TLN WRO Technical Processes type Document

< Co-location and physical interconnect >

Document Housekeeping

Document Category and type

CAT	TYPE	DOC ID	Comment
Technical Processes	TPRC	TLN_WRO_TA_T_T_PAAA	Technical Process type documents (TPRC) describes technical procedures for exchanging information and interacting between Telenet and the AO.

Document Status

EDITION	DATE	STATUS
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List of Appendixes

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1   Abstract

This document describes the co-location procedures that will be in effect to allow the AO to connect its infrastructure to the TLN network interfaces.

2   Technical process: < Co-location procedures>

2.1 Detailed scope and purpose

(1) This procedure governs the procedures that will be in place in order to realize the necessary Ethernet interconnections between the Telenet Network and the AO network in the locations as required by the TLN WRO.

(2) The physical interconnections between Telenet and the AO will be located in one or multiple Telenet Switching Offices (SO). Traffic is routed over these interconnect links between Telenet and the AO. If need be, traffic can be logically separated by means of VLANs (802.1q) over the interconnect links.

(3) In case the AO whishes to do so Telenet offers the possibility for physical co-location at the Telenet RPOI's.

2.2 Application domain

(4) This technical process is applicable in all cases where an AO wants to become a Beneficiary for any of the Telenet Reference Offers:

- Telenet Reference Offer Basic TV (ROTV)
- Annex Interactive Services (AIDTV) (option on ROTV)
- Telenet Reference Offer Broadband Services (ROBB)

(5) The precise interconnection requirements are described further in section 5 of this document.

2.3 Short description of procedure

(6) During the initial implementation and test technical project, the interconnection requirements will be reviewed to the various available options as described in section 3 of this document.

(7) After agreement, the realization of the interconnection(s) will then become part of the overall initial implementation plan and will be governed by the same SOW.

2.4 Procedure specific time tables

(8) The implementation of interconnect links will be realized in a "project" mode as part of the initial implementation project. The realization time for the links will typically be dependent mostly on the time required to implement the physical fiber links. Even in the case where the AO decides to order commercial products from the TLN carrier division, implementation lead time can only be given once concrete AO location(s) are known and TLN has had the opportunity to verify the connectivity options for its fiber network in this location(s) and can asses eventual required "fiber lay" works.

(9) Once the fiber cable is in place and the AO has installed and activated the required optical xWDM equipment, typically a "commissioning" period of 4 calendar weeks will apply, during which TLN will activate and test the connection in an end to end way and enables it for data transport.

3   Technical process: < Telenet Co-location procedures>

3.1 Introduction

(10) In order to allow an AO to make use of the TLN WRO, technical Ethernet interconnection(s) will need to be realized between the Telenet Network and the AO network in various locations. Physical interconnect(s) between Telenet and the AO can carry the IP traffic from multiple Telenet sites, the Switching Office (SO) locations, for a given TLN Reference Offer. If required, this traffic could be logically separated on the same physical link by means of VLANS.

3.2 General architecture physical interconnects

(11) There will be minimum one redundant physical interconnection in one of the RPOI's. This physical connection will be used for BB traffic which is aggregated for all RPOI traffics carried by VLANs.

(12) In case the AO wants to start with only one interconnection, the RPOI will be in one of the regions to be selected by Telenet.
The Telenet RPOI's are located in the following reqions Asse, Hoboken, Mechelen, Gent and Hasselt.
The addresses of the RPPOI's are respectively:

Hoboken: Boombekelaan 14, 2660 Hoboken
Asse: Brusselsesteenweg 464, 1730 Asse
Gent: Bomastraat 11, 9000 Gent
Hasselt: Gouverneur Verwilghensingel 32, 3500 Hasselt
Roeselare: Hof ter Weze 10, 8800 Roeselare

Geo Back-up site: Mechelen: Liersesteenweg 4, 2800 Mechelen

(13) There will be a restriction for the aggregated bandwidth of logical RPOI links. If these links exceed a certain bandwidth, more physical RPOI connections need to be added.
The order in which the RPOI's need to be added will be defined by Telenet taking into account the characteristics of the AO traffic resulting from the AO end-users. The purpose of adding RPOI's should be to have the traffic spread out evenly throughout the Telenet network bearing in mind that offload of the AO traffic should be done as close to the source as possible.

(14) For VOD, there will be a second redundant physical interconnection in one of the RPOI's. This physical connection will be used for VoD traffic which is aggregated for all RVSA traffics carried by VLANs.

(15) There will be a restriction for the aggregated bandwidth of logical RVSA links. If these links exceed a certain bandwidth, more physical RVSA connections need to be added.

In principle no AO networking equipment is required in the Telenet facilities. The AO installs his equipment in its premises and brings an optical connection from its network equipment towards the relevant Telenet buildings. However, if the the AO whishes to do so Telenet offers the possibility for physical co-location at the Telenet RPOI's.

3.3 Physical interconnect types

(16) There are 2 types of physical interconnect types that may need to be realized, depending on the type of RO´s the AO subscribes to:
  o Interconnect at one of the RPOI´s (for data traffic)
  o Interconnect at one of the RPOI´s (for VOD & Management traffic)

(17) Each of the 2 physical interconnect types are realized in the same way:

- o Optical interconnect on a fiber, using xWDM as physical transport and multiplexing layer

(18) Becoming Beneficiary of the ROTV implies following physical interconnects to be realized:
- o Interconnect at one of the RPOI's for Management Link

(19) Becoming Beneficiary of the ROTV with option AIDTV implies following physical interconnects to be realized:

In the case the AO makes use of the Telenet Network for the STB return path:
- o Interconnect at one of the RPOI´s (for data traffic)
- o Interconnect at one of the RPOI´s (for VOD and Management traffic)

In the case the AO does not use the Telenet Network for the STB return path:
- o Interconnect at one of the RPOI´s (for VOD and Management traffic)

(20) Becoming Beneficiary of the ROBB implies following physical interconnects to be realized:
- o Interconnect at one of the RPOI´s (for data traffic)

(21) Besides physical Interconnect it can be required to establish virtual (VPN) connectivity over the public Internet for specific management traffic (such as provisioning, access to test environments, accounting etc)

3.4 Physical interconnect mechanics

(22) The AO incoming fiber cable(s) are mechanically fixed and terminated in the fiber shelves located on top of the AO intake rack.

(23) From the AO intake rack, TLN will make the necessary connections to the Telenet interconnect router handling the AO traffic.

3.5 Physical interconnect transport links

(24) The AO has several options for implementing the physical transport links, as described above, between its premises and the TLN location(s):

- o Making use of the commercial leased line service offering of the Telenet carrier business division that offers various solutions for implementing xWDM over optical fiber link connections as described above, between the AO premises and the TLN location(s)
- o The AO can also make use of its own fiber infrastructure and bring its fiber to the TLN location(s).
- o The AO can make use of third party fiber / leased line infrastructure providers that are capable of realizing the required connections

In addition to these cases the AO has the possibility to request co-location services at Telenet as described below.

3.6 Physical interconnect Power and HVAC supply

(25) As the TLN solution for interconnect does not require AO equipment to be located inside TLN premises there are also no requirements for power and HVAC supply applicable to AO. But when the AO rents rackspace then Telenet will provide power and HVAC. In that case requirements will be provided during initial project.

(26) The intake rack and equipment used for termination of the fiber of the AO will be powered and cooled by TLN in accordance with its own practices for such type of equipment.

3.7 Physical interconnect environmental requirements

(26) As the TLN solution for interconnect does not require AO equipment to be located inside TLN premises there are also no environmental requirements applicable to AO. But when the AO rents rackspace then Telenet will provide environmental requirements during initial project.

3.8 Physical interconnect safety requirements

(27) As the TLN solution for interconnect does not require AO equipment to be located inside TLN premises and hence there is no need for AO technical personnel to enter into TLN technical buildings there are also no safety requirements applicable to AO personnel. But when the AO rents rackspace then Telenet will provide safety requirements during initial project.

3.9 Co-location at Telenet RPOI

(28) In case the AO whishes to do so Telenet offers physical co-location at the RPOI's. Physical co-location can consist in a separate room inside the Telenet building or co-mingling. If no sufficient space is available inside the Telenet building, Telenet will analyse the possibility of outdoor location.

(29) The preferred solution for co-location that will be offered to an AO will be determined taking into account the solution provided to other AO's at the same location. Meaning that in case Telenet already built a co-location room inside the Telenet building/RPOI that provided for sufficient space for different AO's, priority should be given to this solution also for other AO's.

(30) All AO's that have subscribed to the co-location offer should exercise their rights with respect and without causing any discomfort for Telenet or other Beneficiaries using the co-location area. In any event, all technicians entering the co-location area on behalf of the Beneficiary should be reported to Telenet and need to sign the Co-location Code of Conduct included in enclosures "**TLN_WRO_TA_T_T_PAAB – Co-location Code of Conduct**".

(31) In order to set-up a co-location the Beneficiary should send a request to Telenet including the following relevant details: (i) define location of the requested co-location (which RPOI) and (ii) define timing for enabling the co-location bearing in mind the minimum time to set-up a co-location by Telenet of minimum 6 months (excluding possible fibre works).

(32) Telenet will be responsible for the technical set-up of the co-location (set-up of the rack, providing of A&B power feed, connection with the BNG's through the SR patch panel). The Beneficiary will be responsible for setting up the fibre connection with the co-location rack.

(33) Recurring costs linked to the use of the co-location are defined in the relevant enclosures "TLN_WRO_GA_G_P_PAAA _ Tarification Basic TV" and "TLN_WRO_GA_G_P_PAAB _ Tarification Bundle TV_BB".