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Vmesniki V digitalnega storitvenega vozliġļ a (SN) - Vmesniki na referenļ ni toļ ki VB5.1 za podporo ġirokopasovnih ali kombiniranih ozkopasovnih in ġirokopasovnih dostopovnih omreġij (AN) - 1. del: Specifikacija vmesnika

V interfaces at the digital Service Node (SN); Interfaces at the VB5.1 reference point for the support of broadband or combined narrowband and broadband Access Networks (ANs); Part 1: Interface specification

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V interfaces at the digital Service Node (SN); Interfaces at the VB5.1 reference point for the support of broadband or combined narrowband and broadband Access Networks (ANs); Part 1: Interface specification

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Foreword

This European Standard (Telecommunications series) has been produced by the Signalling Protocols and Switching (SPS) Technical Committee of the European Telecommunications Standards Institute (ETSI).

The present document is part 1 of a multi-part standard covering the interfaces at the VB5.1 reference point as described below:

Part 1: "Interface specification";

Part 2: "Protocol Implementation Conformance Statement (PICS) specification".

NOTE: Further parts covering conformance testing may be identified later.

National transposition dates	
Date of adoption of this EN:	20 March 1998
Date of latest announcement of this EN (doa):	31 July 1998
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 January 1998
Date of withdrawal of any conflicting National Standard (dow):	31 January 1998

Introduction

General

The work on a new broadband VB reference point concept was initiated by ETSI Technical Committee SPS to consider possible new structures and reference points for the connection of new broadband and combined narrowband/broadband access arrangements to Service Nodes (SN), in co-operation with other TCs.

The VB5 reference point concept, based on ITU-T Recommendation G.902, was split into two variants. The first variant based on an ATM cross-connect with provisioned connectivity, called the VB5.1 reference point, is described in the present document. The other variant which further enables on-demand connectivity within the AN, called the VB5.2 reference point, is covered under work item DEN/SPS-03047-1.

Relationship between the VB5.1 and VB5.2 reference point concepts

VB5.2 extends the capabilities at the VB5.1 reference point to include on-demand connectivity in the AN under the control of SN. The major common features between the VB5.1 and VB5.2 interfaces are:

- both VB5 interfaces support B-ISDN as well as narrowband and other non-B-ISDN customer access types;
- both VB5 interfaces support ATM multiplexing/cross-connecting in the AN at the VP and/or VC level.

It is anticipated that the Real Time Management Co-ordination (RTMC) protocol for the VB5.1 reference point will be a subset of the RTMC protocol for the VB5.2 reference point.

1 Scope

This first part of EN 301 005 specifies the physical, procedural and protocol requirements for interfaces at the VB5.1 reference point between an Access Network (AN) and a Service Node (SN) with flexible (provisioned) Virtual Path Link (VPL) allocation and flexible (provisioned) Virtual Channel Link (VCL) allocation (controlled by Q3 interfaces) at the VB5.1 reference point.

The following Broadband Integrated Service Digital Network (B-ISDN) customer access types as defined in ITU-T Recommendation I.432.1 [24] are supported:

a) B-ISDN accesses with a User-Network Interface (UNI) according to ITU-T Recommendation I.432.2 [25] at the user side of the access network, i.e.:

   1) Synchronous Digital Hierarchy (SDH) based according to ETS 300 300 [4];

   2) Cell based according to ETS 300 299 [3],

b) B-ISDN access with a UNI according to ITU-T Recommendation I.432.3 [26] case of PDH-framed symmetrical 2 048 kbit/s (electrical interface).

c) B-ISDN accesses with a UNI at 51 840 kbit/s according to ITU-T Recommendations I.432.4 [27] and at 25 600 kbit/s I.432.5 [28].

NOTE: B-ISDN accesses with a UNI according to future standards may require additional functionality at the VB5.1 reference point.

In order to provide for a migration from narrowband to broadband access network and service node arrangements, also narrowband access types as specified for:

- V5.1 interface according to ETS 300 324-1 [6]; and/or

- V5.2 interface according to ETS 300 347-1 [7],

are supported according to the integration scenario given in ITU-T Recommendation G.902 [16], appendix III.2.2, using a circuit emulation function for the transfer of circuit mode into Asynchronous Transfer Mode (ATM).

In addition to these B-ISDN and narrowband customer access types, other non-B-ISDN access types are also supported.

Examples for such non-B-ISDN access types are given below:

a) access types supporting asymmetric/multimedia services (i.e. video on demand) (if not part of B-ISDN access types);

b) access types supporting broadcast services (if not part of B-ISDN access types);

c) access types supporting LAN interconnect functionality (if not part of B-ISDN access types);

d) access types that can be supported via an AN ATM VP cross-connect.

The concept of the Virtual User Ports (VUP), as described in clause 8 of the present document, may be applied to enable any specific implementation.

In accordance with the principles of B-ISDN (see CCITT Recommendation I.121 [34]), remote access arrangements across interfaces at the VB5.1 reference point support switched and (semi-) permanent point-to-point and point-to-multipoint connections and provide on demand, reserved and permanent services of a mono- and/or multimedia type and of a connectionless or connection-oriented nature and in a bi-directional or unidirectional configuration as supported and provided for direct access arrangements to SNs.

Functions to support security management (see CCITT Recommendation X.800 [43]) related to the customer access are out of the scope of the present document. Such security management functions have no impact on the VB5.1 reference point.

The present document does not specify the implementation of the requirements within the AN and does not constrain any implementation alternative as long as the functionality at the interfaces at the VB5.1 reference point as specified in

the present document is met. Furthermore, the present document does not require that an AN shall support all the customer access types listed above.

The present document is not intended to define any systems or equipment in, or connected to, a SN via interfaces at the VB5.1 reference point. Therefore only the characteristics of the interfaces at the VB5.1 reference point are described.

2 References

References may be made to:

a) specific versions of publications (identified by date of publication, edition number, version number, etc.), in which case, subsequent revisions to the referenced document do not apply; or

b) all versions up to and including the identified version (identified by "up to and including" before the version identity); or

c) all versions subsequent to and including the identified version (identified by "onwards" following the version identity); or

d) publications without mention of a specific version, in which case 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.

2.1 Normative references

[1] ETS 300 298-1 (1996) Ed. 2: "Broadband Integrated Services Digital Network (B-ISDN); Asynchronous Transfer Mode (ATM); Part 1: B-ISDN ATM functional characteristics [ITU-T Recommendation I.150 (1995)]".

[2] ETS 300 298-2 (1996) Ed. 2: "Broadband Integrated Services Digital Network (B-ISDN); Asynchronous Transfer Mode (ATM); Part 2: B-ISDN ATM layer specification [ITU-T Recommendation I.361 (1995)]".

[3] ETS 300 299: "Broadband Integrated Services Digital Network (B-ISDN); Cell based user network access for 155 520 kbit/s and 622 080 kbit/s; Physical layer interfaces for B-ISDN applications".

NOTE 1: This ETS is based on parts of ITU-T Recommendation I.432.2 [25].

[4] ETS 300 300 (1996): "Broadband Integrated Services Digital Network (B-ISDN); Synchronous Digital Hierarchy (SDH) based user network access; Physical layer interfaces for B-ISDN applications".

NOTE 2: This ETS is based on parts of ITU-T Recommendation I.432.2 [25].

[5] ETS 300 301 (1996): "Broadband Integrated Services Digital Network (B-ISDN); Traffic control and congestion control in B-ISDN [ITU-T Recommendation I.371 (1996)]".

[6] ETS 300 324-1 (1995): "Signalling Protocols and Switching (SPS); V interfaces at the digital Local Exchange (LE); V5.1 interface for the support of Access Network (AN); Part 1: V5.1 interface specification" (see also ITU-T Recommendation G.964).

[7] ETS 300 347-1: "Signalling Protocols and Switching (SPS); V interfaces at the digital Local Exchange (LE); V5.2 interface for the support of Access Network (AN); Part 1: V5.2 interface specification" (see also ITU-T Recommendation G.965).

[8] ETS 300 404: "Broadband Integrated Services Digital Network (B-ISDN); B-ISDN Operation And Maintenance (OAM) principles and functions".

NOTE 3: This ETS is based on ITU-T Recommendation I.610 [29].

[9] ETS 300 428 (1995): "Broadband Integrated Services Digital Network (B-ISDN); Asynchronous Transfer Mode (ATM) Adaptation Layer (AAL) specification - type 5".

[10] ETS 300 436-1 (1995): "Broadband Integrated Services Digital Network (B-ISDN); Signalling ATM Adaptation Layer (SAAL); Service Specific Connection Oriented Protocol (SSCOP); Part 1: Protocol specification [ITU-T Recommendation Q.2110 (1995), modified]".

[11] ETS 300 437-1 (1995): "Broadband Integrated Services Digital Network (B-ISDN); Signalling ATM Adaptation Layer (SAAL); Service Specific Co-ordination Function (SSCF) for support of signalling at the User-Network Interface (UNI); Part 1: Specification of SSCF at UNI [ITU-T Recommendation Q.2130 (1995), modified]".

[12] ETS 300 443-1 (1996): "Broadband Integrated Services Digital Network (B-ISDN); Digital Subscriber Signalling System No. two (DSS2) protocol; B-ISDN user-network interface layer 3 specification for basic call/bearer control; Part 1: Protocol specification [ITU-T Recommendation Q.2931 (1995), modified]".

[13] ETS 300 486-1: "Broadband Integrated Services Digital Network (B-ISDN); Meta-signalling protocol; Part 1: Protocol specification [ITU-T Recommendation Q.2120 (1995), modified]".

[14] ITU-T Recommendation E.736 (1997): "Methods for cell level traffic control in B-ISDN".

[15] ITU-T Recommendation G.704 (1995): "Synchronous frame structures used at 1 544, 6 312, 2 048, 8 488 and 44 736 kbit/s hierarchical levels".

[16] ITU-T Recommendation G.902 (1995): "Framework Recommendation on functional access networks - Architecture and functions, access types, management and service node aspects".

[17] ITU-T Recommendation I.311 (1996): "B-ISDN general network aspects".

[18] ITU-T Recommendation I.321 (1991): "B-ISDN protocol reference model and its application".

[19] ITU-T Recommendation I.356 (1997): "B-ISDN ATM layer cell transfer performance".

[20] ITU-T Recommendation I.363.1 (1996): "B-ISDN ATM Adaptation layer specification - Type 1".

[21] ITU-T Recommendation I.363.2 (1996): "B-ISDN ATM Adaptation layer specification - Type 2".

[22] ITU-T Recommendation I.363.5 (1996): "B-ISDN ATM Adaptation layer specification - Type 5".

[23] Draft revised ITU-T Recommendation I.414 (8/96): "Overview of Recommendations on layer 1 for ISDN and B-ISDN customer accesses".

[24] ITU-T Recommendation I.432.1 (1996): "B-ISDN User-Network Interface - General characteristics".

[25] ITU-T Recommendation I.432.2 (1996): "B-ISDN User-Network Interface - 155 520 kbit/s and 622 080 kbit/s operation".

[26] ITU-T Recommendation I.432.3 (1996): "B-ISDN User-Network Interface - 1 544 kbit/s and 2 048 kbit/s operation".

[27] ITU-T Recommendation I.432.4 (1996): "B-ISDN user-network interface - 51 840 kbit/s operation".

[28] ITU-T Recommendation I.432.5 (1997): "B-ISDN user-network interface - Physical layer specification for 25 600 kbit/s operation".

[29] ITU-T Recommendation I.610 (1995): "B-ISDN operation and maintenance principles and functions".

[30] ITU-T Recommendation I.732 (1996): "Functional characteristics of ATM equipment".

[31] ITU-T Recommendation Z.100 (1993): "Specification and Description Language (SDL)".

[32] ITU-T Recommendation Z.120 (1993): "Message Sequence Charts (MSC)".