ONP 64kbit/s digital leased lines

SPECIFICATION USER-NETWORK INTERFACE (TRANSMISSION)

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1.   Introduction

This document contains the technical specifications for the PROXIMUS ONP 64kbit/s leased line service. These leased line specifications are based on a generic model as shown in annex 1. The central part of the model is the "connection". A connection includes a series of transmission channels or telecommunication circuits. It's set up to provide for the point-to-point transfer of signals between the terminal equipments of the customer.

The connection is presented to the user via an "interface presentation" at the Network Termination Point (NTP). The NTP comprises all physical connections and their technical access specifications that form part of the PROXIMUS 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 ONP 64kbit/s leased line service, the NTU is considered as being contained within the connection.

The network interface presentation offered to an ONP 64kbit/s leased line customer is based on the G703-interface. Basically, the ONP 64kbit/s digital leased lines offered by PROXIMUS *are at least conform to the ONP technical requirements ETS 300 288 and ETS 300 289.*

2. Connection characteristics

2.1. Transfer rate

2.1.1. Leased line timing

Under normal operating conditions, the timing of the leased line output signal (i.e. from the Proximus network to the customer's terminal) is the network timing[1].

2.1.2. Information transfer rate

The connection is capable of transferring information at a nominal information rate of 64kbit/s which is synchronous to the network timing.

2.2. Information transfer susceptance

The connection is capable of transferring unrestricted digital information.

2.3. Structure

The connection is capable of transferring the octet timing present at the input.

2.4. Establishment of communication

Establishment or release of the connection shall not require any protocol exchange or other intervention at the NTP by the user.

2.5. Symmetry

The connection shall be symmetrical, i.e. each direction of transmission shall have the same information transfer capability.

2.6. Connection configuration

The connection configuration shall be point-to-point.

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[1] Network timing is the timing that is derived from the source or sources of timing that are used for the whole Proximus network. Therefore, the timing provided by the leased line will be similar to that provided by other digital PROXIMUS services.

2.7. Network performance

2.7.1. Transmission delay

The one way end-to-end delay shall be less than $(10 + 0.01G)$ ms, where G is the geographical distance in kilometers.

2.7.2. Jitter

2.7.2.1. jitter tolerance at the network input port

The ONP 64kbit/s leased line shall still function as specified in this document with the maximum sinusoidal input jitter as shown in table 2.7.2.1-1.

Peak-to-peak amplitude(UI[2])		Frequency(Hz)			
A1	**A2**	**f1**	**f2**	**f3**	**f4**
0,25	0,05	20	600	3.000	20.000
Note: 0,25 UI = 3,9µs; 0,05UI = 0,78µs.					

Table 2.7.2.1-1

2.7.2.2. maximum jitter at the network output port

The maximum jitter at the output of the leased line network (at the NTP towards the customer's terminal equipment) shall not exceed the limits specified in table 2.7.2.2-1, even with input jitter as specified in subclause 2.7.2.1., when measured with first order linear filters and with the cut-off frequencies as defined in table 2.7.2.2-1;

measurement filter bandwidth		output jitter
lower cut-off (high pass)	**upper cut-off (low pass)**	**UI peak-to-peak (maximum)**
20 Hz	20 kHz	0,25 UI
3 kHz	20 kHz	0,05UI

Table 2.7.2.2-1

2.7.3. Slip

Regarding the slip, the ONP 64kbit/s digital leased line shall comply with paragraph 5.1.7.3 of ETS 300 289.

2.7.4. Error parameters

2.7.4.1. performance level

Regarding the error performance level, the ONP 64kbit/s digital leased line shall comply with paragraph 5.1.7.4 of ETS 300 289.

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[2] UI = unit interval

3. Network interface presentation

3.1. Physical characteristics

The physical connection arrangements of an ONP 64kbit/s NTP shall consist of an RJ45 connector. For information you can find in table 3.1-1 the contact assignments for this RJ45 connector. Nevertheless, PROXIMUS can offer as an option an alternative means of connection to her customers, which shall consist of a hardwired connection, using insulation displacement connectors provided by PROXIMUS.

contact	network interface
1&2	transmit pair
3	shield reference point
4&5	receive pair
6	shield reference point
7	unused
8	unused

The transmit pair is the output from the network interface.

The receive pair is the input to the network interface.

Table 3.1-1

3.2. Electrical characteristics

The electrical characteristics of the ONP 64kbit/s NTP are in accordance with paragraph 5.2 of ETS 300 288.

3.3. Safety and overvoltage protection

Regarding the safety and overvoltage protection, the NTP complies with the paragraphs 5.3 and 5.4 of ETS 300 288.

3.4. ElectroMagnetic Compatibility (EMC)

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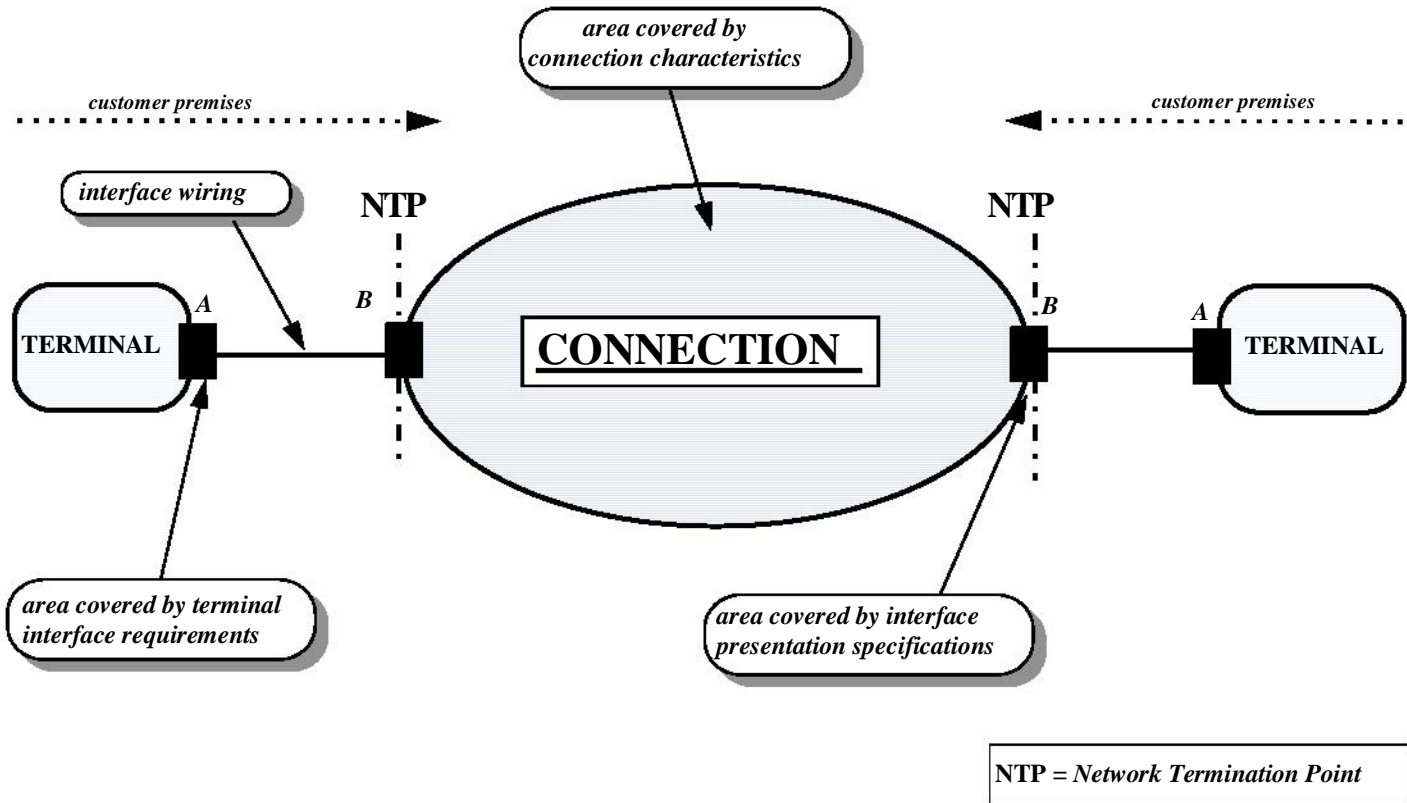
4. Terminal equipment

For connection to the NTP of an ONP 64kbit/s digital leased line, the terminal of the customer has to be approved to CTR14.

At the NTP the customer shall provide Proximus with a grounding connection point. This grounding connection point should be easily accessible, located near the NTP, and shall enable Proximus to attach a 4 mm^2 (minimum section) ground cable with lug, bolt and washer. The characteristics of the grounding connection point provided by the customer must be conform to article 69 of the actual RGIE[3]; this grounding point shall have a resistance value not exceeding 30 Ohms.

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[3] RGIE: Réglement Général des Installations Electriques

Generic model for leased lines specifications

area covered by
connection characteristics

customer premises

customer premises

interface wiring

NTP

NTP

A

B

B

A

TERMINAL

CONNECTION

TERMINAL

area covered by terminal
interface requirements

area covered by interface
presentation specifications

NTP = *Network Termination Point*

ONP 64kbit/s digital leased lines

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ANNEX 2

Definitions, symbols and abbreviations.

A) Definitions

For the purpose of these technical specifications, the following definitions apply:

Errored second
A second in available time with one or more bit errors.

Network Termination Point (NTP)
All physical connections which form part of the PROXIMUS telecommunications network and which are necessary for access to and efficient communication through the PROXIMUS network.

Octet slip
A slip of one complete octet.

Open Network Provision (ONP)
Open Network Provision (ONP) is a regulatory concept introduced by the Commission of the European Communities. It is intended to ensure "harmonized conditions for open and efficient access to and use of public telecommunications networks and, where applicable, public telecommunications services." In particular, ONP specifies a set of harmonized conditions which govern the technical interfaces (including the definitions of network termination points), conditions of use, and tariff principles of the network or service to which they are applied. The general principles of ONP are contained in the Council Directive 90/387/EEC, the "ONP Framework Directive". In addition, the leased lines are specifically covered by the Directive 92/44/EEC, the "ONP leased line Directive".

Severely errored second
A second in available time where at least 0,1% of the bits are errored.

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.

B) Symbols and abbreviations

For the purpose of these technical specifications, the following abbreviations apply:

CTR: _Common Technical Regulations._
DCE: _Data Circuit-terminating Equipment. Data_
DTE: _Terminal Equipment. Errored Seconds._
_ES:_   _International Telecommunication Union._
ITU: _Network Termination Point. Open Network_
NTP: _Provision. Parts per million._
ONP: _Réglement Général des Installations Electriques._
ppm: _Severely Errored Seconds. Unit Interval._
RGIE:
SES:
_UI:_