



Proximus Reference Offer for Bitstream Access

Covering the technology Fiber PON

Main Body

Approved by the Belgian Institute for Postal services and Telecommunications on 21/09/2022
Our reference: version 6 – integrating JV partnerships

This offer is made by Proximus PLC under Belgian Public Law, a Belgian autonomous public enterprise organized under the Law of March 21, 1991, with registered office at B-1030 Brussels, 27 Boulevard du Roi Albert II, VAT BE 0202 239 951 Brussels Register of Legal Entities, exercising its activities under the commercial name Proximus and referred to as "Proximus" in all the documents that are part of this offer.

Proximus has partnered with third-parties in several Joint Ventures or other similar arrangements (hereafter the "JVs") to enable its ambition of enlarging and accelerating fiber deployment in Belgium. The JVs (such as, for example, Fiberklaar in Flanders and Unifiber in Wallonia) are responsible in their respective deployment areas/footprint to build and maintain an open point-to-point (P2P) passive Fiber Access Network while the Active Network Layer is under Proximus responsibility. Overall, the logical/service access layer is unchanged from that used on the Proximus footprint.

The present offer has been elaborated based on Proximus' best knowledge to date. Considering the gradual deployment of the new JVs/Proximus hybrid access networks and ~~As the fact that~~ Fiber GPON and XGS-PON are new technologies and not all technical and commercial decisions have been taken already, the offer and any information therein is subject to change or further clarification at any time.

Similarly, some of the operational functionalities described in the present offer may not be available as from day one of the introduction of these new hybrid access networks and new technologies, as such introduction is usually based in a first step on a MVP (Minimum Viable Product) approach. In that case, further details based on Proximus' best knowledge to date are provided in the "Planning & Operations" document. In particular, reference is made to sections 9.9, 10.3 and 10.4 and 13.4 of the latter document.

Proximus is in any case working towards the goal of having on the JV footprints a Bitstream Fiber PON offer as similar as possible to the existing offer on its standalone footprint, at least in terms of functionalities.

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1 Glossary

- **Bitstream**: unless specified otherwise, the word “Bitstream” equally refers to the three types of service: with Shared, with Dedicated or with Single VLANs.
- **Bitstream xDSL services**: services delivered in the scope of the regulated Proximus Reference Offer for Wholesale Broadband Access, covering the ADSL, Reach Extended ADSL2, ADSL2+ and VDSL2 access technologies.
- **BDFO**: Building Distribution Frame Optical. The term “BDFO” is used in the present offer as a generic term for the various boxes (including the BDSO or Building Distribution Splicing Optical boxes) used installed by Proximus on its footprint for entering the introduction cable and the departure of the vertical cabling.
- **CPE**: Customer Premises Equipment.
- **Customer Equipment**: any equipment that belongs to the Beneficiary.
- **DTP**: Distribution Termination Point. Is the end point of the distribution and the transition to the introduction on the Proximus footprint.
- **End-User premises**: Living Unit of an End-User.
- **End-User**: User of electronic services provided by the Beneficiary, Third Party Beneficiary, or a reseller of that service, and/or Proximus.
- **Fiber GPON**: the Proximus Fiber GPON solution is an ITU-T G.984.x based Gigabit Passive Optical Network solution.
- **Fiber XGS-PON**: the Proximus Fiber XGS-PON solution is an ITU-T G.9807.x based 10 Gigabit Passive Optical Network solution.
- **FTTB**: Fiber To The Business: business zones where there is a mix of PON and copper technologies.
- **FTTH**: Fiber To The Home.
- **FTTH Brownfield**: zones where Proximus intends to replace all copper technologies by the PON technology.
- **FTTH Greenfield**: zones where no copper technologies are present.
- **FTU**: Fiber Termination Unit. FTU (whose realization is called “Home Connect” by the JVs) is the equivalent on the JV Fiber Access Network of the ONTP on the Proximus Fiber Access Network. Unless specified otherwise, the term “ONTP” is used in the present offer for both the JV and Proximus footprints.
- **GE**: Gigabit Ethernet.
- **GPON**: Gigabit Passive Optical Network.
- **IP**: Installation Point.
- **JV**: (Fiber) Joint Venture. The term “JV” in the present offer refers to any partnership between Proximus and third parties, functioning as a Joint Venture or alike and enabling Proximus to further enlarge and accelerate the roll-out of an open Fiber Access Network in Belgium. The Bitstream Fiber PON services provided by Proximus to the Beneficiaries are also offered on the passive network built by the JVs.
- **JV PoP**: JV Point of Presence. The JV PoP refers in the present offer to the building in the JV Fiber Access Network hosting the OLT equipment.
- **JV Technician**: technician employed by one of the JV authorized contractors.
- **LDC**: Proximus Local Distribution Center.
- **LEX**: Proximus Local Exchange. The LEX, which is also called Central Office (CO), refers to the building in the Proximus Fiber Access Network hosting the OLT equipment. Unless specified otherwise, the term “LEX” in the present offer may be used indifferently to refer to any building (Proximus and non-Proximus) hosting the OLT equipment.
- **LU**: Living Unit. A Living Unit corresponds to the dwelling used by one family or one group of persons.
- **MDU**: Multi Dwelling Unit. An MDU corresponds to a building used by several families or several groups of persons, each identified as one single End-User.
- **MSO**: Multi Service Ordering, also known as WSO (Wholesale Service Ordering).
- **NNI**: Network Node Interface.
- **OAL**: OLO (Ethernet) Access Line. An OLO Access Line is an interface between the Customer Equipment and a Proximus Service Router located in one of the two Service PoPs of the Service Area.

- ODF: JV-owned Optical Distribution Frame. The P2P fiber owned by the JV and rented by Proximus is from the ODF to the FTU/ONTP (no OFP).
- **OFP:** Optimized Fiber Point. Is the end point of the feeding and the beginning of the distribution on the Proximus footprint. On the JV footprints, while the Central JV PoP is the equivalent of the Proximus LEX/Central Office, the Local JV PoP is the equivalent of the Proximus OFP. Proximus doesn't own the PoPs but has equipment (such as splitters and/or OLTs) in these PoPs.
- **OLO:** Other Licensed Operator.
- **OLT:** Proximus-owned Optical Line Terminal. Is the end point of a passive optical network, performing conversion between electrical signals used on the Proximus Ethernet backbone and fibre optic signals used by the passive optical network, and coordinating the multiplexing between the ONTs of the PON. An OLT can also be seen as the Access Multiplexer in the fiber access (like an IP-DSLAM is an Access Multiplexer in the copper access).
- **ONTP:** Optical Network Termination Point. Box that terminates one fibre in the Living Unit or in the technical room (for some MDUs). In the JV context, "ONTP" (called "FTU" by the JVs) refers to the JV-owned network termination point on which the JV fiber is terminated.
- **ONT:** Proximus-owned Optical Network Terminal. The ONT (optical modem) is an active network element that is controlled via the OLT.
- **Partner Technician:** technician employed by one of the Proximus authorized contractors.
- **PON:** Passive Optical Network.
- **P2MP:** Point-to-multipoint network topology deployed by Proximus.
- **P2P:** Point-to-point network topology deployed by the JVs at distribution level only, i.e. from the ODF to the FTU/ONTP. The Bitstream Fiber PON services provided by Proximus to the Beneficiaries on the passive network built by the JVs are point-to-multipoint shared fiber solutions using GPON or XGS-PON technology.
- **P-bit:** priority bit.
- **SDU:** Single Dwelling Unit. An SDU corresponds to a building used by one family or one group of persons, identified as one single End-User.
- **Service PoP:** a Service PoP provides access to the Proximus Ethernet network through an NNI connection with a Proximus Service Router.
- **Service Router:** Proximus Service Routers are installed in each Service PoP (S-Edge in TITAN) and in the LEXs (L-Edge in TITAN). A Service Router installed in a LEX provides Ethernet transport to a Service PoP.
- **SFP:** Small Form-factor Pluggable.
- **TITAN:** Terrabit IP Transport and Aggregation Network.
- **UNI:** User to Network Interface.
- **UTAC:** Universal Telecom Access.
- **UTP:** Unshielded Twisted Pair.
- **VLAN:** Virtual Local Area Network. Unless specified otherwise, the word "VLAN" equally refers to a Shared VLAN, a Dedicated VLAN or a Single VLAN.
- **XGS-PON:** 10 Gigabit-capable Symmetric Passive Optical Network.

2 Scope

1. This document provides a description of the Bitstream Fiber PON service that Proximus offers to a Telecommunications Operator¹, hereafter called “Beneficiary”. PON in this document refers to both GPON and XGS-PON, unless otherwise specified.
2. This document entails the conditions related to the provision by Proximus to the Beneficiary of the Bitstream Fiber PON service, which will enable the Beneficiary to define its own Fiber PON products and to market, distribute and sell under its name and on its behalf its own Fiber PON products towards End-Users, using ~~Proximus the~~ installed and existing Network infrastructure, pursuant to the technical limitation of this existing infrastructure for offering the service.
3. This offer and its tariffs are only applicable for connecting End-User premises connected to ~~a~~ Proximus OLT located in Proximus premises (LEX or LDC) or in JV premises (JV PoP). The identification of zones where the Living Units are eligible for a Fiber PON service is available on the Beneficiary ShareSpace².
4. This document describes in broad terms the technical, operational and financial conditions of the Bitstream Fiber PON service offered by Proximus.
5. The provision of the hereunder-described service supposes the following list of prerequisites that will need to be met at all times and in all circumstances:
 - Connection between the network of the Beneficiary and the Proximus network (hereafter the “Network”) is established pursuant to the principles set out in this document;
 - ~~A~~ A PON between the End-User premises and a Proximus OLT must be available;
 - When patching works (i.e. optical jumpering) are required to ensure interconnection between the JV and Proximus networks and deliver the service, they will be performed by the concerned JV (or one of its subcontractors).
 - When termination works are required to deliver the service (also referred to as SNA or Small Network Adaptations in this offer) and are allowed by the Beneficiary, they will be performed by Proximus or the JV (or one of ~~its~~ their subcontractors) according to the intervention type defined by the latter: whether e.g. splicing underground, splicing façade and/or splicing indoor. It is possible that the JV enters into contact with the Beneficiary’s End-User for the termination works in the Living Unit (e.g. to fix an appointment).
6. A Bitstream Fiber PON service is only offered if technically feasible and in accordance with the Fiber PON deployment in the Proximus standalone network or through the Proximus active layer built on the JV passive network. Proximus will perform a technical feasibility study on the End-User line (Fiber PON UNI port availability, etc...) after having received the order of the Beneficiary.
7. Upon reasonable firm request by the Beneficiary, Proximus will analyse with the latter the access to (sections of) ducts for optical fibre in the underground FTTH distribution networks of Proximus where the End-Users are connected by such underground ducts from end to end, subject to the effective availability of free space in such ducts to host the requested elements

¹ “Telecommunications Operator” under the present reference offer is to be understood as entitled to provide telecommunications services under national legislation, and which is eligible for Bitstream Fiber PON access. Reference is made to the Annex “General Terms and Conditions” for further details on the eligibility.

² This information is subject to the signature of a specific Non-Disclosure Agreement.

of electronic communications networks, inter alia by taking account of (future) needs for such ducts by Proximus, as evaluated at the time of the request.

More specifically, the specifications, conditions, operational modalities and tariffs of access to (sections of) ducts of the underground FTTH distribution networks of Proximus will be assessed by Proximus and set out in detail by means of an engineering study covering the technical and IT feasibility as well as the reasonability of the request.

3 Practical Information

8. Further requests for information concerning the present reference offer can be made in writing by interested Parties at the following Proximus contact point. In particular, in the event of doubt as to the interpretation of the provisions of this reference offer, Proximus should be contacted. In the event of doubt and as stated by the BIPT, contacting Proximus is without prejudice to any clarification of the reference offer given by the BIPT.
9. In case of disagreement about the interpretation, one of the Parties can request the BIPT for a non-binding advice on the specific case. This advice will be taken within a reasonable term and will take into account the legal framework and the applicable BIPT decisions. The possibility for the Parties to present the BIPT a problem in interpretation will not influence the legal means that remain at the Parties' disposal in case of a conflict such as the reconciliation procedure or the dispute procedure.

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10. The sharing by Proximus of some types of information (e.g. the addresses of Proximus buildings) is subject to the prior signing of a Non-Disclosure Agreement by the requesting Party. Furthermore, a payment may be due for obtaining certain documents.
11. It is also a right for everyone who has signed a Non-Disclosure Agreement to obtain information via the Proximus website through a secured access. Information on how to access the mentioned website can be obtained at the Proximus contact point mentioned above.
12. This offer is made by Proximus PLC under Belgian Public Law, a Belgian autonomous public enterprise organized under the Law of March 21, 1991, with registered office at B-1030 Brussels, 27 Boulevard du Roi Albert II, VAT BE 0202 239 951 Brussels Register of Legal Entities, exercising its activities under the commercial name Proximus, and referred to as "Proximus" in all the documents that are part of this reference offer.

4 Proximus-Fiber PON Access Network overview

13. The Proximus Fiber PON solution is a shared fibre solution, shared amongst a number of End-Users: an ITU-T G.984.x based Gigabit Passive Optical Network (GPON) solution or an ITU-T G.9807.x based 10 Gigabit Passive Optical Network solution (XGS-PON), usually composed of the following elements on the Proximus footprint:
- An OLT (Optical Line Terminal) in the LEX (Central Office) and the OLT NT to the Service Router in the said LEX.
 - A shared fibre. This fibre exits the LEX (Central Office) in fiber cables, which are split and terminated in a small underground manhole (OFP or Optimized Fiber Point) in the street, equipped with a splitters. From the fiber cables, which exit the manhole and run either underground or on façade, a single fiber is extracted from the cable and fed into a DTP (Distributed Termination Point).
 - The DTP is a small box where the introduction fibre cables are spliced onto the distribution fibre cable. These introduction fiber cables exit the DTP and enter the Living Units where they are terminated on the ONTP (Optical Network Termination Point).
 - An ONT (Optical Network Terminal), which is installed and configured by Proximus (or one of its subcontractors) at End-User premises.
 - The UNI is a Gigabit Ethernet or a 10 Gigabit Ethernet interface on the ONT, for connecting the Beneficiary's End-User LAN and/or Service Box.
 - The network demarcation point is the Ethernet port on the ONT box.
 - The difference between GPON and XGS-PON is the following:
 - o GPON is a technology delivering up to 2,448 Gb/s in downstream by using a certain wavelength (color) and up to 1,224 Gb/s in upstream with another wavelength.
 - o XGS-PON is a technology delivering symmetrically up to 9.95328 Gb/s in downstream and upstream by using two other wavelengths (colors).

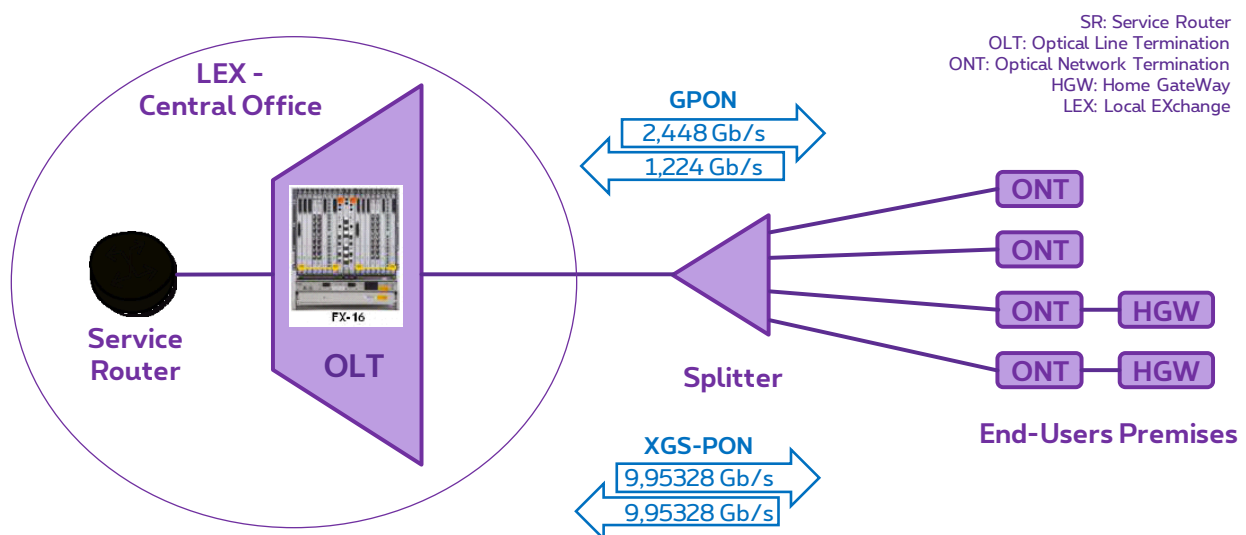


Figure 1: Proximus Fiber PON Access Network overview

14. The difference between the Proximus Fiber Access Network and the JV Fiber Access Network is that the fibre on the latter network is owned by the JV company and the splitter can be owned or not by Proximus. The ONTP, also known as FTU, is owned by the JV company as well. On the JV footprints, there is a one-to-one relation between a patch position in the JV PoP and a Living Unit so that it is of utmost importance for the Beneficiary (or Beneficiary's End-User) to select the correct detailed address during order entry in order to avoid any light issues.
The hybrid JV-Proximus access network on which the Proximus shared fibre solution is offered can be pictured as follows:

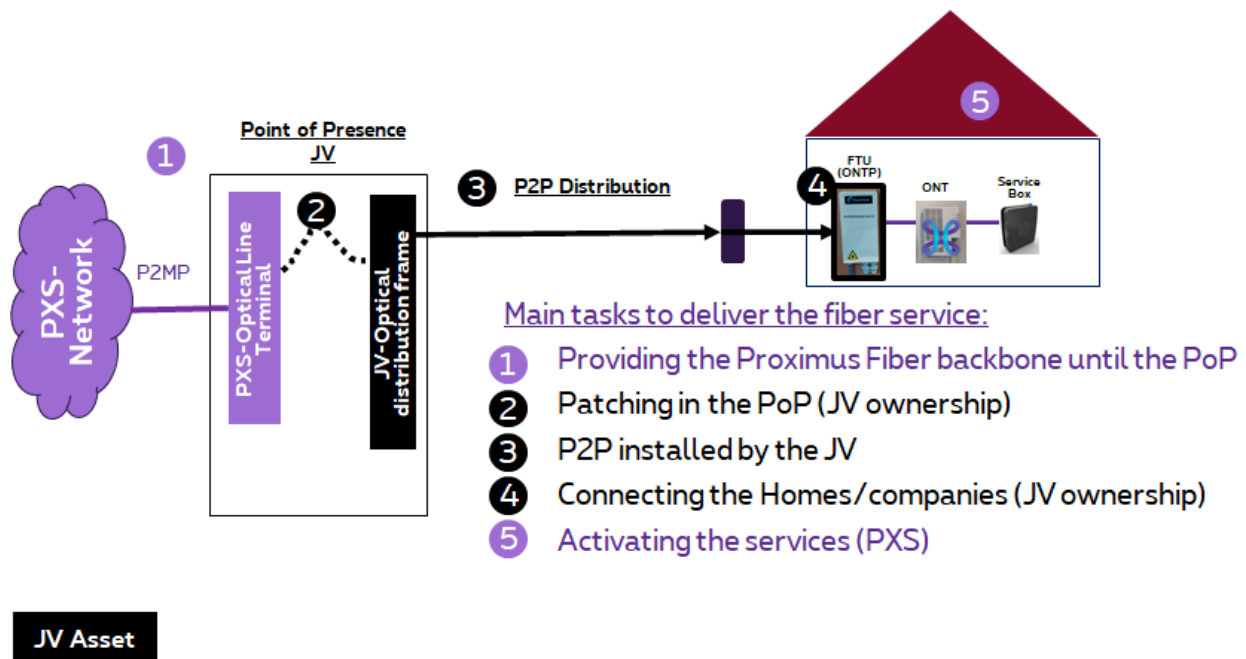


Figure 2: Hybrid JV-Proximus Access Network overview

15. With respect to the GPON and XGS-PON technologies, there is also a difference between the Proximus Fiber Access Network and the Fiber Access Network built by the JVs:

- o The Proximus Fiber Access Network is equipped with cards & SFP supporting both GPON and XGS-PON technologies.
- o The Fiber Access Network built by the JVs is equipped with cards & SFP supporting exclusively the GPON technology (for services up to 1 Gb/s) or with cards & SFP supporting both GPON and XGS-PON technologies (for services above 1 Gb/s). The ordered service and the ONT installed at End-User premises will determine to which card & SFP the End-User will be connected.

The objective of the cards & SFP supporting both GPON & XGS-PON technologies is to facilitate the migration of an End-User from a service up to 1 Gb/s to a service above 1 Gb/s: it does not require to synchronise the fibre repatching with the visit of the technician installing the new XGS-PON ONT.

5 Description of the Bitstream Fiber PON service

5.1 General

~~14~~16. As most of the European operators, Proximus is in the process of adapting and upgrading its telecommunication infrastructure. In this regard, Beneficiaries shall be able to benefit from any changes in the Proximus broadband network similar to the changes provided by Proximus to its own retail services. In case these network changes have an impact on the Bitstream Fiber PON service offered, whether a major impact (e.g. introduction of a new technology, a new network element or a new topology) or a minor impact for the Beneficiary (e.g. a new or adapted configuration, a new or adapted UNI rate limiting type profile or new/adapted product parameters), Proximus will respect the same periods of notice as those defined in the Annex “Planning & Operations” of the present reference offer regarding the IT projects. The BIPT will be informed in any case and can allow exceptions concerning the periods of notice.

~~15~~17. After having first informed the BIPT, Beneficiaries shall be notified 12 months in advance of any withdrawal of a Bitstream Fiber PON service in the “existing” infrastructure. If Proximus wants to withdraw a Bitstream Fiber PON service before the end of these 12 months, an alternative agreement in good faith discussion will be concluded with the concerned Beneficiaries.

~~16~~18. The Bitstream Fiber PON service will allow the Beneficiary to connect on the Proximus network at a Proximus Service PoP and to receive Ethernet frames from the End-User using the Fiber PON technology. The transport end-to-end between the End-User and the Beneficiary is Ethernet. The Ethernet transport is done over the TITAN network.

~~17~~19. The service offering covers:

- The provision by Proximus of one or several OLO Access Lines between the Customer Equipment and the Proximus Service PoPs.
- The provision by Proximus of transport bandwidth (VLANs) between the Service Routers to which the OLTs are connected and the Proximus Service PoPs to which the Customer Equipment is connected; these VLANs are shared between several End-Users of a Beneficiary in a same LEX or dedicated per individual End-User.
- The configuration by Proximus of the Ethernet Transport between the OLTs on which the Beneficiary wants to connect End-Users and the Customer Equipment.
- The provision by Proximus of Fiber PON lines to the End-Users.

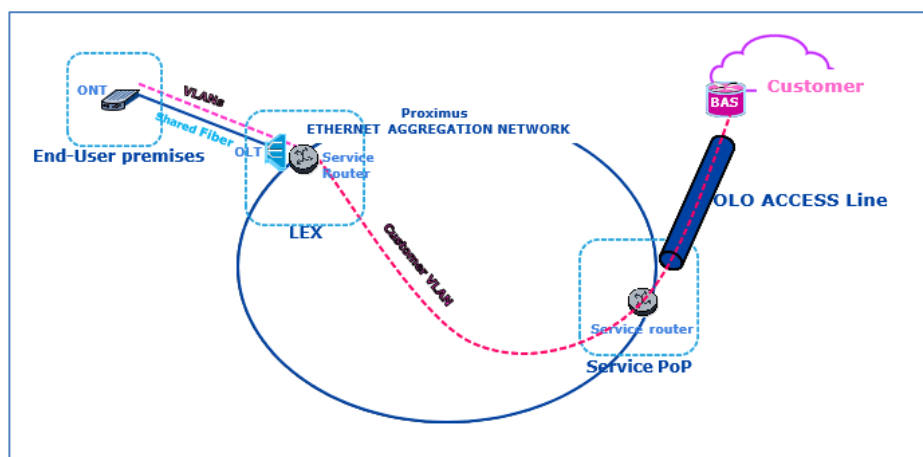


Figure 23: End-to-end overview

18-20. The Bitstream Fiber PON service is offered on the basis of the equipment delivered by Proximus' supplier at the moment of the bringing into service of the equipment in a given site.

19-21. Proximus will ensure the management of the OLTs and ONTs and their proper configuration.

20-22. The Bitstream Fiber PON service does not allow 'shared pair' alike services where the Beneficiary provides data services and Proximus would provide classical fixed voice services³ over the same network.

³ Classical voice services = PSTN & ISDN services.

5.2 OLO Access Line between a Proximus Service PoP and the Customer Equipment

21-23. For the description of the OLO Access Line service, reference is made to the document "Main Body" of the Bitstream xDSL reference offer, section "OLO Access Line between a Proximus Service PoP and the Customer Equipment".

22-24. The same OLO Access Lines may be used by the Beneficiary for the Bitstream Fiber PON and Bitstream xDSL services.

5.3 Ethernet Transport between the OLT and the Customer Equipment

23-25. The Bitstream Fiber PON service offers an Ethernet connectivity between the OLO Access Lines and the End-User Fiber PON lines.

24-26. Various service qualities can be offered (depending on the chosen transport option) for the Bitstream Fiber PON service, differentiated by the Ethernet p-bit (P):

- P=0: best effort.
- P=1: low priority.
- P=2: medium priority.
- P=3: medium priority.
- P=4: medium priority.
- P=5: highest priority and better performance for jitter and delay sensitive traffic.
- Session signalling p-bit.

25-27. Shared, Dedicated and Single VLANs

- Shared VLANs: for the Virtual LANs (VLANs) of the Fiber PON lines, the Ethernet traffic of a Beneficiary's End-User is aggregated and transported in 1 Shared VLAN per service quality and per LEX to a Service PoP in the same Service Area where an OLO Access Line of the Beneficiary is connected.

In each LEX where Proximus installed OLT equipment, Proximus will create for the Beneficiary at maximum 8 Shared VLANs - with a maximum of 2 VLANs per service quality - to which the Beneficiary's End-Users are connected in order to transport their Fiber PON traffic from the Service Router (on which the OLT is connected) to the Customer Equipment and reversely.

The same Shared VLANs corresponding to the same service qualities are used by the Beneficiary for the Bitstream Fiber PON and Bitstream xDSL services, for Ethernet connectivity between the OLO Access Lines and the LEX.

- Dedicated VLANs: per Beneficiary's End-User, all Virtual LANs (VLANs) are transported transparently in 1 Dedicated VLAN to a Service POP in the same Service Area where an OLO Access Line of the Beneficiary is connected.

- Single VLANs:

For the Virtual LANs (VLANs) of the PON lines, the Ethernet traffic of a Beneficiary's End-User is aggregated and transported in 1 VLAN including all chosen service qualities per TITAN LEX to a Service PoP in the same Service Area where an OLO Access Line of the Beneficiary is connected.

In each TITAN LEX where Proximus installed OLTs, Proximus will create for the Beneficiary maximum 2 Single VLANs englobing the chosen service qualities by the Beneficiary, to which the Beneficiary's End-Users are connected in order to transport their Bitstream traffic from the TITAN LEX to the Customer Equipment and reversely.

26-28. 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 Proximus Service Areas, their definition and the address of the related Service PoPs is available in Appendix A.

~~27.29.~~ _____ VLANs will be configured by Proximus, on behalf of the Beneficiary, to transport the Fiber PON traffic of the Beneficiary's End-Users from the OLTs on which the Beneficiary's End-Users are connected up to the Customer Equipment and reversely.

5.4 Bandwidth between the Local Exchanges and the Proximus Service PoP to which the Customer Equipment is connected

5.4.1 Shared VLANs

28-30. The Beneficiary will order bandwidth and more precisely Shared VLANs between each LEX in which the Beneficiary wants to connect End-Users and where Proximus installed OLTs and the Proximus Service PoP(s) to which the Beneficiary is connected. Each Beneficiary may order up to 2 VLANs per service quality per LEX.

29-31. The bandwidths that can be ordered by the Beneficiary between a LEX and a Proximus Service PoP are summarized in the table 1 below, in function of the service quality chosen by the Beneficiary for the related VLAN.

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	Y	N	N
700	Y	Y	N	N
800	Y	Y	N	N
900	Y	Y	N	N
1gig	Y	Y	N	N
2gig	Y	N	N	N
3gig	Y	N	N	N
4gig	Y	N	N	N
5gig	Y	N	N	N
6gig	Y	N	N	N
7gig	Y	N	N	N
8gig	Y	N	N	N
9gig	Y	N	N	N
10gig	Y	N	N	N

Table 1: bandwidths allowed for ordering, per service quality.

[30-32.](#) Higher bandwidths could be possible in the future, if reasonable and sufficient justification can be submitted by the Beneficiary to Proximus.

5.4.2 Dedicated VLANs

[31-33.](#) There is no pre-provisioning of the Dedicated VLANs. Each Dedicated VLAN is configured by Proximus at the moment of the implementation of the End-User line.

[32-34.](#) The configuration of Dedicated VLANs for GPON lines is described in Annex 2.

5.4.3 Single VLANs

~~33-35.~~ The Beneficiary will order bandwidth for each p-bit and more precisely Single VLANs between each TITAN LEX in which the Beneficiary wants to connect End-Users and where Proximus installed OLTs and the Proximus Service PoP(s) to which the Beneficiary is connected. Each Beneficiary may order up to 2 VLANs per TITAN LEX.

~~34-36.~~ The bandwidths that can be ordered by the Beneficiary between a TITAN LEX and an OAL in a Proximus Service PoP are summarized in the following table, in function of the service qualities chosen by the Beneficiary for the related VLANs.

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

Offered VLAN Bandwidth (Mbps)	P=0	P=1	P=2	P=3	P=4	P=5
440	Y	Y	N	N	N	N
460	Y	Y	N	N	N	N
480	Y	Y	N	N	N	N
500	Y	Y	N	N	N	N
600	Y	Y	N	N	N	N
700	Y	Y	N	N	N	N
800	Y	Y	N	N	N	N
900	Y	Y	N	N	N	N
1gig	Y	Y	N	N	N	N
2gig	Y	N	N	N	N	N
3gig	Y	N	N	N	N	N
4gig	Y	N	N	N	N	N
5gig	Y	N	N	N	N	N
6gig	Y	N	N	N	N	N
7gig	Y	N	N	N	N	N
8gig	Y	N	N	N	N	N
9gig	Y	N	N	N	N	N
10gig	Y	N	N	N	N	N

Offered VLAN Bandwidth (Mbps)	Session signalling p-bit
1	Y
2	Y
3	Y

35-37. Higher bandwidths could be possible in the future, if reasonable and sufficient justification can be submitted by the Beneficiary to Proximus.

5.5 Interconnection with Proximus at LEX/Central Office level

36-38. In addition to the connection of the Beneficiary on Service PoP level described in the above sections of this chapter, which allows the Beneficiary to use Bitstream services to connect End-Users of the whole Service Area, the Beneficiary may also interconnect with Proximus at LEX (i.e. Central Office) level.

37-39. The interconnection with Proximus at LEX (i.e. Central Office) level is defined in Annex 2 – Technical Specifications of the present reference offer.

5.6 Activation of Bitstream Fiber PON on a specific End-User line

~~38~~40. Subject to the condition that the Beneficiary has ordered the necessary infrastructure (OLO Access Line and Shared or Single VLAN(s) for the Bitstream Fiber PON service), the Beneficiary will be able to offer to End-Users services based on the Fiber PON technology, using the installed and existing Fiber Network infrastructure of Proximus and JVs, pursuant to the technical limitation of this existing infrastructure for offering Fiber PON technology.

~~39~~41. When the Remote Installation Method as further described below is not possible (or not wished by the Beneficiary), a Proximus or Partner Technician (as well as a JV Technician when applicable) will install the Bitstream Fiber PON service at End-User premises according to the Beneficiary's orders submitted to Proximus through the MSO SOA interface or the GUI. For further details regarding the MSO ordering and the Partner Technician types, reference is made to the Annex "Planning & Operations".

~~40~~42. Proximus is able to configure the individual lines of End-Users at the OLT level on the basis of the following characteristics:

- With Shared VLANs:
 - Maximum 4 VLANs per End-User line, each dedicated to a different service quality. The 4 service qualities are:
 - P=0: best effort.
 - P=1: low priority.
 - P=3: medium priority.
 - P=5: highest priority and better performance for jitter and delay sensitive traffic.
 - The VLANs of different Beneficiary's End-User lines are aggregated per service quality and per LEX and transported in 1 Shared VLAN to a Service PoP where an Access Line of the Beneficiary is connected.
- With Dedicated VLANs:
 - Maximum 4 Ethernet service qualities per GPON connection, each service quality being differentiated by the Ethernet p-bit (P). The 4 service qualities are:
 - P=0: best effort.
 - P=1: low priority.
 - P=3: medium priority.
 - P=5: highest priority and better performance for jitter and delay sensitive traffic.
 - The VLANs of an individual Beneficiary's End-User line are transported transparently in 1 Dedicated VLAN to a Service POP where an Access Line of the Beneficiary is connected.
- With Single VLANs:
 - Maximum 7 Ethernet service qualities per PON connection, each service quality being differentiated by the Ethernet p-bit (P). The 7 service qualities are:
 1. P=0: best effort.
 2. P=1: low priority.
 3. P=2: medium priority.
 4. P=3: medium priority.
 5. P=4: medium priority.
 6. P=5: highest priority.
 7. Session signalling p-bit.

- The Single VLAN traffic of different Beneficiary's End-User lines connected on the same TITAN LEX is transported in 1 VLAN to a Service PoP where an Access Line of the Beneficiary is connected.
- A rate limiting is applied in upstream and downstream, on the flows of the UNI, according to the rate limiting type specified for each line individually by the Beneficiary. The Beneficiary can use the rate limiting types defined in a common pool of profiles and/or in its own dedicated pool. For the list of available rate limiting types, reference is made to the Annex "Technical Specifications", section "VLAN ID allocation and QoS at UNI" of the present reference offer.

5.7 Fiber PON infrastructure at End-User premises

5.7.1 General

41.43. A Living Unit (LU) corresponds to the dwelling used by one family or one group of persons:

- An **SDU** (Single Dwelling Unit) corresponds to a building used by one family or one group of persons, identified as one single End-User.
- An **MDU** (Multi Dwelling Unit) corresponds to a building used by several families or several groups of persons, each identified as one single End-User.

The word "LU" or "Living Unit" covers both Residential and Business Living Units as well as Service Units such as elevator or security lines.

42.44. The figure 34 schematizes the Fiber PON infrastructure needed in a Living Unit to provide a Bitstream Fiber PON service.

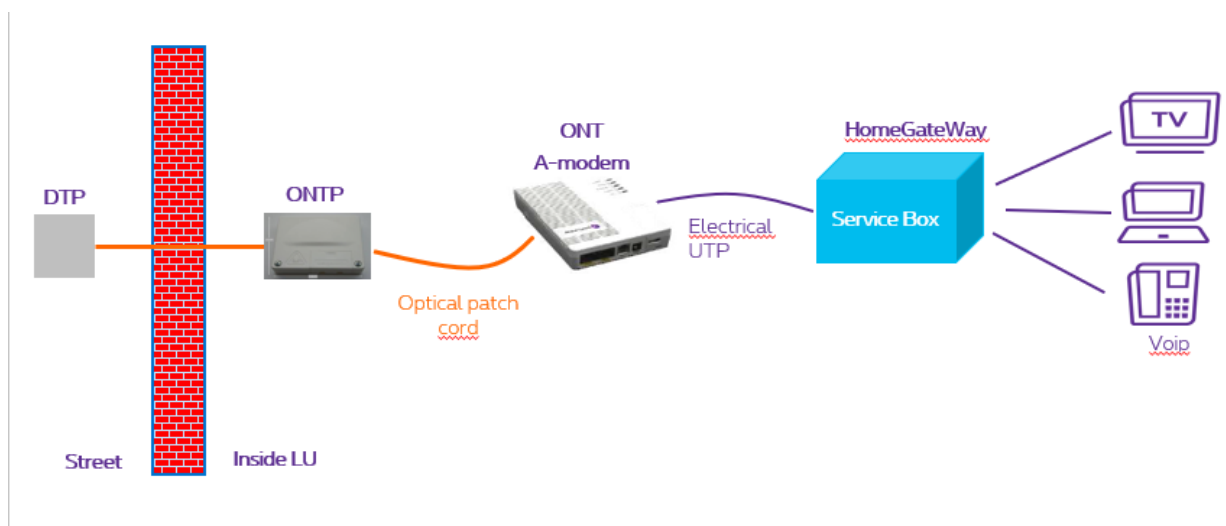


Figure 34: Fiber PON infrastructure needed in a Living Unit

5.7.2 Optical Network Termination Point

~~43-45.~~ The Optical Network Termination Point (ONT) is the first termination point of the fibre connecting the Living Unit to the PON. In the Proximus Fiber Access Network, the Optical Network Termination Point is a part of the Proximus network owned by Proximus whereas in the JV Fiber Access Network, the Optical Network Termination Point is owned by the JV.

~~46.~~ In the Proximus Fiber Access Network, the ONTP is always installed by a splicer (a Proximus splicer or a Third Party splicer working for Proximus, selected or not via the Partner Splicing functionality) in the Living Unit or in the technical room (for some MDUs). In the JV Fiber Access Network, the JV company is responsible for the installation of the ONTP.

5.7.3 Optical Network Terminal and Service Box

~~44-47.~~ The Optical Network Terminal (ONT), connected to the ONTP, is an optical modem. It's an active network element managed via the OLT and it's a part of the Proximus network. Two main types of ONT are used in the Proximus network: GPON ONT and XGS-PON ONT. There is no ONT supporting both standards at the same time. Note that it is not planned to swap an XGS-PON with a GPON ONT because the XGS-PON ONT can also support Shared and Single VLAN PON products up to 1 Gb/s.

~~45-48.~~ The ONT is managed by PON in-band channel, called **ONT Management and Control Interface (OMCI)** as defined in ITU-T Recommendations G.984 and G.9807.

~~46-49.~~ Depending on the Proximus engineering design, the GPON ONT with four ports will get one of the two functionalities described hereafter:

- Shared ONT aims to connect up to 4 IPs in the context of an MDU with ethernet vertical cabling.
- Multiple Service ONT aims to activate different services from different operators by IP.

The GPON ONT with one port will get maximum one IP address and will deliver one service from one operator.
The XGS-PON ONT is an ONT with one single LAN interface at 10 Gb/s.

~~47-50.~~ Depending on the minimum Installation Method required to perform the activation, the ONT will be installed by a Proximus or Partner Technician in the Living Unit (for 1-port GPON or XGS-PON ONT or 4-ports GPON ONT for Multiple Service ONT) or in the technical room (for Shared ONT).

~~48-51.~~ The access to the high bandwidth at End-User premises will be at the ONT Ethernet port, which is the Proximus network demarcation point, where the Beneficiary or the Beneficiary's End-User will connect its LAN or its Service Box. The **Service Box** will be provided, installed and connected to the ONT by the Beneficiary or the Beneficiary's End-User, according to the requirements set forth in Annex 2, "Technical Specifications", section "Service Box".

5.7.3.1 For SDU

~~49-52.~~ The ONT and the optical patch cord⁴ connecting it to the ONTP are provided and installed by a Proximus or Partner Technician in the SDU.

5.7.3.2 For MDU equipped with optical fibre structured cabling

~~50-53.~~ For MDUs where a complete **optical fibre** structured cabling is available from a Building Distribution Frame Optical (BDFO) inside a technical room to the different LUs, each ONT is provided, connected to the structured cabling and installed by a Proximus or Partner Technician in the Living Unit, and connected to the ONTP through the correct and working optical fibre structured cabling.

5.7.3.3 For MDU equipped without optical fibre structured cabling

~~51-54.~~ For MDUs where a complete optical fibre structured cabling is not available from a Building Distribution Frame Optical (BDFO) inside a technical room to the different LUs, the ONT and the optical patch cord connecting it to the ONTP are provided and installed by a Proximus or Partner Technician in the technical room of the MDU.

~~52-55.~~ In this exceptional case and also as a general rule, the Beneficiary should ensure that the electrical connectivity after the ONT is of carrier grade quality to guarantee flawless high speed multi-Gbps throughputs. The connectivity (including cabling, connectors, (wall)sockets, shielding,...) should be compliant with the standards that apply for these transport speeds, considering that the length and even the possible presence of interference sources should be taken into account.

~~53-56.~~ It is the Beneficiary or the Beneficiary's End-User responsibility to connect the ONTs installed and configured by a Proximus or Partner Technician to the Living Units through the structured cabling.

5.8 Bitstream Fiber PON End-User line installation

5.8.1 General

57. The present section refers in particular to the Proximus Fiber Access Network. Only a subset of the below-mentioned statuses is applicable to the JV Fiber Access Network as a result of the JV network documentation. It is the JV's responsibility to build out the feeder network between the PoPs and distribution network (resulting in a Home Passed network) as well as the Access network (Home Terminated, also known as Home Connected at JV side).

~~54-58.~~ Three (3) different types of Installation Methods relating to Bitstream Fiber PON End-User lines are possible in function of the connectivity status of the Fiber PON Installation Point (IP): Home New, Street Passed, Home Passed, Intro Building, Floorbox Terminated, Home Terminated, Home Connected or Home Activated.

⁴ For maximum distances of the optical patch cord installed by Proximus, reference is made to the section "With Customer Visit" of the present document.

55-59. The Fiber PON Installation Point (IP) defines the installation point within a Fiber PON deployment zone (FTTH Greenfield, FTTH Brownfield or FTTB) on which the ordered fiber product needs to be installed. The IP consists of two parts: the UTAC and the UNI, which are described in the section “Identifiers of the End-User line and the End-User Living Unit” of the present document.

56-60. The connectivity status (or IP status) depends on different criteria: the Living Unit situation (inside or outside a Fiber PON deployment zone), the OLT presence, the OFP presence, the DTP presence, the ONTP presence, the GPON or XGS-PON ONT presence and the presence of a Fiber PON service.

57-61. The IP status represents the status of 1 fibre terminating in (or available for) the Living Unit. Depending on the design, we have at least 1 terminating fibre per Living Unit.

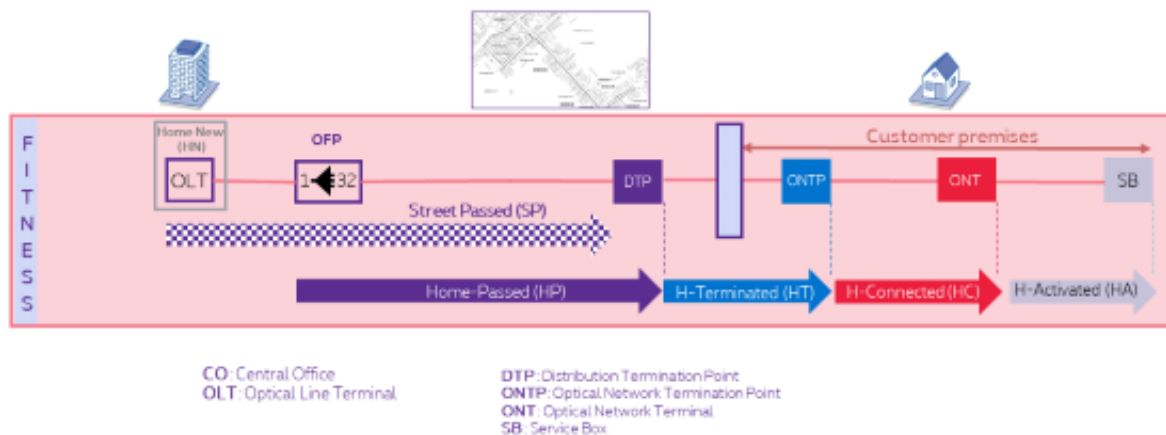
- Home New [HN] is set for a new fibre termination that has been designed/planned by Proximus engineering.
- Street Passed [SP] is set when OFP [Optimized Fiber Point] has been successfully installed.
- Home Passed [HP] is set when DTP [Distribution Termination Point] has been successfully installed.
- Intro Building [IB] is set when Fiber cable enters the building in the context of an MDU or when UTP cable enters the LU in the context of an MDU with Ethernet vertical cabling.
- Floorbox Terminated [FT] is set when the Floorbox has been successfully installed on the floor in the context of an MDU (FT is only possible for MDUs with vertical cabling in fiber – not for MDUs with Ethernet vertical cabling).
- Home Terminated [HT] is set when ONTP has been successfully installed.
- Home Connected [HC] is set when ONT has been successfully installed and configured.
- Home Activated [HA] is set when (at least) a service is activated.

58-62. The Building Termination status represents the aggregated status of the building:

- Building New [BN]: all IPs in the building are Home New.
- Street Passed [SP]: all IPs in the building are Street Passed.
- Building Passed [BP]: all IPs in the building are Home Passed.
- Building Terminated [BT]: all IPs in the building are Intro Building (only for MDU).
- Building Floorbox Terminated [BFT]: all IPs in the building are Floorbox terminated (only for MDU).
- Building Home Terminated [BHT]: all IPs in the building are Home terminated.

59-63. The figures below schematically summarize the different connectivity statuses allowed in (i) an SDU and (ii) an MDU.

PON Network : HL connectivity status (SDU)



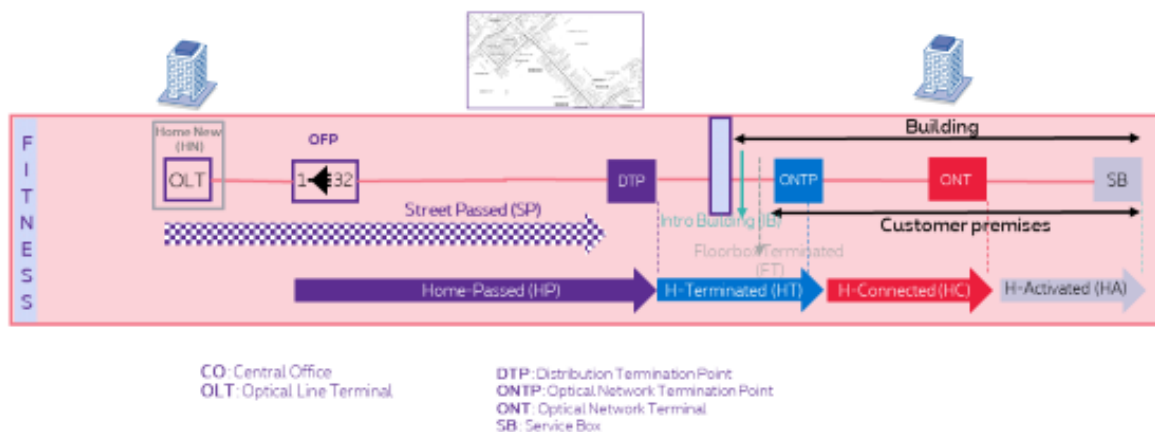
24/03/2022

Sensitivity: Confidential

Slide 29

Figure 45: HL connectivity status (SDU)

PON Network : HL connectivity status (MDU)



24/03/2022

Sensitivity: Confidential

Slide 30

Figure 56: HL connectivity status (MDU)

60-64. Independently of the minimum Installation Method required to activate the Bitstream Fiber PON service, the Beneficiary or the Beneficiary's End-User is always responsible for the delivery, installation and connection of the Service Box to the ONT:

- o placed inside the Living Unit (for SDU and MDU with optical fibre structured cabling),
- o or placed inside the technical room of the MDU, through the MDU structured cabling (for MDU with electrical structured cabling).

5.8.2 Home Termination ~~for SDU~~ on the Proximus Fiber Access Network

65. The Beneficiary may order a Wholesale Home Termination on the Proximus Fiber Access Network according to the status of the latter. This is applicable to both SDUs and MDUs.

61-66. For example, in case an SDU is “new” or “passed” (“Home New”, “Street Passed” or “Home Passed”) according to the definition explained above, the Beneficiary may order a Wholesale Home Termination to Proximus for this Living Unit, to make it ready for a possible later activation of a Bitstream Fiber PON service. A More specifically, a Home Termination for an SDU consists of the following:

- o If SDU is “Home New”: the delivery and installation by Proximus of the OFP & DTP outside the Living Unit and the delivery and installation by Proximus of the ONTP inside the Living Unit and its connection to the PON.
- o If SDU is “Street Passed”: the delivery and installation by Proximus of the DTP outside the Living Unit and the delivery and installation by Proximus of the ONTP inside the Living Unit and its connection to the PON.
- o If SDU is “Home Passed”: the delivery and installation by Proximus of the ONTP inside the Living Unit and its connection to the PON.

62-67. On the private domain, duct or trench must be provided by the Beneficiary or its End-User.

68. The Wholesale Home Termination will only be performed upon specific request of the Beneficiary and provided that the Proximus standard conditions for access are fulfilled. This requires that a free duct or an open trench is available on the private domain. If neither a free duct nor an open trench is available on the private domain, Proximus can be asked to also perform this part of the work (or have it performed) on condition that the Beneficiary agrees to pay the price for that part of the work performed by Proximus or Proximus’ Third Party. This price will be determined on a case-by-case basis according to a cost estimate if the Beneficiary allows it.

63-69. Proximus will only perform the Wholesale Home Termination provided that the installation address is eligible for such access. An installation address located in a JV zone is not eligible.

64-70. In case no more free fibre is available in the Distribution Cable, the request for Wholesale Home Termination will be discarded. The construction or trenching of new distribution cabling, another DTP than the one designed by Proximus engineering or new feeder cabling is outside the scope of the present offer.

65-71. An order for Wholesale Home Termination may occur independently of a Bitstream Fiber PON service order. Once realized by Proximus, a Wholesale Home Termination may be used by any Beneficiary to order a Fiber PON service for the concerned End-User, based on

any Fiber PON services offered by Proximus, or by Proximus itself to provision a Retail Fiber PON service.

~~66.72.~~ The Wholesale Home Termination Product will always be installed by splicers (Proximus splicers or Third Party splicers working for Proximus).

5.8.3 With Customer Visit splicing included

~~67.73.~~ In case a Living Unit or building within a FTTH Greenfield zone has the connectivity status “Home New”, “Building New”, “Street Passed”, “Home Passed”, “Building Passed”, “Intro Building”, “Building Terminated”, “Floorbox Terminated” or “Building Floorbox Terminated” according to the definition explained above, Proximus will report as minimum Installation Method required a **“With Customer Visit splicing included”** for the activation of the Bitstream Fiber PON service for this Living Unit or building.

~~68.74.~~ In case a Living Unit or building within a FTTH Brownfield or FTTB zone has the connectivity status “Home Passed”, “Building Passed”, “Intro Building”, “Building Terminated”, “Floorbox Terminated” or “Building Floorbox Terminated” according to the definition explained above, Proximus will report as minimum Installation Method required a **“With Customer Visit splicing included”** for the activation of the Bitstream Fiber PON service for this Living Unit or building.

~~69.75.~~ When the minimum Installation Method required to activate the Bitstream Fiber PON service is a “With Customer Visit splicing included”, the following works will be executed:

- o ~~Patching works in the JV PoP (when applicable).~~
- o Fibre splicing or termination works (~~splicing underground, splicing façade and/or splicing indoors as described in the Annex “Planning & Operations”~~) including the ONTP installation. These termination works are also referred to as “Small Network Adaptations” or SNA.
- o Activation works at End-User premises including the GPON or XGS-PON ONT installation and configuration.

~~70.76.~~ Once the ONT is installed in the LU, this installation includes the delivery and placement⁵ of an optical patch cord of ~~0.5~~ 1, 3 or 5 meters maximum (~~or occasionally more~~) between the ONTP and the ONT.

~~71.77.~~ An upgrade of the Installation Method is not possible

~~72.78.~~ Reference is made to the above section “Home Termination ~~on the Proximus Fiber Access Network for SDU~~” for the aspects related to the works on private domain.

~~73.79.~~ SNA and additional works on private domain in ~~the~~ FTTB zones ~~and in the least accessible and least densely populated JV zones~~ always require a site survey and the creation of a cost estimate.

⁵ Only in case of no vertical cable and no drilling work. The optical patch cord is placed in an existing cable gutter.

5.8.4 With Customer Visit

~~74-80.~~ In case a Living Unit or building has the connectivity status “Home Terminated” or “Building Home Terminated” according to the definition explained above, Proximus will report as minimum Installation Method required a **“With Customer Visit”** for the activation of the Bitstream Fiber PON service for this Living Unit or building.

~~75-81.~~ When the minimum Installation Method required to activate the Bitstream Fiber PON service is a “With Customer Visit”, the following works will be executed:

- o Patching works in the JV PoP (when applicable).

- o Activation works at End-User premises including the GPON or XGS-PON ONT installation and configuration.

~~76-82.~~ If the ONT is installed in the LU (in case of SDU or MDU with optical fibre structured cabling), this installation includes the delivery and placement⁶ of an optical patch cord of 0.5, 1, 3 or 5 meters maximum (or occasionally more) between the ONTP and the ONT.

~~77-83.~~ An upgrade of the Installation Method is not possible.

5.8.5 Remote

~~78-84.~~ In case a Living Unit is “Connected” or “Activated” according to the definition explained above, Proximus will report as minimum Installation Method required a **“Remote activation”** of the Bitstream Fiber PON service for this Living Unit.

~~79-85.~~ When the minimum Installation Method required to activate the Bitstream Fiber PON service is a “Remote”, the Beneficiary will not be able to select a technician type given the absence of field work to perform in the Proximus network.

~~80-86.~~ An upgrade of the Installation Method towards a “With Customer Visit” is however possible.

5.8.6 Swap GPON ONT to XGS-PON ONT

~~81-87.~~ In case a GPON ONT is already installed and the Beneficiary requires an XGS-PON ONT for a service above 1 Gigabit, Proximus will swap the GPON ONT with an XGS-PON ONT. It is not foreseen to swap an XGS-PON with a GPON ONT because the XGS-PON ONT can also support Shared and Single VLAN PON products up to 1 Gb/s.

⁶ Only in case of no vertical cable and no drilling work. The optical patch cord is placed in an existing cable gutter.

6 Operational Processes

82.88. The provisioning and repair processes for the OAL, the VLANs and the End-User lines are detailed in the Annex 3, "Planning & Operations" of the present reference offer.

7 Pricing, Compensations and Billing

~~83-89.~~ Principle: all Standard Fees as described in Annex 5, “Pricing, Compensations & Billing” of the present reference offer will be invoiced to and are to be paid by the Beneficiary whenever relevant.

~~84-90.~~ 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 Annex 5, “Pricing, Compensations & Billing” of the present reference offer.

8 Identifiers of the End-User line and the End-User Living Unit

8.1 UTAC, UNI & UTAC/UNI

~~85-91.~~ The **UTAC** is the identifier of the **fibre terminating on the Optical Network Termination Point** [ONTP] or the BDFO (Building Distribution Frame Optical used in some SDU/MDU), part of the Fiber PON access network. Only 1 Optical Network Terminal [ONT] can be connected on this fibre.

The UTAC can be allocated when the fibre is installed by the Proximus or Partner Technician at a certain Living Unit located at a certain installation address. The UTAC is independent from the services provided on the Fiber PON access.

Its format is described below:

GS1 Company Prefix > < Individual Asset Reference >

X1... X7

X8... X18

54 **13729**⁷

9 999 999 999 X

UTAC examples: 54 1372 9000 0000 001**2**, 54 1372 9000 0000 002**9**

UTAC is the unique identifier of the Wholesale Termination Product.

~~86-92.~~ The **UNI** is the identifier of the **Ethernet port** on the ONT.

Then, for a given End-User, 1 Ethernet service will be provided on 1 UNI of the ONT connected on the "terminated" fibre identified by 1 UTAC.

UNI format is x-y where x = slot (always 1) and y = port (1, 2, 3 or 4)

The UNIs for the 4-ports GPON ONT are : 1-1, 1-2, 1-3 or 1-4.

The UNI for the 1-port GPON or XGS-PON ONT is 1-1.

⁷ X1...X7 always remains fixed as

54 is the identifier of Belgium.

13729 is the identifier of Proximus PLC under Belgian Public Law. Each JV has its own identifier (for example, the company UTAC prefix for Fiberklaar is 5430002843 while it is 5430002977 for Unifiber).

~~87~~93. The UTAC/UNI is the combination of the two here-above mentioned identifiers (UTAC & UNI) and refers to the Fiber PON installation point ID. This combination can be used by the Beneficiary to determine the detailed installation address for the provide-like order types.

~~88~~94. In the context of a Multiple Service ONT, the first free UNI of the IP will always be used for a new activation.

8.2 Circuit ID (CID)

~~89~~95. The CID is the unique identifier of the **Ethernet service** provided on the ONT.

CID is the identifier of the Proximus wholesale (including Bitstream) and retail (Fast Internet) Fiber PON services.

8.3 NA (Subscriber Number)

~~90~~96. The NA is the identifier of the Proximus voice over IP service.

8.4 Detailed installation address

~~91~~97. The **detailed installation address** is for all providers the identifier of the **Living Unit** of the End-User.

8.5 SSID

~~92~~98. The SSID is the identifier of the **Proximus TV/Multicast** service.

9 Unique reference per End-User line

93.99. In case a Beneficiary sends a request to take over a ~~Bitstream~~ Fiber PON service from Proximus (whether retail or wholesale) or from another Beneficiary Owner Telco (i.e. a telecom operator using its own OLT-ONT active components on the JV network) or a Proximus retail Fiber PON service, there will be an issue in the identification of the fibre on addresses with for example more than one fibre in service.

94.100. With the MSO “Location Check” and “Active Installation Check” functionalities, the Beneficiary will be able to validate the input given by the End-User with the internal Proximus IT system(s). The validation can be done by using the installation address or the service identifier (NA for the Voice, CID for the Internet service and/or SSID for the TV service) or the Fiber PON installation point ID (whether specified by the UTAC/UNI or only the UTAC). The location check is a mandatory step for Provide, Change Operator, Swap Telco and Move orders. The location check based on the service identifier or Fiber PON installation point ID will provide the most reliable and precise installation address information.

95.101. The Circuit ID that has been communicated by Proximus at the provisioning of a new Bitstream Fiber PON service (or of any other new Proximus ~~Fast Internet wholesale or retail~~ Fiber PON service) is a unique reference that will identify both the service and the ONT UNI.

96.102. Communicating such unique service identifier on the bills and contracts sent by the Beneficiary to the End-User for the Bitstream Fiber PON service provided on the basis of the present reference offer will help facilitate the change of operator on the Proximus network. Such communication will allow the End-User to provide the Beneficiary – as recipient operator – with the Circuit ID to enable a seamless Change Operator process. As a matter of fact, the systematic inclusion of the Circuit ID in the orders will allow to avoid identification problems.

97.103. The Proximus Fast Internet Fiber PON retail service is identified by a Circuit ID which can be found on the End-User invoice.

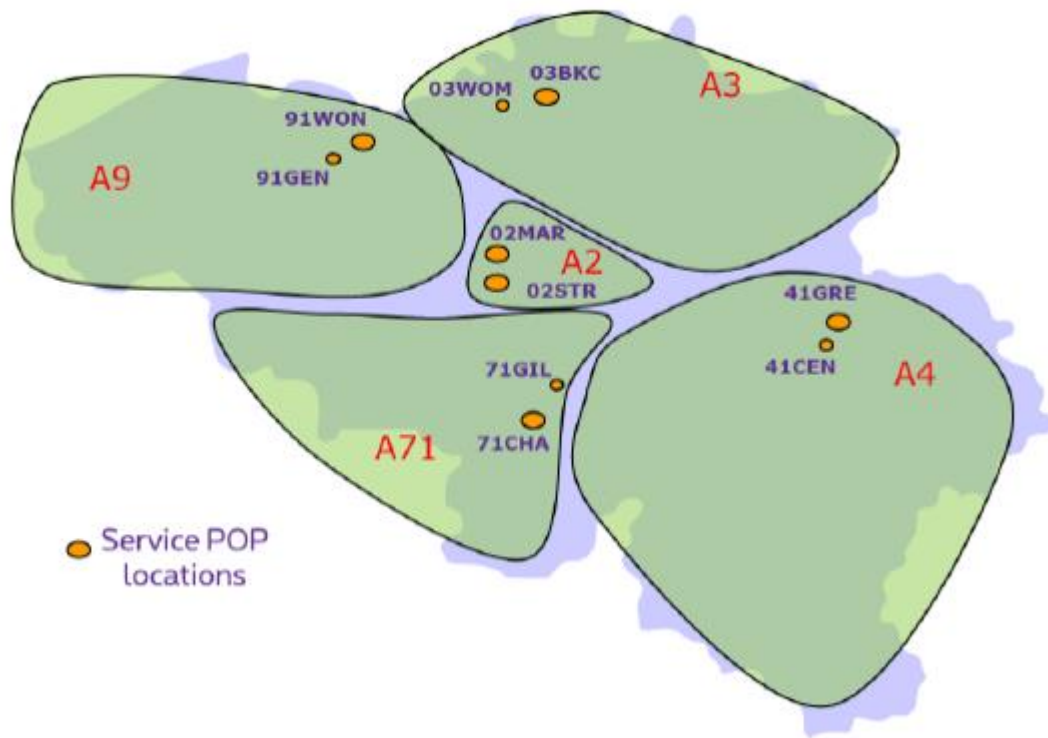
98.104. As long as the Bitstream Fiber PON service remains active for the same Beneficiary, the service identifier will remain the same. For further details on the service identifier behaviour, reference is made to the “MSO User Guide” documented on the secured wholesale personal page.

99.105. The Beneficiary will also provide in each repair case the service identifier (Circuit ID) that was provided by Proximus in the provisioning process.

Appendix A: List of Service Areas and Service PoPs

a. Overview

5 Service Areas and 10 Service PoPs



b. Definition of the Service Areas

Service Area	Included Telephone Zones
A3:	03, 011, 012, 013, 014, 015, 016, 089
A2:	02
A4:	019, 04, 061, 063, 080, 081, 082, 083, 084, 085, 087
A71:	010, 060, 064, 065, 067, 068, 069, 071
A9:	050, 051, 052, 053, 054, 055, 056, 057, 058, 059, 09

(*): For the sake of clarity, it is confirmed that the zone codes indicated above in the context of the present offer are limited to the numbers which identify fixed network termination points. In particular, 09 and 04 are respectively limited to the number series 092, 093 and 042, 043. As far as the code 080 is concerned, the numbers starting with 0800 are excluded.

c. List of Service PoPs

Area		City	Address	NCOW
A9	91WON	Gent - Wondelgem	Zeeschipstraat 209	9265
A9	91GEN	Gent - Centrum	Sint Niklaasstraat 27	9223
A3	03WOM	Antwerpen - Wommelgem	Jacobsveldweg 15	3224
A3	03BKC	Antwerpen - Berchem	Karel Coggestraat 2	3227
A2	02MAR	Brussels - Marais	Rue du Marais - Broekstraat 72-74	2220
A2	02STR	Brussels - Paille	Rue Lebeau - Lebeauststraat 2	2513
A71	71GIL	Charleroi - Gilly	Sentier de la Limite 80	7141
A71	71CHA	Charleroi - Centre	Rue de la science 2	7127
A4	41CEN	Liège - Centre	Rue de l'université 30	4223
A4	41GRE	Liège - Grétry	Rue d'Harscamp 17	4349

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