

# **TLN WRO Technical Processes type Document**

< Co-location procedures >



## Document Housekeeping

### Document Category and type

CAT	TYPE	DOC ID	Comment
Technical Processes	TPRC	TLN-WRO-TA-T-T-PAAF	Technical Process type documents (TPRC) describes technical procedures for exchanging information and interacting between Telenet and the AO.

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### Document Effective Date

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## Table of Contents

1	Abstract .....	5
2	Glossary and Abbreviations.....	6
3	Technical process : < Co-location procedures> .....	7
3.1	DETAILED SCOPE AND PURPOSE.....	7
3.2	APPLICATION DOMAIN .....	7
3.3	SHORT DESCRIPTION OF PROCEDURE .....	7
3.4	PROCEDURE SPECIFIC TIME TABLES .....	7
4	Technical process : < Telenet Co-location procedures> .....	8
4.1	INTRODUCTION .....	8
4.2	GENERAL ARCHITECTURE PHYSICAL INTERCONNECTS.....	8
4.3	PHYSICAL INTERCONNECT TYPES .....	8
4.4	PHYSICAL INTERCONNECT MECHANICS .....	9
4.5	PHYSICAL INTERCONNECT TRANSPORT LINKS .....	9
4.6	PHYSICAL INTERCONNECT POWER AND HVAC SUPPLY.....	10
4.7	PHYSICAL INTERCONNECT ENVIRONMENTAL REQUIREMENTS .....	10
4.8	PHYSICAL INTERCONNECT SAFETY REQUIREMENTS .....	10

## List of Appendixes

This document may refer to further detailed documents that are added in Appendixes to this document.

A reference to an appendix is in this document highlighted with grey background.

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None.

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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.

The feasibility of the technical designs and methods described in this document are subject to verification by a Proof of Concept (POC) test organized by Telenet and may be changed or updated depending on the outcome of this POC.

## 2 Glossary and Abbreviations

HVAC: Heating, Ventilation and Air-Conditioning

NOC-H: Network Operations Centre- Hoboken

NOC-M: Network Operations Centre- Mechelen

RPOI: Regional Point of Interconnection

RVSA: Regional VoD Serving Area

SOW: Scope of Work

STB: Set-top-box

xWDM: non-specific form of Wavelength Division Multiplexing

### **3 Technical process : < Co-location procedures>**

#### **3.1 Detailed scope and purpose**

- (1) This procedure governs the procedures that will be in place in order to realize the necessary interconnections between the Telenet Network and the AO network in the locations as required by the TLN WRO.
- (2) The technical interconnection(s) will be physically located at one (or 2 for redundancy) physical interconnect(s) between Telenet and the AO can carry the traffic from multiple Telenet sites, typically the Switching Office (SO) locations for the respective TLN Reference Offer. This traffic will then be logically separated on the physical link by means of VLANs depending on the geographical area distinction. Typically, this is implemented through the 802.1q trunking protocol.
- (3) No AO networking equipment is required in the Telenet facilities.

#### **3.2 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.

#### **3.3 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 5 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.

#### **3.4 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 assess 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 at its premises, 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.

## 4 Technical process : < Telenet Co-location procedures>

### 4.1 Introduction

- (10) In order to allow an AO to make use of the TLN WRO, technical 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 traffic from multiple Telenet sites, typically the Switching Office (SO) locations for a given TLN Reference Offer. This traffic will then be logically separated on the physical link by means of VLANs.

### 4.2 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) There will be a restriction for the aggregated bandwidth of logical RPOI links which is 1 Gbps. If these links exceed 1 Gbps, more physical RPOI connections will be added.
- (13) 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.
- (14) There will be a restriction for the aggregated bandwidth of logical RVSA links which is 1 Gbps. If these links exceed 1 Gbps, more physical RVSA connections will be added.
- (15) 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.

### 4.3 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 :
- Interconnect at one of the RPOI's (for data traffic)
  - 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 :
- Optical interconnect on a fiber, using xWDM as physical transport and multiplexing layer
  - Further parameters and characteristics of these links are described in the ROTV, ROBB and AIDTV Reference Offer technical specification documents.
- (18) Becoming Beneficiary of the ROTV implies following physical interconnects to be realized :
- 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:
- Interconnect at one of the RPOI's (for data traffic)
  - Interconnect at one of the RPOI's (for VOD and Management traffic)
- In the case the AO makes does not use the Telenet Network for the STB return path:
- 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 :
- 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 )

## 4.4 Physical interconnect mechanics

- (22) Figure 5-1 below shows a typical interconnect layout. The AO incoming fiber cable(s) (colored lines) are mechanically fixed and terminated in the fiber shelves located on top of the AO intake rack.
- (23) Depending on the agreed redundancy options the intake may be realized with one or with two fiber cable(s).

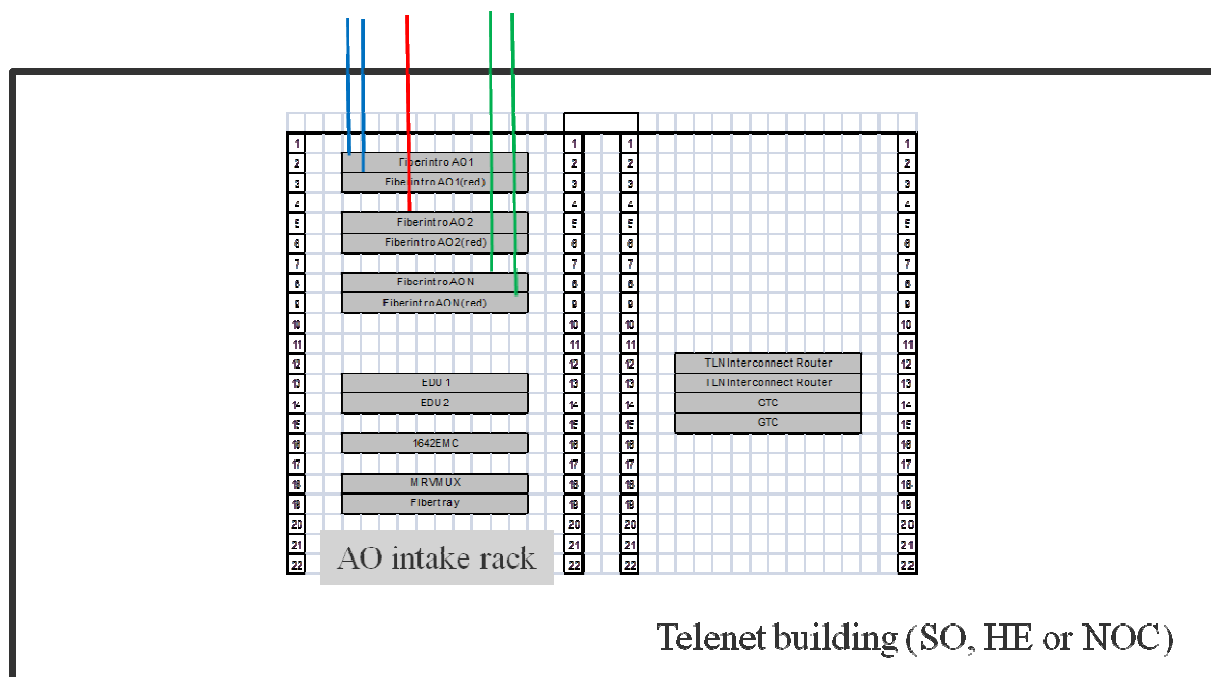


Figure 4-1

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

## 4.5 Physical interconnect transport links

- (25) The AO has several options for implementing the physical transport links, as described above, between its premises and the TLN location(s):
- 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)
  - The AO can also make use of its own fiber infrastructure and bring its fiber to the TLN location(s).
  - The AO can make use of third party fiber / leased line infrastructure providers that are capable of realizing the required connections

## 4.6 Physical interconnect Power and HVAC supply

- (26)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.
- (27)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.

## 4.7 Physical interconnect environmental requirements

- (28)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.

## 4.8 Physical interconnect safety requirements

- (29)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.