via the Open Calendar ordering interface, and validated by Belgacom, the Due Date of the order must fulfil the SLA slot availability. If the SRD is outside the above-mentioned timers, the Due Date of the order must be at the latest on the requested SRD date.

5.1.1.4 Total Provisioning Timer

~~12-40.~~ Total Provisioning Timer is only available for ordered products introduced directly via the XML.

41. Belgacom will publish globalized measures of Total Provisioning Timer, applicable to the entire market as a whole, aligned with the globalized system of Forecasting (see Annex 3 – Planning & Operations). Beneficiaries are entitled to request individual reports in order to monitor Belgacom’s performance towards them. Each individual report requested will be charged at a fix fee (see Annex 6: Pricing and Billing).

~~13-42.~~ The total provisioning timer is the elapsed time between reception of order XML from and ready for service date passed to the Customer through a XML Done message. 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).

~~14-43.~~ 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 5.1.2 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 of the BROBA end-

user line order if no further delay because of public domain obligations. These cases fall out of the application of SLAs.

Total provisioning timers to be respected by Belgacom:

	Timers
BROBA II without Customer visit	8wd 95% incl "done"
BROBA II with Customer visit	10wd 95% incl "done"

	Timers
BROBA II without Customer visit	18wd 99% incl "done"
BROBA II with Customer visit	20wd 99% incl "done"

~~15.44.~~ 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.

5.1.1.5 Appointment Kept

~~16.45.~~ This indicator will not apply for all lines installed by a certified technician.

46. Appointment Kept will be measured and published at market level. Individual reports per Beneficiary will be developed. Customers can request to receive individual reports in order to monitor Belgacom's performance towards them. For each individual report requested by the Beneficiary Belgacom will charge a fix fee (see Annex 5: Pricing and Billing).

Appointment Kept measures the number of orders with Customer Visit that have respected all their Customer Visit appointments. In case of an order with multiple customer visits, if one Customer Visit appointment has not been respected, the full order is considered as out of SLA.

~~17. 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.~~

18-47. Bi-monthly computation is as follows:

$$\% \text{ Appointment kept} = \frac{\text{Number of orders for which all Customer Visit appointments are kept}}{\text{Number of orders having at least one Customer Visit}}$$

19-48. The Bi-monthly percentage is set at **95 %**.

20-49. Belgacom reserves the right to adapt this value at the level of the performance reached by its own retail broadband services

5.1.1.6 Due Date Respected

21-50. This indicator will not apply for all lines installed by a certified technician.

51. Due Date Respected will be measured and published at market level. Individual reports per Beneficiary will be developed. Beneficiaries can request to receive individual reports in order to monitor Belgacom's performance towards them. For each individual report requested by the Customer Belgacom will charge a fix fee (see Annex 5: Pricing and Billing).

22. Due Date Respected measures the number of orders for which the last Due Date was respected by Belgacom. Due Date Respected is measured per Beneficiary. It measures the number of orders for which the last Due Date was respected by Belgacom.

23-52. 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.

24-53. Bi-monthly computation is as follows:

$$\% \text{ Due date respected} = \frac{\text{Number of orders for which the last due date was respected}}{\text{Total Number of orders}}$$

25-54. The Bi-monthly percentage is set at **95 %**.

26-55. Belgacom reserves the right to adapt this value at the level of the performance reached by its own retail broadband services



Regular
mail



5.1.2 Provisioning of Virtual Paths, Virtual Circuits or VLANs (VP/VCs/VLANs)

~~27~~-56. 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.

5.1.2.1 Set-up and configuration of VP/VC/VLAN Timer

~~28~~-57. 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/VLAN timer is set at:

	Timer
Set-up & configuration timer (to be respected by Belgacom)	10 working days

5.1.2.2 Modification of VP/VC/VLAN parameters Timer

~~29~~-58. 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.

~~30~~-59. 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/VLAN parameters timer is set at:

	Timer
Modification of VP/VC/VLAN parameters timer (to be respected by Belgacom)	3 working days

5.1.3 Provisioning of Access Line

~~31~~-60. The provisioning of access line timers follows the timers described in section 11.2, chapter 11 of the document "BROTSoLL_Main Body".

5.2 Repair

5.2.1 Repair Time on the End User line timer

~~32-61.~~ 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.

~~33-62.~~ This timer is **frozen by a stop clock 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.

	Timer
Repair timer End User line (to be respected by Belgacom)	Day of trouble ticket opening + 1 (before end of the following second half working day)

~~34-63.~~ For a newly installed BROBA ADSL without voice without 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 without customer visit as defined in the section ~~5.1.1.35-1-9~~ “Slot Availability” of this document.

~~35-64.~~ 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 ~~5.1.1.35-1-9~~ “Slot Availability” of this document.

~~36-65.~~ 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.

66. Note that the application of the “Trouble Ticket Resolution Timer” is deferred in case appointment is requested by Customer later than the second half working day following opening of the trouble ticket. For such cases Belgacom will apply the stop clock principle and will resume the counting of repair timer as of the beginning of

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 ~~6-7~~, for the complete set of information

the chosen slot. For a detailed definition of the stop clock principle, reference is made to the annex 4a “Improved SLA”.

~~37-67.~~ 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.

5.2.2 Repair Time on the ATM/Ethernet Transport Timer

~~38-68.~~ The repair time window for ATM/Ethernet transport is done by trouble ticket handling during working days.

~~39-69.~~ 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 <u>half</u> 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

5.2.3 Repair Time on the (OLO) Access Line Timer

~~40-70.~~ The repair of access line timers follows the timers described in [section 11.3, chapter 11 of the document “BROTSOLL_Main Body”](#).

5.3 IT SLA’s

~~41-71.~~ This section includes the SLA’s relating to the IT applications that Belgacom puts at disposal of the Beneficiary for ~~pre provisioning~~eligibility, ~~or~~ ordering or repair of its BROBA lines.

5.3.1 Open Calendar response time

~~42-72.~~ The response time of the Open Calendar ordering interface used by the Beneficiary for ordering of its BROBA lines is subject to SLA.

~~43-73.~~ This response time relates to the 2 following steps of ordering a WBA VDSL2, BROBA or BRUO line through the Open Calendar interface, i.e.:

- I. get an overview of the work orders needed to provision the line,
- II. get the available time slot per work order.

~~44-74.~~ For each individual order, the response time of the Open Calendar interface is the sum of the response times for the first iteration of each of the ordering steps defined in §7369 of this document. The incomplete orders where the beneficiary did not perform the second step of the ordering steps defined in §7369 – although needed for submitting the order – are excluded from the SLA calculation.

~~45-75.~~ The response time of the Open Calendar interface will be measured by Belgacom from Monday to Saturday (excluding Belgian and Belgacom holidays), between 08:00 AM and 08:00 PM. Following cases will be excluded from the calculation:

- “Force majeure”,
- Maintenance works that are announced by Belgacom via the communication channel FLASH or any equivalent mean,
- Unavailability of the Open Calendar announced to the Beneficiary by Belgacom Service Impact Flash,
- Unavailability/~~in~~stability of the Open Calendar interface due to misuse (*) performed by a Beneficiary or overload (**) caused by one or several Beneficiary.

(*) Misuse: Beneficiaries should use a GUI interface to access the Open calendar interface, should not call the interface via robotic or similar simulations (massive calls to the interface via a batch mechanism), and the access via certificates should not be used to send potential malicious malware into Belgacom systems.

(**) Overload: Open Calendar is able to support a maximum of 35 requests per minute, for all Beneficiaries together. This limit will be reconsidered once the interface will be used in production by all Beneficiaries.

~~46-76.~~ Belgacom will endeavour to reach the response times mentioned in the following table, in function of the order action type (“Provide new”, or “Change Owner & Convert”), for the orders entered through Open Calendar:

	Provide New	Change Owner / Convert
SLA Maximum Response Time Open Calendar	2 minutes 20 seconds min	2 minutes 50 min seconds

Initially, an SLA of 75% will apply, subject however to a minimum volume of 1500 orders:
 - If the ordering level exceeds 1500 orders per month, the SLA will be calculated on a bi-monthly basis,
 - If the ordering level does not reach 1500 orders per month but exceeds 1500 orders per year, the SLA will be calculated on a yearly basis.

As from the moment that 50% of the orders are placed via the Open Calendar interface, the SLA will then be applicable according to the following transition period:

First 1-3 months: 75 %
Following 3-6 months: 85 %

At the end of the transition period, Belgacom will guarantee an SLA respect of 95%.

~~77.~~ The SLA “Open Calendar response time” will be calculated as follows for WBA VDSL2, BROBA and BRUO together, and for the whole market, but separately for orders with action type “Provide New” and for orders with action type “Change Owner / Convert”:

~~47.~~

$$\% \text{ Response Time respected} = \frac{\text{Number of orders within Maximum Response time}}{\text{Total number of orders entered through Open Calendar}}$$

The cases defined in §~~7470~~ and ~~7470~~ of this document will be excluded from the calculation.

5.3.2 E-tools availability

~~78.~~ The following e-tools used by the Beneficiary for eligibility, ordering or repair of its BROBA lines are subject to an Availability SLA:

~~48.~~

- LLU Inquiry tool,
- XDSL availability tool,
- Ordering XML (ordering through MTS interface),
- E-troubleshooting tool,
- Open Calendar (ordering through AHS interface).

The Availability SLA will be measured individually by Belgacom for each of these e-tools and - when relevant- separately for access by the Beneficiary through CWS portal and through XML .

~~49-79.~~ Belgacom will endeavour to reach a maximum of ~~4~~**12** hours of unavailability per month, per e-tool and per type of access, excepted in the following cases, which will be excluded from the calculation:

- “Force majeure”, or maintenance works that are announced by Belgacom at least 3 working days in advance via the communication channel FLASH or any equivalent mean,
- Unavailability of the e-tool due to misuse (*) performed by a Beneficiary.

(*) Misuse: Beneficiaries should use the correct standards to access the e-tools, should not access the tools by method other than the interfaces defined in function of each e-tools (web, MTS, AHS), should not call the interfaces via robotic or similar simulations (massive calls to the e-tools via a batch mechanism), and the access via certificates should not be used to send potential malicious malware into Belgacom systems.

~~50-80.~~ The Availability of each e-tool and of each access type will be measured by Belgacom from Monday to Saturday (excluding Belgian and Belgacom holidays), between 08:00 AM and 08:00 PM.

~~51-81.~~ The Availability SLA will be calculated by Belgacom at the level of access to each e-tool, separately for each access type, using robotic simulation of user transactions.

6 Wrongful Repair Requests

~~52-82.~~ 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.

~~53-83.~~ 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 reserves the right to will charge the Beneficiary with the costs of those actions.



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7 Documented reports

~~84.~~ Belgacom will publish, on a bi-monthly basis, reports with performance at market level. Performance will be reported per product: BRUO (with visit/without visit), BROBA (with visit/without visit), and WBA (with visit/without visit).

~~54.~~ Belgacom will provide every two months the BIPT and each Beneficiary with documented reports on the lines ordered by this Beneficiary during these two months, containing all information needed to calculate the provisioning KPI's described in this document.

~~85.~~ Beneficiaries will be entitled to request bi-monthly individual reports on the lines ordered during the two previous months, containing all information needed to calculate the provisioning KPI's and monitor Belgacom's performance towards them. For each individual report requested by the Beneficiary Belgacom will charge a fix fee (see Annex 6: Pricing and Billing). Results in individual reports will be aggregated at BRXX level in order to have statistically relevant volumes. While these results will be delivered on a bi-monthly basis, they do not trigger the application of SLA/penalties on a bi-monthly basis. The application of SLA/penalties at individual level is set out in the point 8 "Terms and Conditions for Compensations".

~~86.~~ For Beneficiaries having requested individual reports, the transmission of reports will be done on a confidential basis.

~~55.~~ This information will be transmitted to each Operator individually, on a confidential basis.

~~56-87.~~ This information will be provided under the form of a structured file (Excel or CSV format), and will include at least the following data's:

- For each order: Beneficiary, CID, Order ID, product, date of order, end-user visit needed (y/n), Service Requested Date (SRD), Validate XML date, Done XML date.
- For each workorder part of an order: with/without visit (y/n), work order description, first proposed timeslot, chosen timeslot (if with visit), confirmed date, date of execution of work order. In case of workorder adaptation without new workorder, new proposed date, new chosen timeslot and reason of modification.

8 Terms and Conditions for Compensations

8.1 General

~~57-88.~~ Compensations are applicable in the cases that Belgacom has not respected its commitment ~~within the delay or~~ on the delivery date agreed with the Beneficiary, excluding the cases in which the Beneficiary is responsible for the delay or in the case of force majeure.

~~58-89.~~ 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.

- ~~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.

~~59-90.~~ Compensations will be settled through a Beneficiary's invoice without VAT.

91. 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.

92. Compensations are only applicable if the yearly ordered volumes of the Beneficiary exceed 200 orders. This threshold is necessary in order to minimize statistical risks due to a too low ordering level.

93. Compensations will be computed based on performance aggregated at BRXX level. This aggregation is necessary in order to have volumes that are statistically relevant.

94. Even though reports will be transmitted on a bi-monthly basis, the computation of compensations will be done on a yearly basis, except for Beneficiaries with a volume of above 1500 orders per month for whom the computation of the compensation will be done on a bi-monthly basis.

~~60-95.~~ 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).

~~61-96.~~ 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.

~~62-97.~~ 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.

~~63-98.~~ 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.

8.2 Provisioning Escalations

8.2.1 Compensation Total Provisioning Timer

~~64-99.~~ These compensations are only applicable for ordered products introduced via the MTS interface (through XML).

92. Compensations are only applicable if the yearly ordered volumes of the Beneficiary exceed 200 orders. This threshold is necessary in order to minimize statistical risks due to a too low ordering level.

93. Compensation will be computed based on performance aggregated at BRXX level. This aggregation is necessary in order to have volumes that are statistically relevant.

94. Even though reports will be transmitted on a bi-monthly basis, the computation of compensations will be done on a yearly basis, except for Beneficiaries with a volume of above 1500 orders per month for whom the computation of the compensation will be done on a bi-monthly basis.

95. In case where pProvisioning of the ordered product was not completed on the agreed Due Date, e-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 communicated to the Beneficiary 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.

~~92.~~

~~93-96.~~ In cases that Belgacom has not respected its commitment to provision the Beneficiary within the agreed lead time~~delay or on the date agreed with the Beneficiary~~, the Beneficiary will be entitled to a compensation per end-user line and per calendar-working day, according to the rules presented in the following table.

	<u>Compensation</u>
<u>Provisioning Timer Escalation</u>	<u>10 € per working day with a maximum of 120 €</u>
<u>Type-of-Provisioning timer</u>	<u>Compensation</u>
<u>95% timer</u>	<u>10 € per calendar day (until the 10 working day timer has been reached)</u>



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99% timer

5 € per calendar day (above the 10 working day timer)

8.2.2 Compensations Appointment Kept

~~97.~~ These compensations are only applicable for ordered products introduced via the Open Calendar interface.

~~94.~~

~~98.~~ Compensations are only applicable if the yearly ordered volumes of the Beneficiary exceed 200 orders. This threshold is necessary in order to minimize statistical risks due to a too low ordering level.

~~99.~~ Compensation will be computed based on performance aggregated at BRXX level. This aggregation is necessary in order to have volumes that are statistically relevant.

~~100.~~ Even though reports will be transmitted on a bi-monthly basis, the computation of compensations will be done on a yearly basis, except for Beneficiaries with a volume of above 1500 orders per month for whom the computation of the compensation will be done on a bi-monthly basis.

~~95-101.~~ 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€

8.2.3 Compensations Due Date Respected

~~102.~~ These compensations are only applicable for ordered products introduced via the Open Calendar interface.

~~96.~~

~~103.~~ Compensations are only applicable if the yearly ordered volumes of the Beneficiary exceed 200 orders. This threshold is necessary in order to minimize statistical risks due to a too low ordering level.

~~104.~~ Compensation will be computed based on performance aggregated at BRXX level. This aggregation is necessary in order to have volumes that are statistically relevant.

~~105.~~ Even though reports will be transmitted on a bi-monthly basis, the computation of compensations will be done on a yearly basis, except for Beneficiaries with a volume of above 1500 orders per month for whom the computation of the compensation will be done on a bi-monthly basis.

~~97-106.~~ 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€

8.2.4 Provisioning VP/VC/VLAN Timer Escalations

~~98-107.~~ 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.

~~99-108.~~ The Beneficiary will be entitled to a compensation that corresponds to the values per VP/VC/VLAN presented in the following table.



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	Compensation
Provisioning of VP/VC/VLAN Timer Escalation (to be respected by Belgacom)	€ 10 per VP/VC/VLAN per calendar day delayed

8.2.5 Provisioning Access Line Timer Escalations

~~109.~~ 109. The Beneficiary will be entitled to the same compensation as described in section 11.2, chapter 11 of the document "BROTSoLL_Main Body".

8.3 Repair Timer Escalations

8.3.1 Repair End User line Timer Escalations

~~110.~~ 110. 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.

~~111.~~ 111. 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

8.3.2 Repair ATM Transport Timer Escalations

~~112.~~ 112. Interruptions of service where Belgacom did not intervene within the timeframes as defined in section 5.2.2 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

8.3.3 Repair Access Line Timer Escalations

~~104.113.~~ The Beneficiary will be entitled to the same compensation as described in [section 11.3, chapter 11](#) of the document “BROTSoLL_Main Body”.

9 Escalation procedure

~~+05-114.~~ 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.

~~+06-115.~~ For repair, escalation is possible when a trouble ticket has been created.

~~+07-116.~~ 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.

~~+08-117.~~ 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.

~~+09-118.~~ The escalation matrix is available on the Belgacom Wholesale website, [on the Beneficiary personal page](#).

Belgacom Reference Offer for Bitstream Access

**BROBA II ADSL & SDSL (covering the technologies ADSL, Reach
Extended ADSL2, ADSL2+ and SDSL) VP & VC Switching**

Annex 5A: Improved Service Level Agreement

Created on: 16 February 2012

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2 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.

3 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.~~

4 Prerequisites

- ~~6-5.~~ This Improved Service Level Agreement is signed between two parties being Belgacom and Beneficiary concerned.
- ~~7-6.~~ 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.
- ~~8-7.~~ The document reflects only the service indicated. Any future interference due to synchronization with any other product is out of scope.
- ~~9-8.~~ The Improved Service Level Agreement is not valid in situations of “Force Majeure” as defined in the “General Terms and Conditions”.
- ~~10-9.~~ In case of incomplete information in ticket creation (see point ~~23-4~~) by Beneficiary, the timer of the ticket concerned will be frozen by a stop clock. The timer will be unfrozen after Beneficiary has provided the necessary information, 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 25) is not covered by the present ISLA.
- ~~10.~~ 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 will be frozen by a stop clock 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.
- ~~11.~~ The principle of stop clocks penalises Belgacom in the sense that less effective repair time is available for its technicians (e.g. due to useless transport time). In case of repetitive situations (*) where the Belgacom’s technician loses repair time or is forced to redo some activities due to failures of the Beneficiary or its end-user, Belgacom reserves the right to not take into account the ticket concerned for the timers respect and compensations as further specified in this document.
- (*) repetitive situations: when Belgacom’s technician goes on site for the second time but cannot perform its work for the following reasons: end-user absent, site inaccessible or not ready, Beneficiary’s technician absent,... while one of these negative situations had already occurred the first time for the same ticket.
- ~~12.~~

5 Conditions

~~13~~12. 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~~13. 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~~14. 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~~15. 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.

6 Terminology

~~17~~.16. 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~~.17. Trouble Intake: The creation of the Trouble Ticket in the computer systems for the repair of Belgacom services.

~~19~~.18. 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~~.19. 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, performance of line measurements, etc.

~~21~~.20. Net Repair Time: Difference between the Gross Repair Time and the Stop-Clock Time.

~~22~~.21. 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~~.22. 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~~.23. 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.



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7 Information and test results

~~24.~~ It is mandatory that the Beneficiary ~~gives-performs~~ test results ~~whenbefore~~ 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.~~

25. The following information has to be included in the ticket:

- Circuit identity number
- Is service fully interrupted or degraded?

The Circuit identity number will allow Belgacom to perform an automatic check on the administrative information.

26. The transmission of test results by the Beneficiary is optional but in case the latter provides such information to Belgacom, reference is made to the diagnose information below.

~~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?

8 Set-up of service

~~26-27.~~ 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. **When ordering through the Open Calendar interface as well as through XML,** the request will be included in the remarks field of the XML ~~when ordering, i~~ 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 **it** 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.

9 Nature of the service disruption

27-28. 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.

28-29. 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.

29-30. 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.

10 Stop-Clock or freeze rules

~~30-31.~~ The clock for repair starts when the complaint ticket is valid, i.e. in line with the conditions described in section ~~2324.~~

~~31-32.~~ 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

~~32-33.~~ 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.

11 Wrongful Repair Requests

33.34. 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.

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~~ reserve the right to charge the Beneficiary with the costs of those actions.

12 Beneficiary's obligations

12.1 Contact persons

~~34-35.~~ 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.

~~35-36.~~ It is highly recommended that the Beneficiary guarantees the availability of a 24/24, 7/7 helpdesk.

~~36-37.~~ A technical contact with the Beneficiary will be available 24/24, 7/7.

~~37-38.~~ Beneficiary will provide a SPOC with its respective name, telephone number and e-mail address for the purpose of follow up or support.

12.2 Site access

~~38-39.~~ When calling the Belgacom Helpdesk, the Beneficiary will communicate the site access procedure..

~~39-40.~~ 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..

~~40-41.~~ The appointment date and time proposed by Belgacom will be agreed between the Beneficiary and Belgacom.

~~41-42.~~ The end user or site contact person communicated is present at the proposed date and/or hour

~~42-43.~~ Any failure to comply with these procedures shall result in a stop clock / freeze rule.

~~43-44.~~ If necessary, the Beneficiary shall also undertake to provide the necessary staff during the repair process.

12.3 Required Information

44-45. Beneficiary will provide correct information with relevance for the repair process.

45-46. 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.

13 Timers

13.1 Preliminary

13.1.1 Timers

~~46-47.~~ 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.

13.1.2 General Feedback Timer

~~47-48.~~ 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.

13.1.3 Note

~~48-49.~~ 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.

13.2 Repair

13.2.1 End-user line Trouble Ticket Resolution timer

~~49-50.~~ 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 isf needed and 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.



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	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



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13.2.1.1 Trouble ticket resolution timer

	Repair Timer
Repair timer for Broba II end user line (to be respected by Belgacom)	4 hours (60% of the trouble tickets resolved) 6 hours (80% of the trouble tickets resolved) 8 hours (95% of the trouble tickets resolved)

These percentage relates to the total number of trouble tickets opened by the Beneficiary per month for BROBA ADSL or SDSL, ~~wrongfull repair requests~~ splicer interventions excluded, which Belgacom guarantees to resolve within the specified timers when the fault is under its responsibility.

13.2.1.2 Availability

~~50-51.~~ 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

~~51-52.~~ 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.

52-53. The volume for applicability of case 1) can be agreed bilaterally between Belgacom and the Beneficiary.

14 Prices

53-54. Reference is made to Annex 6 Pricing and Billing

15 Compensations

15.1 General

~~54-55.~~ 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.

~~55.~~ **Compensations will be settled through a Beneficiary’s invoice without VAT.**
~~Payment will be expressed in a discount on next provisioning and rental bill(s) for the respective service.~~

~~56-57.~~ 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.

~~57-58.~~ 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.

~~58-59.~~ In case of repair timer escalations, the consequences as described further in this paragraph shall be applicable to Belgacom.

15.2 End-user line Repair Timer Escalations

~~59-60.~~ Troubles which last more than the timers described in point 13.2.1 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.



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Type of repair timer	Compensation
< 60% in 4 hours	50% of the line monthly rental fee per trouble ticket closed in more than 4 hours
Between 60% and <80% in 6 hours	100% of the line monthly rental fee per trouble ticket closed in more than 6 hours
Between 80% and <95% in 8 hours	150% of the line monthly rental fee per trouble ticket closed in more than 8 hours

Availability

60-61. 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 13.2.1.2

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

Belgacom Reference Offer for Bitstream Access

**BROBA II ADSL & SDSL (covering the technologies ADSL, Reach
Extended ADSL2, ADSL2+ and SDSL) VP & VC Switching**

Annex 5B: Improved Service Level Agreement for Provisioning

Created on: 16 February 2012

belgacom



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2 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.

3 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.

4 Conditions

- 7 The services offered in virtue of this Improved SLA on Provisioning are to be described as follows:
- Improved validation timers compared to Basic SLA Validation XML timer,
 - Improved percentages compared to basic SLA on Appointment Kept
 - Higher compensations in case of default (compared to basic SLA on Appointment Kept)
 - Free of charge modification of the due date, in case that the due date provided by Belgacom after the validation differs from the date scheduled by Beneficiary via Open Calendar.
 - ~~Free of charge modification of the Service Requested Date by the Beneficiary, in case that the Due Date provided by Belgacom differs from the initial Service Requested Date of the Beneficiary.~~

4.1 Terminology

- Order: assembly of all work orders 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.

4.2 Description

- 8 For an order for which ISLA for Provisioning has been requested by the Beneficiary via the electronic Open Calendar 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.

4.2.1 Validation xml Timer

- 9 As soon as an order to activate BROBA lines for an individual End-User with ISLA on Provisioning 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 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.
- 10 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 a reject message will be sent to the Beneficiary and the rejection reasons will be communicated with the respective message.
- 11 For all orders for which ISLA on Provisioning has been requested by the Beneficiary via the electronic ordering message Open Calendar interface, Belgacom will endeavour to validate the orders in the timers mentioned in the following table :

Type of treatment of the order
Validation/Rejection Timer

Validation-Timer
Percentage of orders validated or rejected within the corresponding validation timer

Flowthrough treatment of the order <u>30 minutes</u>	30 minutes <u>50%</u>
<u>2 Working Days</u>	<u>98 %</u>
Manual treatment of the order <u>5 Working Days</u>	2 working days <u>100%</u>

12 Since the 100% timer is actually not feasible because of the orders requiring factual spot checks or site surveys, Belgacom will provide twice a year to BIPT a reporting on the cases being validated beyond 5 working days.

~~13~~ For every order submitted to Belgacom via the Open Calendar ordering interface, and validated by Belgacom, the Due Date of the order may only be adapted by Belgacom when, during the installation, the end-user was directly the cause of the change (e.g.: Customer Absent) or after payment by Belgacom to the OLO of the Change Date Fee mentioned in the Annex 6 Pricing and Billing.

4.2.2 Appointment Kept timer

~~14~~ This indicator ~~will is not apply applicable~~ for ~~all~~ lines installed by a certified technician.

15 Belgacom will publish globalized measures of Appointment Kept. Beneficiaries are entitled to request individual reports in order to monitor Belgacom's performance towards them. Each individual report requested will be charged at a fix fee (see Annex 6: Pricing and Billing).

~~16~~ Appointment Kept ~~is measured per Beneficiary. It~~ measures the number of orders with Customer Visit that have respected all their Customer Visit appointments. In case of an order with multiple customer visits, if one Customer Visit appointment has not been respected, the full order is considered as out of SLA.

~~17~~ The bimonthly computation of the ISLA for Provisioning is defined as follows:

Number of ISLA orders for which all Customer Visit appointments are kept

$$\% \text{ Appointment kept} = \frac{\text{Number of ISLA orders for which all Customer Visit appointments are kept}}{\text{Number of ISLA orders having at least one Customer Visit}}$$

For all products ordered with an ISLA on Provisioning, this bi-monthly percentage is set at **99 %**.

18 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.

~~16~~

19 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.

~~17~~

~~18~~ 20 Notwithstanding the provisions of points ~~179~~ and ~~1810~~ above, if the Belgacom technician was present on the appointment date but the end user 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.

4.3 Set-up of service

~~19~~ 21 Activation of the improved SLA per line can be done at ordering via the electronic ordering system Open Calendar Interface.

5 Beneficiary 's obligations

5.1 Contact persons

~~2022~~ 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

~~2123~~ 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.

~~2224~~ In case of incomplete or incorrect information given in the order by Beneficiary, the ISLA on provisioning target can not be guaranteed.

6 Prices

~~23~~25 Reference is made to Annex 6 Pricing and Billing.

~~24~~26 For any BROBA line ordered with ISLA on Provisioning, if the Due Date provided by Belgacom in the Validate XML differs from ~~the date scheduled by the Beneficiary via Open Calendar~~ ~~the initial Service Requested Date submitted initially by the Beneficiary~~, then any reasonable request of the Beneficiary to modify the ~~installation-Due Date~~ will be free of charge.

7 Compensations

~~25~~²⁷ 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 End user is responsible (e.g. customer absent) or in the case of force majeure.

28 Compensations are only applicable for ordered products introduced via the Open Calendar interface.

29 Compensations are only applicable if the yearly ordered volumes of the Beneficiary exceed 500 orders. This threshold is necessary in order to minimize statistical risks due to a too low ordering level.

30 Compensation will be computed based on performance aggregated at BRXX level. This aggregation is necessary in order to have volumes that are statistically relevant.

31 Even though reports will be transmitted on a bi-monthly basis, the computation of compensations will be done on a yearly basis, except for Beneficiaries for whom the computation of the Basic SLA compensations will be done on a bi-monthly basis and subject to a minimum of 500 ISLA orders by period of two months.

~~26~~³² Payment will be made via a credit note on next provisioning and rental bill(s) for the respective service.

~~27~~³³ 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.

~~28~~³⁴ 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 foer 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 :

Belgacom Reference Offer for Bitstream Access

**BROBA II ADSL & SDSL (covering the technologies ADSL, Reach
Extended ADSL₂, ADSL₂₊ and SDSL)**

Annex 8: Prepayment Terms & Conditions

Created on: 16 February 2012

belgacom

together with



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 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 interest, administrative and recovery costs. For disputed amounts, this interest is only due if the dispute has been resolved in favour of Belgacom.
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.

Belgacom Reference Offer for Bitstream Access

BROBA II SDSL

Main Body

Created on: 16 February 2012

The Belgacom logo is displayed in a blue rounded rectangle. The word "belgacom" is written in a lowercase, sans-serif font.



together
with



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2 Preliminary

1. In this document, for reasons of facility, the acronym SDSL will be used instead of g.Shdsl.
2. For Broba over ATM¹: 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 Service PoPs are the same for Broba II SDSL (in VP & VC switching modes) as for Broba II ADSL

¹ See §18 and §19 of section 6 for description of Broba over ATM and Broba over Ethernet.

3 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
- 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
- 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.
- **VLAN:** Virtual Local Area Network. In this document, the word "VLAN" equally refers to a shared or dedicated VLAN.
- 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.

4 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.

5 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'.

6 Description of Broba II SDSL

6.1 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), 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.

6.2 The “connection” that is established between the end-user and the Beneficiary can be seen as follows:

6.2.1 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 8.10f of this document.
32. In the framework of Broba II SDSL, there is no rate-adaptiveness, as the bitrate delivered on the physical line is guaranteed (see section 8).

6.2.2 DSLAM from which end-user depends and ATM switch from which the DSLAM depends:

33. 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.

6.2.3 The ATM switch from which the DSLAM depends and the ATM Access Point (ATM switch) to which the Beneficiary equipment is connected²:

34. 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.

6.3 Access Line between Belgacom ATM Access Point and the Beneficiary Equipment

35. 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.
36. The list of Belgacom Access Areas is available in Appendix C.
37. 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).
38. 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.
39. The Access Line is made of:
 - A Patch Line as described in Section 6.3.1;
 - A Data Link as described in Section 6.3.2.
40. 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).

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

6.3.1 Patch Line

41. 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.
42. 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.
43. The fees to be paid by the Beneficiary and corresponding to this Patch Line are specified in Annex 6 of this document.

6.3.2 Data Link

44. The Data Link is the physical element between Belgacom Distribution Frame and the Beneficiary equipment.
45. By default, Data Links consist of a Customer-Sited Data Link Service as described in Broba II ADSL Main Body - Appendix A.
46. 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.

7 Schematic Presentation

47. 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.
48. 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.
49. 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.
50. 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.

7.1 Broba II SDSL Service with Belgacom-Sited Data Link

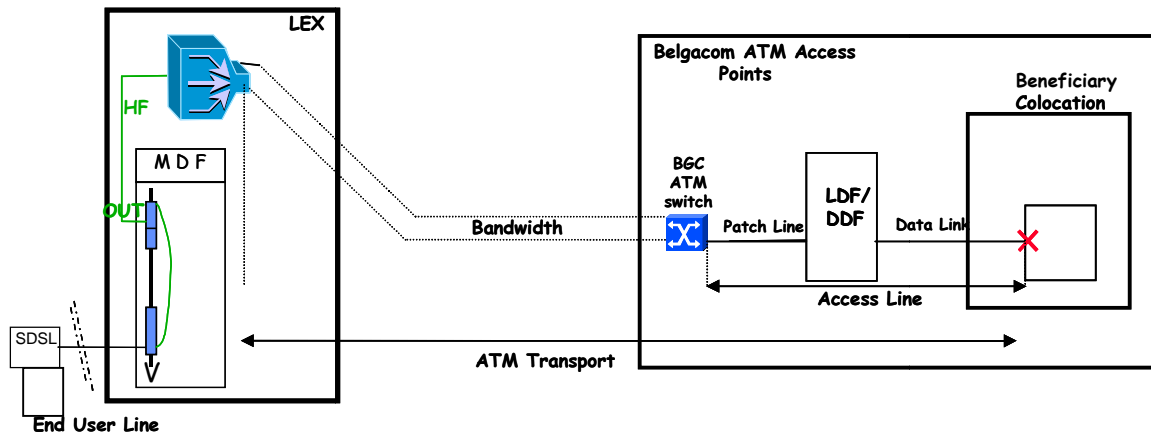


Fig. 1

51. The customer needs physical (separate room or comingling) collocation in the Belgacom Access Point.

7.2 Broba II SDSL Service with Customer-Sited Data Link

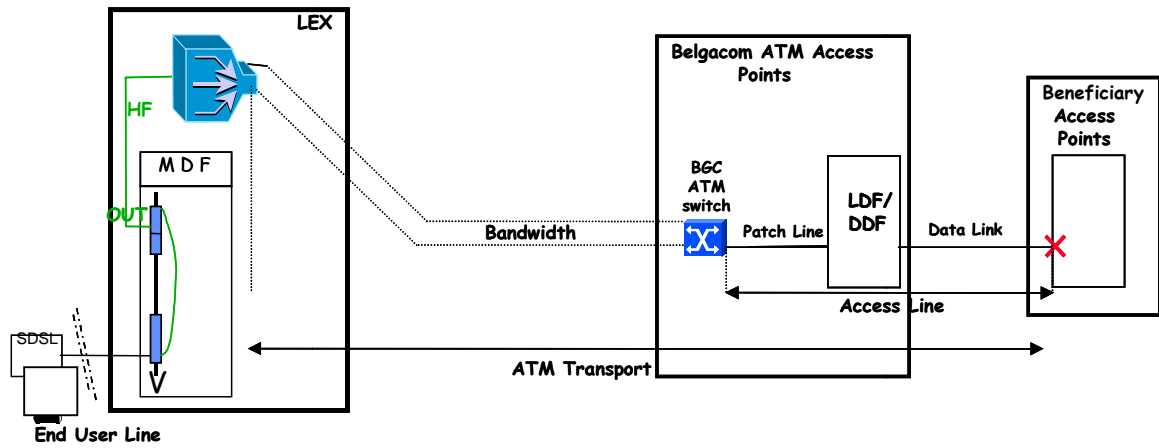


Fig. 2

8 Broba II SDSL profiles

8.1 Physical line from end-user to DSLAM

52. 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

8.2 DSLAM – ATM backbone (VC switching)

53. 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. Additionally, 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. 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).

8.3 DSLAM – ATM backbone (VP switching)

56. 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.](#)
 - Additionally, 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.
57. 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 CBR or VBR rt VC or lower (DSLAM) and VBR nrt VP (ATM) can only content UBR+ or VBR nrt VC (DSLAM).

9 Provisioning

58. At the moment that the Beneficiary requests the activation of SDSL on a specific End User line:
- Belgacom or a certified technician 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 makes the setup and the configuration of the VCs on behalf of the Beneficiary following the VC parameters.
 - Belgacom 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. 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 PoP) 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. 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.
61. 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. 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.

10 Inquiries

63. 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. 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. 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. 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. 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. This inquiry will be billed to the Beneficiary (seen Annex 6 – Pricing & Billing – point 1.1.2).

11 Rules to follow with respect to End-user lines

11.1 Types of lines

69. 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 11.2.
- 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.

11.2 Small Network Adaptations

70. 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. 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. 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. 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. The certified technicians will never perform Small Network Adaptations.
75. 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. 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. 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).

11.3 Network Termination Point

78. The Network Termination Point is the first termination point of a loop at the End User premises.
79. 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. The NTP can be of the following types :
 - TF2001
 - TF2007
81. 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.

11.4 Move from LDC to LEX

82. 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. 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. 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. If the beneficiary asks to move back the line to its LDC, an activation fee will be invoiced to the beneficiary.

11.5 Spectrum Management and equipment aspects

86. 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. 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. 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. 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. 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. Note: particular requisites in terms of performance could lead to the definition of new rules and new types of lines in the future.

12 SDSL deployment rules

92. This table doesn't show the bit rates Beneficiaries can order. These bit rates are defined in the table in section 7.
93. 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. The limitations were calculated by taking into account the presence of potential signal perturbations (ADSL, SDSL) in the same quad and adjacent ones.
95. Tests were performed on feeding and distribution cables on the test environment of Belgacom.
96. Equipment: Chipset: Globespan, version 1.5
97. 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:

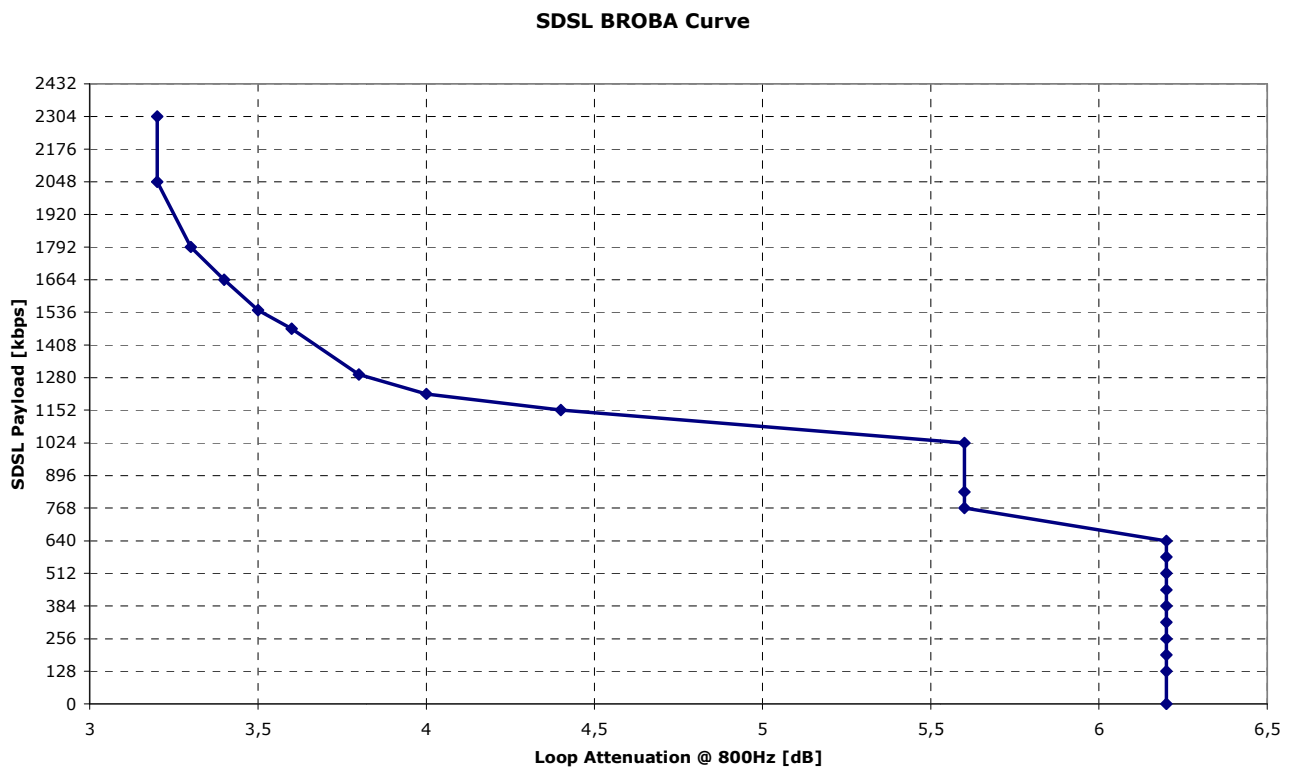


Fig.3



together
with



98. 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.

13 Ordering of Broba II SDSL Services

99. 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.

13.1 Services that can be ordered

100. An exhaustive list of the Broba II SDSL services can be found in Annex 6 – Pricing & Billing.

13.2 Rejection of Requests for Broba II SDSL

101. 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 11.2;
 - 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. 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.

13.3 Ordering process

103. 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 BROBA³, he will obtain the encryption keys in order to sign and encrypt the message.
104. The order must carry the following minimal information:
- Beneficiary's identification;
 - Name and full address of the end user to connect;
 - Customer ID (optional)³;
 - When relevant (in case of migrations or active loops), directory number (NA);

³ 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.



- 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.

13.4 Migration

105. For more information on migrations, reference is made to the Migrations Offer (BRUO Annex K).

14 Billing

14.1 General

- 106. Principle: all Standard Fees as described in Annex 6, whenever relevant, will be invoiced to and are to be paid by the Beneficiary.

14.2 Process

- **Graphic illustration**

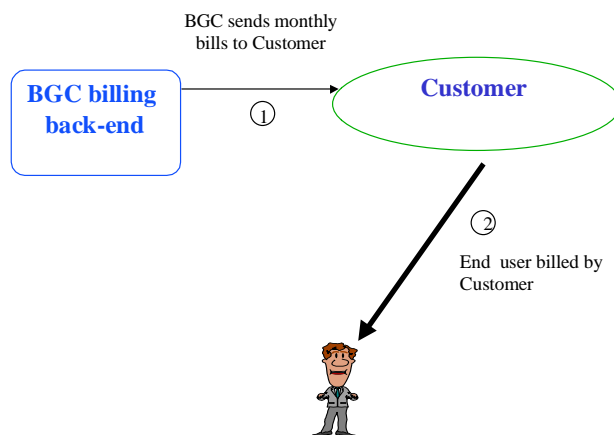


Fig. 4

- **Description**

- 107. 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).

15 Repair

15.1 General

- 108. 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. 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

- 110. 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.

15.1.1 Repair on a specific End User line

- 111. 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.

15.1.2 Repair for spectral issues reasons

- 112. 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. 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. If the SDSL services offered by the Beneficiary appear to be the cause of an abnormal⁴ 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).

4 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 technical rules and authorisation conditions as defined within the context of the technical specifications

Appendix A: Access Line

16 Customer-Sited Data Link

16.1 Preliminary

115. 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. 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.

16.2 Description

117. 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. Belgacom will install the necessary transmission equipment at the premises of the Beneficiary.
119. The Customer-Sited Data Link Service consists of one (1) or more 2Mbit/s, 34 Mbit/s or STM-1 Systems.
120. 2Mbit/s, 34Mbit/s or STM-1 Systems provided under this Service Plan do not have Diversity of routing.
121. 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. The Beneficiary Connection point is located at the Beneficiary's premises.

16.3 Implementation

123. 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.

16.4 General Conditions

124. 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. 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. All Belgacom transmission equipment shall comply with the appropriate Belgacom Technical Specifications provided in Annex 2 – Section 2: Technical Specifications of the Access Line.

16.5 Prices

127. The Beneficiary shall pay to Belgacom the installation and rental fees provided in [Annex 6](#) for Customer-Sited Data Link Service.

16.6 Specific Conditions

128. 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.

17 Belgacom-Sited Data Link

17.1 Preliminary

129. 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. 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. 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. 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.

17.2 Description

133. Belgacom-Sited Data Link Service will only be available in Belgacom ATM Access Points.
134. 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. 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. 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. 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.

17.3 Scheme

138. See below for a general scheme illustrating Belgacom-Sited Data Link (scheme valid for 2 Mbit/s and 34Mbit/s configurations):

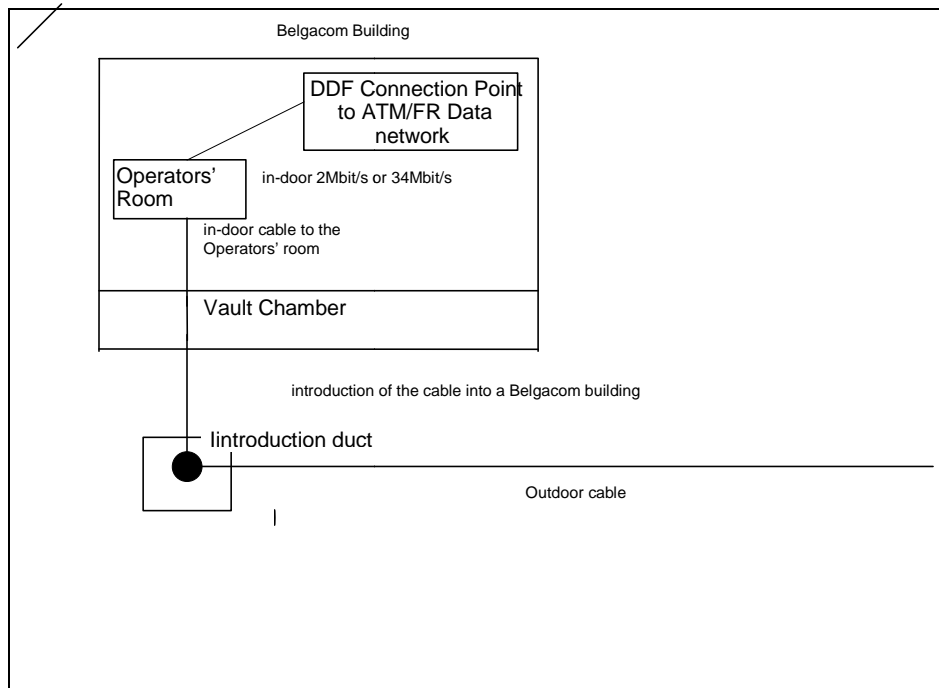


Fig. 5

17.4 General Conditions

139. All Beneficiary transmission equipment shall comply with the Technical Specifications provided in Annex 2 – Section 2: Technical Specifications of the Access Line.
140. The Beneficiary shall provide to its employees full information regarding the content of the rules to be respected regarding Belgacom-Sited Data Links.

17.5 Procedures

141. 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.

17.6 Prices

142. 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. 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. 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. 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. 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.

18 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.

19 List of ATM Access Points

City	Address
Aalst	Ridderstraat 43
Antwerpen - Berchem	Karel Coggestraat 2
Antwerpen - Centrum	Lange Nieuwstraat 106
Arlon	Avenue Jean-Baptiste Nothomb 40
Ath	Rue Jean Jaurès, 11
Brugge - Assebroek	Matmeers 2 A
Brussels - Ixelles/Elsene	Rue Borrens - Borrensstraat 16
Brussels - Etterbeek	Rue J. de Lalaing - J. de Lalaingstraat 36-40
Brussels - Evere	Avenue des Anciens Combattants - Oudstrijderlaan 94
Brussels - Linthout	Rue V. Lefèvre - V. Lefèvre 24-26
Brussels - Marais	Rue du Marais - Broekstraat 72-74
Brussels - Paille	Rue Lebeau - Lebeaustraat 2
Brussels - Sacré-Coeur	Avenue A.J. Slegers - A.J. Slegerslaan 36
Brussels - Schaarbeek	Rue Jan Blockx - Jan Blockxstraat 26-30
Brussels - St-Gilles- /St. Gillis	Rue Steens - Steensstraat 11
Brussels - Uccle	Rue Rodenbach – Rodenbachstraat 133
Brussels - Woluwe	Voordestraat 10
Charleroi - Centre	Rue de la science 2
Charleroi - Gilly	Sentier de la Limite 80
Chimay	Rue Reine Astrid 5
Ciney	Rue d'Omalius 67 B
Dendermonde	Courtenstraat 22
Diest	Ferd. Allenstraat 38
Dinant	Rue Bribosia 9
Durbuy	Chainrue 52
Genk	Europalaan 27
Gent - Centrum	Sint Niklaasstraat 27
Gent - Keizer Karel	Keizer Karelstraat 1
Hasselt	Paardsdemerstraat 10
Herentals	Molenvest 13
Huy	Rue du Vieux-Pont 16
Ieper	Vooruitgangsstraat 1
Jemelle	Rue Delvigne 76
Kortrijk	Doorniksestraat 61-65
La Louvière	Rue de la Concorde 17
Leuven	Vismarkt 17
Libramont	Rue des alliés 1
Liège - Centre	Rue de l'université 30
Liège - Grétry	Rue d'Harscamp 17
Mechelen	Stationstraat 58
Mons	Rue des fosses 7
Namur	Rue Marie-Henriette 60
Namur	Rue Rogier 2
Ninove	Groenmarkt 42
Nivelles	Place Albert 1
Oostende	Hendrik Serruyslaan 18 A
Roeselare	H. Consciencestraat 3-5
Ronse	Politieke Gevangenerstraat 14
Stavelot	Cour de l'hôtel de ville 3
Tournai	Rue de la Tête d'Or 9
Verviers	Rue Thil Lorrain 6
Veurne	Pannestraat 1
Waremmme	Rue Joachim 67
Wavre	Rue de la Limite 2

Belgacom Reference Offer for Bitstream Access

BROBA II SDSL

Annex 2: Technical specifications of BROBA over ATM

Created on: 16 February 2012

belgacom

together with



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2 Introduction

1. This document describes the technical specifications of BROBA II SDSL. 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 VP switching mode, 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”.

3 Tables of potential profiles Beneficiaries can choose from:

3.1 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

3.2 DSLAM – ATM backbone



together
with



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

3.3 Customer defined

3. In addition to the ATM profiles defined used for the products defined in 3.2, 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).

Belgacom Reference Offer for Bitstream Access

BROBA II SDSL

Annex 6: Pricing and Billing

Created on: 16 February 2012

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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.

For prices related to ATM or Ethernet in VP switching mode, reference is made to the Belgacom Reference Offer for Bitstream Access - BROBA II ADSL Annex 6 – Pricing & Billing.

2 Pricing

2.1 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

2.2 Tariffs applicable for the end-user line

2.2.1 XML Inquiry Fee

2. An XML inquiry is an XML message that is used to make specific requests for feasibility for a given address. These feasibility inquiries are treated by a specific Belgacom service.
3. 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

2.2.2 LLU Inquiry Tool

4. The Beneficiary will be invoiced the following amount per inquiry done.

	Euro
Per inquiry done	€0,00



together
with



2.2.3 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)	€121,855 €112,47
Activation fee for BROBA II SDSL (VC or VP-switching), installed by certified technician	€25,73 €25,73

- The activation fee is exclusive the price of the activation of any VC on the End User Line.
- ~~For the Activation of a BROBA II SDSL without customer visit on an End User Line, T~~he above-mentioned fee includes travel to the end-user and hardware costs.
- This fee will also be applicable, in VP switching mode, per VC, in case of modification from ATM to Ethernet transport (and vice-versa), for the same Beneficiary.
- 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.

Additional fee for repair due to incorrect installation by certified technician	Price
BROBA II SDSL installed by certified technician	€129,03

2.2.4 Rush Order

- When Rush order has been requested the standard activation fee will be doubled.

2.2.5 Fees related to VCs

	Euro
<u>Activation/Modification/De-activation fee per VC (in VC switching mode)</u>	<u>€11,08</u>
<u>Activation/Modification/De-activation fee per VC (in VP switching mode)</u>	<u>€7,69</u>

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.

11. 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.

2.2.5.1 ~~VC Configuration Fee on an End User Line~~

Fee per VC	Activation	Modification	De-activation
Broba over ATM, VP switching mode	€7,69	€7,69	€7,69
Broba over ATM, VC switching mode	€11,08	€11,08	€11,08
Broba over ETH, with shared VLAN's	€7,69	€7,69	€7,69
Broba over ETH, with dedicated VLAN's	€41,61	€33,63	€12,21

~~10. The above mentioned fees are billed independently of any other fee.~~

~~11. These fees will also be applicable per VC, in case of modification from ATM to Ethernet transport with shared VLAN (and vice versa), for the same Beneficiary.~~

2.2.6 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

12. In case of simultaneous Modification of a Line Profile and of a VC of the same End-User Line, both fees will be invoiced.

2.2.7 De-activation Fee of the SDSL Service on an End User line

13. 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

14. The above-mentioned fee is exclusive the price of the de-activation of any VC on the End User Line.

2.2.8 Change Date Fee

15. 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

16. 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.

2.2.9 Cancellation Fee

17. 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

18. 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).

2.2.10 Pending order due to useless end-user visit

Pending order due to useless end-user visit	Euro
Per intervention	€20,04

19. 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.

2.2.11 Improved SLA on repair

20. 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.

Setup fee	One-time fee
	€2.000,47

21. One-time fee per line for setup of ISLA in case of a new line.

Activation fee	One-time fee
	€8,23

22. One-time fee per line for change of the SLA from Basic to Improved (or reverse) in case of an existing line.



together
with



	Per local loop
Change SLA type fee	€8,23

23. Rental fee per local loop with the ISLA type in addition to the monthly fee.

	Monthly Rental
Extra Rental Fee	€8,74

2.2.12 Improved SLA on provisioning

24. 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

2.2.13 Small Network Adaptations

25. 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. The following fee will apply in surplus of the Activation fee relevant to an installation by Belgacom.

	Euro
Small Network Adaptations	€441,66

26. 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.

2.2.14 Wrongful Repair request

27. In case of wrongful repair request by a Beneficiary, Belgacom will invoice this Beneficiary an administrative fee of 104,61 Euro.
28. If Belgacom has performed specific work due to this wrongful repair request made by Beneficiary, Belgacom will invoice these additional costs to Beneficiary.
29. In case of wrongful 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.

2.2.15 Monthly Recurring fee per End User line

BROBA SDSL	ATM	ETH Shared VLANs	ETH Dedicated VLANs	ATM and ETH (shared VLANs)	ATM and ETH (dedicated VLANs)	ATM and ETH (shared VLANs) and ETH (dedicated VLANs)	ETH (shared VLANs) and ETH (dedicated VLANs)
BRUO Raw copper	€8,03						
Active part	€5,53						
Transport Rental ATM	€1,24	N.A.	N.A.	€1,24	€1,24	€1,24	N.A.
Transport Rental ETH	N.A.	€0,62	€0,78	0,62 €	0,78 €	€0,78	€0,78
Total Monthly Rental	€14,80	€14,18	€14,34	€15,42	€15,58	€15,58	€14,34

2.3 SLA documented reports

- 46 Belgacom is entitled to invoice the Beneficiary for the production of the SLA documented reports described in the Annex 5, Basic SLA, section 7 “Documented reports”. The unit price per report amounts 25,14 €.

2.4 Compensation for Non First Time Right Installation

30. In cases that a BROBA II SDSL line is brought into service by Belgacom and that a repair ticket is created for this line by the Beneficiary within 14 calendar days after provisioning closure date, giving a fault located on Belgacom access network, and caused by Belgacom or a third party working for Belgacom, the Beneficiary will be entitled for this line to a compensation for “Non first time Right Installation”.
31. The compensation due by Belgacom per Non First Time Right Installation related to a specific BROBA II SDSL line is equal to the Activation Fee of the BROBA II SDSL Service on this End User line, as defined in § 5 of this document.
32. Compensations for Non First Time Right Installation will be settled through a Beneficiary’s invoice without VAT.
33. Together with this invoice, the Beneficiary must provide Belgacom with the necessary information to claim for Non First Time Right Installation. 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 for Non First Time Right Installation, refunding will be done by Belgacom.
34. This necessary information will be provided to Belgacom under the form of a structured file (Excel or CSV format), and will include at least the following data’s for each Non First Time Right Installation:
- Beneficiary, Circuit Id, Ready For Service Date, Belgacom repair ticket nr, Belgacom repair ticket opening date, Belgacom repair ticket closure date, number of the Belgacom invoice of the claimed Non First Time Right Installation and total activation fee, as mentioned in the invoice, of the claimed Non First Time Right Installation (HTVA).

Each invoice of The Beneficiary related to Non First Time Right Installation claims will group the cases of one or several complete months, based on the Belgacom repair ticket closure date.

2.5 Tariffs applicable for the ATM Transport (incl. Access Line)

35. Reference is made to the Belgacom Reference Offer for Bitstream Access BROBA II ADSL Annex 6 – Pricing & Billing.

2.6 Tariffs applicable for the Ethernet Transport (incl. OLO Access Line)

36. Reference is made to the Belgacom Reference Offer for Bitstream Access BROBA II ADSL Annex 6 – Pricing & Billing.

2.7 Migration fees

37. This section only refers to migrations towards a BROBA SDSL service. The tariffs for migrations

- towards a WBA VDSL2 service are described in Annex 6 of WBA VDSL2
- towards a BROBA ADSL service are described in Annex 6 of BROBA II ADSL.
- towards a BRUO service are described in Annex H “Price List” of BRUO.

2.7.1 Single Line Migration fees

38. The migration fee includes both the activation and the deactivation parts of the migration, and will be entirely invoiced to the party requesting for migration.

39. The Migration fee is applicable in the following cases:

- a. **Change of ownership:** transfer of a line from Beneficiary 1 to Beneficiary 2. The fee is invoiced to the party requesting for transfer (i.e Beneficiary 2).
- b. **Convert:** Product modification from any product to BROBA II SDSL. The line remains at the ownership of the Beneficiary (no transfer of ownership). The fee is invoiced to the party requesting for conversion.
- c. **A combination of a. and b.**

40. The following tariffs are applicable to the OLO requesting for migration in accordance with the scenario of migration to BROBA II SDSL presented in the following table.

Migration fees to SDSL	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
--	---------

41. The Physical Migration fee includes both the activation and the deactivation parts of the migration, and will be entirely invoiced to the destination Beneficiary.
42. 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

43. 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.

2.7.2 Project Migration fee

44. Because of the specific character of the Project Migration, pricing will be proposed on a case-by-case quotation.

2.8 Use of e-tool and databases

2.8.1 Repair e-Tools

45. The e-tool for repair BROBA and the repair line measurement

Repair e-Tools	Price
Repair and Line Measurement	Free of Charge

2.8.2 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

2.9 Training and certification costs of certified technicians

48. 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.
49. 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.
50. The cost of a theoretical training module, or of an updating session, of an half day is: € 80,00 per certified technician.
51. The cost of a practical training module of an half day is: € 68,00 per certified technician.
52. The cost of the test is: € 53,00 per certified technician.
53. 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.
54. 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.

2.10 Billing

2.11 Preliminary

55. 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.
56. 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.
57. For each BROBA product, Belgacom will invoice Beneficiary accordingly.
58. Belgacom shall record, store and process the Billing Data in accordance with Section 2 of this Document.
59. 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.
60. 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.
61. Belgacom reserves the right to modify the layout and the presentation of the invoice to the Beneficiary.

2.12 Recording and storage of billing data

62. 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.
63. The general list of billing data indicated above is not exhaustive. Pricing is set in the Section 1 of this Annex.
64. 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.

2.13 Confirmation of charging principles

65. 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.
66. 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.
67. All the non-recurring charges will be mentioned in the Invoice of the Billing Period covering the Bringing Into Service Date.
68. 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.
69. 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).

2.14 Invoices

70. 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.
71. 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.
72. 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.
73. 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.
74. 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.
75. All changes to amounts invoiced in accordance with this Section 4 will be made through credit notes or additional invoices.

2.15 Payment

76. 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”).
77. 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.
78. Credit notes will be set off against any payments due of the next invoice and are refundable when there are no outstanding invoices.
79. 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.
80. 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.
81. 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.

2.16 Disputes

82. 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.
83. 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.
84. Upon receipt of the Notice of Dispute, the Parties shall exchange by ordinary mail any information necessary or useful for solving the Dispute.

85. 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.
86. 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.
87. 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

88. Product covered under this billing and accounting document:
89. The general list of billing services below is not exhaustive, and may be adapted. Pricing is set in Section 1 of this Annex.
90. 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
91. 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)
92. 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.
93. 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
94. Belgacom reserves its right to modify the layout and the presentation of its invoice to the Beneficiary.



together
with



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	



together
with



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.