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34.368 kbit/s digital leased lines

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0. Document history

Every update of this document results in a complete new version with new version number and release date.

Version	Date	Main or important changes since previous version
1.1	08 FEB 1999	• …..
1.2	28 DEC 2001	• "Document history" is added. • A connection option is added.

1. Introduction

This document contains the technical specifications for the PROXIMUS 34 Mbit/s leased lines 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 34 Mbit/s leased line service, the NTU is considered as being contained within the connection.

The 34.368 kbit/s leased line provides a bi-directional point-to-point digital circuit for which no structuring of the data is provided by the PROXIMUS network.

The network interface presentation offered to a 34.368 kbit/s digital leased line customer is based on the G703-interface; 75 Ohms is the standard version.

2. Connection characteristics

2.1.   Transfer rate

2.1.1.   Leased line timing

There's no timing provided from the leased line network connection; the provision of the circuit timing is the responsibility of the customer. On the other hand, the 34.368 kbit/s leased line is capable of carrying timing provided by the customer's terminal equipment within the limits of 34.368 kbit/s $\pm$ 20 ppm as specified by ITU-T Recommendation G.703.

2.1.2.   Information transfer rate

The 34.368 kbit/s digital leased line is capable of transferring an information rate of 34.368 kbit/s $\pm$ 20 ppm.

2.2.   Information transfer susceptance

The 34.368 kbit/s digital leased line is capable of transferring unrestricted digital information.

2.3.   Structure

The connection shall not be structured by the PROXIMUS network : the full bit rate of 34.368 kbit/s shall be available to the customer for unrestricted digital information transfer.

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 customer.

2.5.   Symmetry

The connection shall be symmetrical, i.e. each direction of transmission shall have the same nominal characteristics.

2.6.   Connection configuration

The connection configuration shall be point-to-point.

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. (*In the exceptional case that a satellite transmission has to be involved for the realization of the leased line, the one way end-to-end delay shall be less than 350 ms*).

2.7.2. Jitter

2.7.2.1. Jitter tolerance at the network input port

The 34.368 kbit/s leased line shall function as specified with an input signal containing jitter with the characteristics as defined in figure 2.7.2.1-1. This requirement is taken from ITU-T Recommendation G.823.
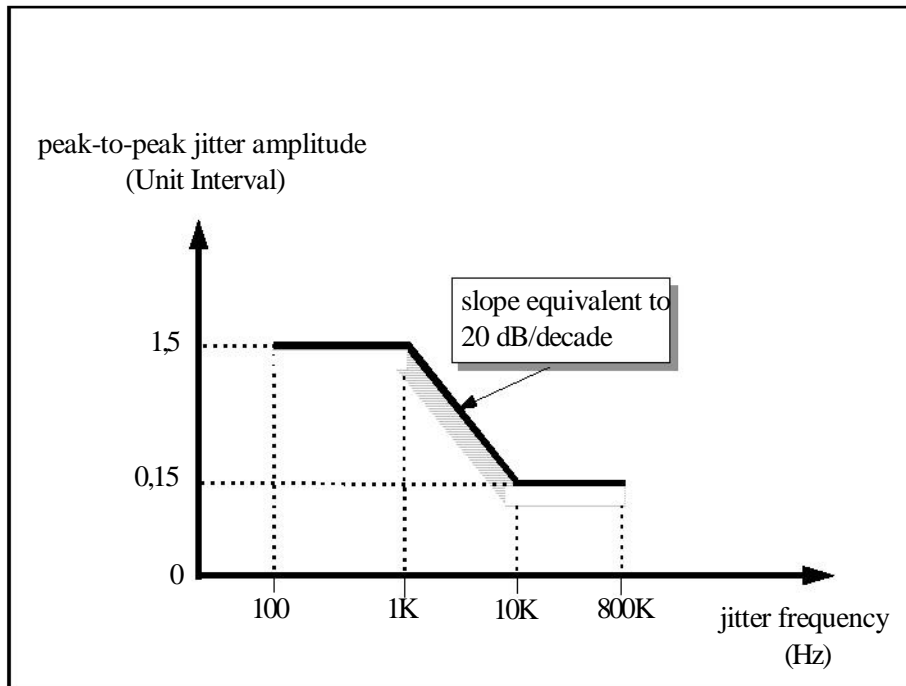

Figure 2.7.2.1-1

2.7.2.2. Maximum jitter at the network output port

The maximum jitter at the output port from the 34.368 kbit/s digital leased line (i.e. at the NTP towards the customer's terminal equipment) shall not exceed the network limits as specified in table 2.7.2.2-1, when measured with first order linear filters with the defined cut-off frequencies. This requirement is taken from ITU-T Recommendation G.823.

measurement filter bandwidth		output jitter
lower cut-off (high pass)	upper cut-off (low pass)	UI peak-to-peak (maximum)
100 Hz	800 kHz	1,5 UI
10 kHz	800 kHz	0,15 UI

Table 2.7.2.2-1

2.7.3. Error parameters

2.7.3.1. Performance level

The error performance level for the 34.368 kbit/s digital leased lines are at least conform to those specified in ITU-T Recommendation G.826.

3. Network interface presentation

3.1. Physical characteristics

The physical connection arrangements for the standard NTP of a 34.368 kbit/s digital leased 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. However, with the agreement of the customer, a BNC-connector may be provided as an *option.*

3.2. Electrical characteristics

The electrical characteristics of the standard NTP are in accordance with ITU-T Recommendation G.703 (75 Ohms).

3.3. Safety

Regarding the safety, the NTP complies with EN 60950 (IEC 950).

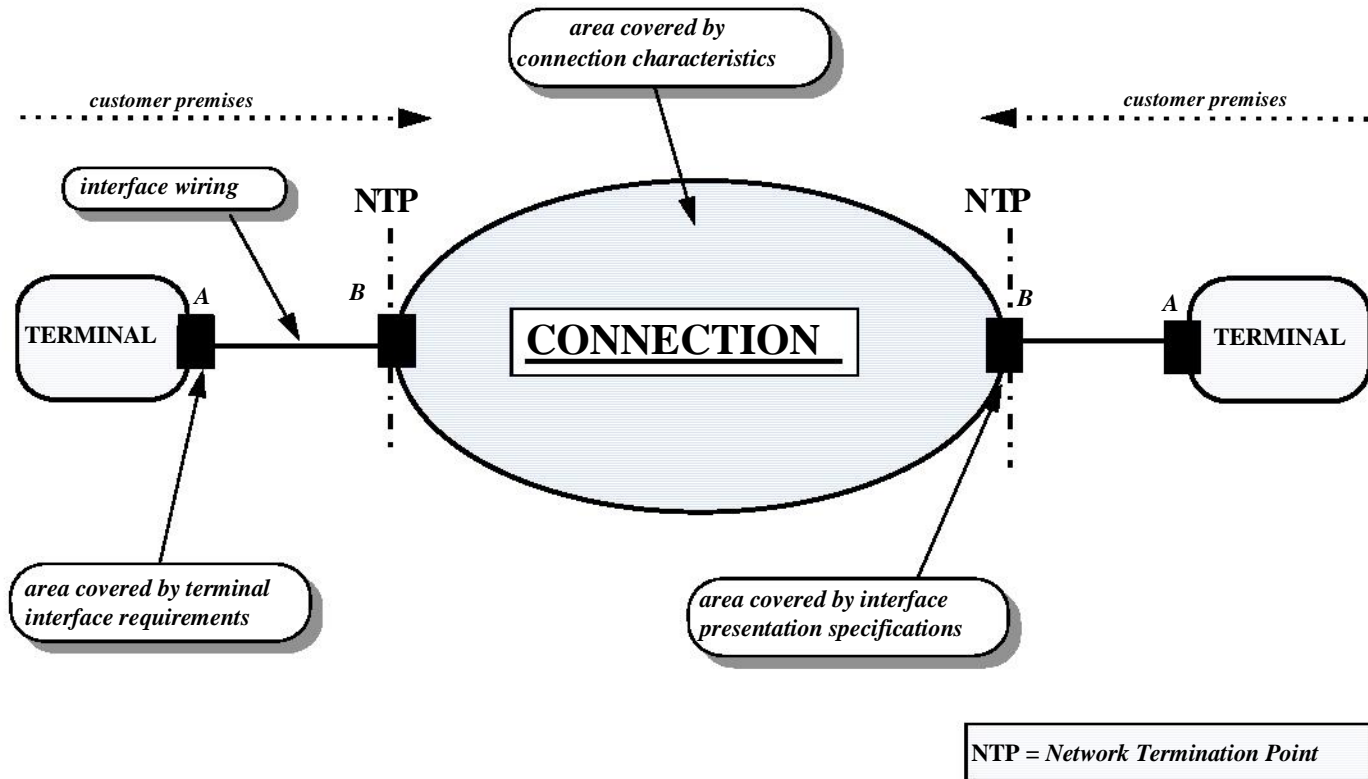### 3.4. ElectroMagnetic Compatibility (EMC)

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 a 34.368 kbit/s digital leased line, the terminal of the customer has to be in accordance with ETS 300 689, taking into account that :

- Proximus 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.

ANNEX 1

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*

ANNEX 2

Definitions, symbols and abbreviations.

A) Definitions

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

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.

Errored block
A block with one or more bit errors.

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

Leased lines
The telecommunications facilities provided by the PROXIMUS public telecom-munications network that provide defined transmission characteristics between network termination points (NTP) and that do not include switching functions that the user can control.

Local PROXIMUS network
The PROXIMUS national telephone network is subdivided into three parts:
• the local networks;
• the junction networks; • the
trunk network.

The *local network* assures the connection of the subscriber's telephone set (or PABX, or terminal,...) to the local exchange. This network is star-shaped; one subscriber line (in most cases one symmetrical copper pair in underground cables) links directly each telephone set to its numbered position in the exchange. The *junction network* links all the local exchanges of the same telephone zone to a primary exchange. The *trunk network* links the primary exchanges either directly between themselves (for the heavy traffic routes) or to an intermediate transit exchange, for the low traffic routes.

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. In a structured communication channel, the slips can be controlled such that either a frame of data is inserted or lost; this is known as a controlled slip or frame slip. Where a slip is not a complete frame (typically one bit), this is known as an uncontrolled slip.

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 (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.

Unavailable time

A period of time beginning at the first of 10 consecutive severely errored seconds and ending immediately before the first following period of 10 consecutive seconds none of which are severely errored.

B) Symbols and abbreviations

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

CRC-4:	*Cyclic Redundancy Check-4 bit.*
CTR:	*Common Technical Regulations.*
DCE:	*Data Circuit-terminating Equipment. Data*
DTE:	*Terminal Equipment. Errored Seconds.*
ES:	*International Telecommunication Union.*
ITU:	*Network Termination Point. Parts per million.*
NTP:	*Severely Errored Seconds. Unit*
ppm:	*Interval.*
SES:	
UI:	