This specification describes the situation of the Proximus network and services. It will be subject to modifications for corrections or when the network or the services will be modified. Please take into account that modifications can appear at any moment. Therefore, the reader is requested to check regularly with the most recent list of available specifications that the document in one’s possession is the latest version.

Proximus can’t be held responsible for any damages due to the use of a version of this specification which is not included in the most recent list of available specifications (list always available with a request to the e-mail address mentioned in the underneath paragraph).

Whilst every care has been taken in the preparation and publication of this document, errors in content, typographical or otherwise, may occur. If you have remarks concerning its accuracy, please send a mail to the following address proximus.uni.spec@proximus.be and your remark will be transmitted to the right Proximus department.

The User Network Interface Specifications published via Internet are available for your information but have no official value. The only documents with an official value are printed on a specific paper.

If you want to get an official version of this User Network Interface Specification, please order it by sending your request by mail to proximus.uni.spec@proximus.be
The Proximus Private ONNET Service
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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.

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Main or important changes since previous version</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>25 FEB 2002</td>
<td>• First version</td>
</tr>
</tbody>
</table>
1. Introduction

The present document specifies the interface, transmission characteristics and protocol specifications of the ISDN User Interface offered on Proximus Private ONNET Service for local powered terminals.

For this moment, the Layer 3 protocol is limited to Q.931 only. Q-SIG specifications will be added later.

Access to the Proximus Private ONNET Service is possible via a user-network interface, which has been fully defined in international ITU-T and ETSI recommendations. The customer has the choice between two types of access, namely:

- Basic access (BA);
- Primary Rate Access (PRA).

Paragraph 2 of this document contains the Reference Model for the two ISDN access interfaces mentioned above.
Paragraph 3 describes the transmission characteristics of ISDN connections.
Paragraph 4 describes the protocol specifications of the ISDN access interfaces.
2. Reference Model

Figure 1: Proximus Private ONNET Service - UNI reference model
3. ISDN Interface and Transmission characteristics - BA & PRA

The ISDN interfaces are built up according to the relevant ITU-T and ETSI specifications. The interface points are specified according to ITU I.411, including the T interface.

The equipment and network termination points are defined in the context of the 7 layers OSI model, whereby only the three lower layers are used for the network part of it:
- Physical Layer
- Data Link Layer
- Network Layer

Overview Applied interfaces with their specifications

<table>
<thead>
<tr>
<th></th>
<th>BA</th>
<th>PRA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Layer 1</td>
<td>ETS 300 012</td>
<td>ETS 300 011</td>
</tr>
<tr>
<td>Layer 2</td>
<td>EN 300 402</td>
<td>EN 300 402</td>
</tr>
<tr>
<td>Layer 3</td>
<td>EN 300 403</td>
<td>EN 300 403</td>
</tr>
</tbody>
</table>

Restriction on the Basic Access interface: the user can connect only local powered devices (e.g. PABX, routers, PC boards) because the Basic Access interface has no power source.

The principal characteristics of the ISDN interfaces are:

<table>
<thead>
<tr>
<th></th>
<th>BA</th>
<th>PRA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of B-channels</td>
<td>2</td>
<td>30</td>
</tr>
<tr>
<td>Number of D-channels</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Synchronisation</td>
<td>8 kbps</td>
<td>64 kbps (channel 0)</td>
</tr>
<tr>
<td>Bit rate B-channel</td>
<td>64 kbps</td>
<td>64 kbps</td>
</tr>
<tr>
<td>Bit rate D-channel</td>
<td>16 kbps</td>
<td>64 kbps (channel 16)</td>
</tr>
<tr>
<td>T-interface 4 wire</td>
<td>4 wire -100 Ohm</td>
<td>4 wire 120 Ohm</td>
</tr>
<tr>
<td></td>
<td>female RJ45 connector</td>
<td>female RJ45 connector</td>
</tr>
<tr>
<td></td>
<td>Transmit 3-6</td>
<td>Receive 1-2</td>
</tr>
<tr>
<td></td>
<td>Receive 4-5</td>
<td>Transmit 4-5</td>
</tr>
<tr>
<td>PS1 Power</td>
<td>Not provided</td>
<td>Na</td>
</tr>
<tr>
<td>Normal &amp; Restricted</td>
<td>Only local powered terminals can be connected</td>
<td>Procedure CRC4 may or may not be activated. Default is CRC4 ON</td>
</tr>
<tr>
<td>Power</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CRC4 procedure</td>
<td>Na</td>
<td></td>
</tr>
<tr>
<td>Related interface specs</td>
<td>L.430 ETS 300 012</td>
<td>L.431 G.703/G.704 and G.706 ETS 300 011</td>
</tr>
</tbody>
</table>
Details of the pole numbering on the interfaces.

**Basic Access**

<table>
<thead>
<tr>
<th>Pin Number</th>
<th>Contact</th>
<th>Network interface</th>
<th>Terminal interface</th>
<th>Signal Polarity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>a</td>
<td>Not used</td>
<td>Not used</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>b</td>
<td>Not used</td>
<td>Not used</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>c</td>
<td>Transmit</td>
<td>Receive</td>
<td>+</td>
</tr>
<tr>
<td>4</td>
<td>d</td>
<td>Receive</td>
<td>Transmit</td>
<td>+</td>
</tr>
<tr>
<td>5</td>
<td>e</td>
<td>Receive</td>
<td>Transmit</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>f</td>
<td>Transmit</td>
<td>Receive</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>g</td>
<td>Not used</td>
<td>Not used</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>h</td>
<td>Not used</td>
<td>Not used</td>
<td></td>
</tr>
</tbody>
</table>

**Primary Rate Access**

<table>
<thead>
<tr>
<th>Pin Number</th>
<th>Contact</th>
<th>Network interface</th>
<th>Terminal interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>a</td>
<td>Receive</td>
<td>Transmit</td>
</tr>
<tr>
<td>2</td>
<td>b</td>
<td>Receive</td>
<td>Transmit</td>
</tr>
<tr>
<td>3</td>
<td>c</td>
<td>Not Used</td>
<td>Not Used</td>
</tr>
<tr>
<td>4</td>
<td>d</td>
<td>Transmit</td>
<td>Receive</td>
</tr>
<tr>
<td>5</td>
<td>e</td>
<td>Transmit</td>
<td>Receive Not</td>
</tr>
<tr>
<td>6</td>
<td>f</td>
<td>Not used</td>
<td>used Not</td>
</tr>
<tr>
<td>7</td>
<td>g</td>
<td>Not used</td>
<td>used Not</td>
</tr>
<tr>
<td>8</td>
<td>h</td>
<td>Not used</td>
<td>used</td>
</tr>
</tbody>
</table>
4. Protocol specifications for the BA and PRA interface

4.1. References

The following documents contain provisions that, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc...) or non-respect.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

<table>
<thead>
<tr>
<th>Specification</th>
<th>Short description of the specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETS 300 012</td>
<td>Integrated Services Digital Network (ISDN); Basic User-Network Interface (UNI); Layer 1 Specification and Test principles</td>
</tr>
<tr>
<td>ETS 300 011-1</td>
<td>Integrated Services Digital Network (ISDN); Primary rate User-Network Interface (UNI); Part 1: Layer 1 specification</td>
</tr>
<tr>
<td>ETS 300 402</td>
<td>Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Data link layer; Part 1: General aspects [ITU-T Recommendation Q.920 (1993), modified]</td>
</tr>
<tr>
<td>EN 300 403-1</td>
<td>Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Signalling network layer for circuit-mode basic call control; Part 1: Protocol specification specification [ITU-T Recommendation Q.931(1993), modified]</td>
</tr>
<tr>
<td>ETS 300 092-1</td>
<td>Integrated Services Digital Network (ISDN); Calling Line Identification Presentation (CLIP) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification</td>
</tr>
<tr>
<td>ETS 300 093-1</td>
<td>Integrated Services Digital Network (ISDN); Calling Line Identification Restriction (CLIR) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification</td>
</tr>
<tr>
<td>ETS 300 094</td>
<td>Integrated Services Digital Network (ISDN); Connected Line Identification Presentation (COLP) supplementary service; Service description</td>
</tr>
<tr>
<td>ETS 300 095</td>
<td>Integrated Services Digital Network (ISDN); Connected Line Identification Restriction (COLR) supplementary service; Service description</td>
</tr>
<tr>
<td>ETS 300 182-1</td>
<td>Integrated Services Digital Network (ISDN); Advice of Charge (AOC) supplementary service; Digital Subscriber Signalling System No. One (DSS1) protocol; Part1: Protocol specification</td>
</tr>
<tr>
<td>ETS 300 286</td>
<td>Integrated Services Digital Network (ISDN); User-to-User Signalling (UUS) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification</td>
</tr>
<tr>
<td>ETS 300 064</td>
<td>Integrated Services Digital Network (ISDN); Direct Dialling In (DDI) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification.</td>
</tr>
<tr>
<td>Specification</td>
<td>Short description of the specification</td>
</tr>
<tr>
<td>-------------------</td>
<td>----------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>ETS 300 061</td>
<td>Integrated Services Digital Network (ISDN); Subaddressing (SUB) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification</td>
</tr>
<tr>
<td>ETS 300 286</td>
<td>Integrated Services Digital Network (ISDN); User-to-User Signalling (UUS) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification</td>
</tr>
<tr>
<td>ITU-T G.703</td>
<td>Physical/electrical characteristics of hierarchical digital interfaces</td>
</tr>
<tr>
<td>ITU-T G.704</td>
<td>Synchronous Frame structures used at 1455, 6312, 2048, 8448 and 44.736 kbits/s Hierarchical Levels</td>
</tr>
<tr>
<td>ITU-T G.706</td>
<td>Frame alignment and cyclic redundancy check (CRC) procedures relating to basic frame structures defined in Recommendation G.704</td>
</tr>
</tbody>
</table>

### 4.2 Symbols, definitions and abbreviations

For the purpose of the present document, the following definitions applies:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOC</td>
<td>Advice Of charging</td>
</tr>
<tr>
<td>AOC_E</td>
<td>Advice Of charging End</td>
</tr>
<tr>
<td>AOC_S</td>
<td>Advice Of charging Setup</td>
</tr>
<tr>
<td>BA</td>
<td>Basic Access</td>
</tr>
<tr>
<td>BiLan</td>
<td>PROXIMUS Interconnection of Local area Networks</td>
</tr>
<tr>
<td>CLIP</td>
<td>Calling Line Presentation</td>
</tr>
<tr>
<td>CLIR-T</td>
<td>Calling Line Presentation Temporary</td>
</tr>
<tr>
<td>CNIP</td>
<td>Calling Name Presentation</td>
</tr>
<tr>
<td>COLP</td>
<td>Connected Line Presentation</td>
</tr>
<tr>
<td>COLR-T</td>
<td>Connected Line Presentation Temporary</td>
</tr>
<tr>
<td>CRC4</td>
<td>Cyclic Redundancy Check 4</td>
</tr>
<tr>
<td>DSS1</td>
<td>Digital Subscriber Signalling System No. one</td>
</tr>
<tr>
<td>EN</td>
<td>European Telecommunication Standard</td>
</tr>
<tr>
<td>ETS</td>
<td>European Telecommunication Standard</td>
</tr>
<tr>
<td>ISDN</td>
<td>Integrated Services Digital Network</td>
</tr>
<tr>
<td>ITU-T</td>
<td>International Telecommunication Union - Telecommunication sector</td>
</tr>
<tr>
<td>PRA</td>
<td>Primary Rate Access</td>
</tr>
<tr>
<td>PS1</td>
<td>Power Source 1 (Phantom power)</td>
</tr>
<tr>
<td>SUB</td>
<td>Sub Addressing</td>
</tr>
<tr>
<td>UUS1</td>
<td>User To User Info 1</td>
</tr>
</tbody>
</table>
4.3. Supported services for the Q.931 protocol

Following ISDN PABX services will be available on BA and PRA interfaces:

<table>
<thead>
<tr>
<th>Service</th>
<th>BA</th>
<th>PRA</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLIP</td>
<td>Supported</td>
<td>Supported - Note 1</td>
</tr>
<tr>
<td>CLIR-T</td>
<td>Supported - Note 1</td>
<td>Supported</td>
</tr>
<tr>
<td>COLP</td>
<td>Supported</td>
<td>Supported - Note 2</td>
</tr>
<tr>
<td>COLR-T</td>
<td>Supported - Note 2</td>
<td>Supported</td>
</tr>
<tr>
<td>SUB</td>
<td>Supported</td>
<td>Supported</td>
</tr>
<tr>
<td>UUS1</td>
<td>Supported</td>
<td>Supported</td>
</tr>
<tr>
<td>CRC4</td>
<td>Not Applicable</td>
<td>On Demand default is CR-4 on</td>
</tr>
</tbody>
</table>

| Reduced Channel Capacity | Not Applicable | On Demand |
| fraction of the 2 Mbit   | | |

| Speech / 3.1 kHz Audio calls | Supported | Supported |
| 64 kbit/s Unrestricted Digital Info | Supported | Supported |
| High Layer Compatibility | Supported | Supported |
| Low Layer Compatibility | Supported | Supported |
| CNIP via Display Info element | Supported | Supported |
| Display I.E. in the call Control Msg | Supported | Supported |
| Notify msg during conversation phase | Supported | Supported |
| Facility I.E. in the call Control Msg (example CCBS, AOC) | Supported | Supported |

Note 1
The Calling Party Number I.E. is Full transparent:
- Type of number: Transparent
- Numbering plan id Advice: Transparent
- Presentation ind: Transparent
- Screening ind: Transparent
- Calling Number: Transparent

Advice:
- national number
- ISDN/Telephony numbering plan
- user-provided, not screened
- national number

Note 2
The Connected Number I.E. is Full transparent:
- Type of number: Transparent
- Numbering plan id: Transparent
- Presentation ind: Transparent
- Screening ind: Transparent
- Connected Number: Transparent

Advice:
- national number
- ISDN/Telephony numbering plan
- user-provided, not screened
- national number
4.4. Additional information

- Overlap sending is possible on PRA
  - Dial tone is not sent by the network in case of overlap sending, in the first phase
- Overlap sending is not possible on BA in the first phase of ONNET
- En block sending is possible on BA & PRA
- By default the network will be send a Channel I. E. with the indication:
  Preferred/exclusive field = 1 (exclusive: only the indicated channel is acceptable)
- Channel negotiation is possible (BA & PRA) if the user sent a Channel I.E. in the Setup msg
- The network sends ringing Back Tone on the BA interface to the Calling user (PRA later)
- Facility msg during the conversation phase is ignored
  - AOC information cannot be sent via the facility msg
  - AOC information can only be sent via the facility Info Element that is part of a call control Message (Setup, Connect, Disconnect, Release msg) = AOC_S and AOC_E.
- Facility msg in idle state is ignored
- High Layer Compatibility (HLC) Info Element is full transparent
- Low Layer Compatibility (LLC) Info Element is full transparent
- Bearer Capability Info Element is not fully transparent:
  - Following octets are transparent:
    - octet 3 (coding standard & information transfer capability)
    - octet 4 (transfer mode & information transfer rate)
  - Following octet has a default setting:
    - octet 5 (user information Layer 1 protocol) is default set to A law in case of BC= Speech or 3.1 kHz Audio
  - Following octets are ignored:
    - octet 4a (structure & configuration & establishment),
    - octet 4b (symmetry information transfer rate (destination origination)
    - octet 5a (synch./asynch. & negot. user rate)
    - octets 5b & 5c (parameters for rate adaption V.110/X.30 or V.120)
    - octet 5d (duplex mode & modem type)
    - octet 6 (user information Layer 2 protocol)
    - octet 7 (user information Layer 3 protocol)
• The default data link setting is Point to Point (Fixed TEI 0-63) and is **default set to 0**.
  - The network can be configured for using a TEI between 0 - 63
  - user can be subscribed for a TEI different to 0 also.

• Point to Multi Point Data link (automatic TEI assignment 64-126) is **supported on the Basic Access interface on Subscription basis** in a physical Point to Point configuration (only one terminal connection is allowed)

• Point to Multi Point on layer 1 is not supported

• The parameters of the Called Party Number I.E. default are presented as follows:

  Type of number: national number
  Numbering plan id Advice : ISDN/Telephony numbering plan
  Screening ind.: user-provided, not screened
  Called Number: national number without the leading Zero
Annex A : Standard Network timers for the Basic Access interface

ISDN BRI1/1 Timers (dsl 1) Switch type = basic-net3
*** interface Network side configuration ***

ISDN Layer 2 values
K= 1 outstanding I-frames
N200 = 3 max number of retransmits
N202 = 2 max number of TEI ID Request retransmits
T200 = 1.000 seconds
T202 = 2.000 seconds
T203 = 10.000 seconds

ISDN Layer 3 values
T302 = 10.000 seconds
T303 = 4.000 seconds
T304 = 30.000 seconds
T305 = 30.000 seconds
T306 = 30.000 seconds
T307 = 180.000 seconds
T308 = 4.000 seconds
T309 = 90.000 seconds
T310 = 30.000 seconds
T312 = 6.000 seconds
T313 = 4.000 seconds
T316 = 120.000 seconds
T318 = 4.000 seconds
T319 = 4.000 seconds
T321 = 40.000 seconds
T322 = 4.000 seconds
T300S = 5.000 seconds
TGUARD = 3.000 seconds, Expiry = REJECT_CALL
Annex B : Standard Network timers for the Primary Rate Access interface

ISDN Serial1/0:15 Timers (dsl 0) Switch type = primary-net5
*** interface Network side configuration ***

ISDN Layer 2 values
K= 7 outstanding I-frames
N200 = 3 max number of retransmits
T200 = 1.000 seconds 2.000
T202 = seconds
T203 = 10.000 seconds

ISDN Layer 3 values
T303 = 6.000 seconds
T304 = 30.000 seconds
T305 = 30.000 seconds
T306 = 30.000 seconds
T307 = 180.000 seconds
T308 = 6.000 seconds
T309 = 90.000 seconds
T310 = 40.000 seconds
T313 = 6.000 seconds
T316 = 120.000 seconds
T318 = 4.000 seconds
T319 = 4.000 seconds
T322 = 4.000 seconds
T300S = 5.000 seconds
TGUARD = 8.000 seconds , Expiry = REJECT_CALL