SLOVENSKI STANDARD
SIST EN 301 060-4 V1.1.4:2005

01-april-2005

Digitalno omrežje z integriranimi storitvami (ISDN) - Protokol digitalne naročniške signalizacije št. 1 (DSS1) - Krmiljenje osnovnega klica - Izboljšanje v vstopni točki b storitve za aplikacije navideznega zasebnega omrežja (VPN) - 4. del: Abstraktni preskušalni niz (ATS) in dodatna informacija za preskušanje delne izvedbe protokola (PIXIT) - Specifikacija za uporabnika

Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Basic call control; Enhancement at the b service entry point for Virtual Private Network (VPN) applications; Part 4: Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the user

Ta slovenski standard je istoveten z: **EN 301 060-4 Version 1.1.4**

ICS:

33.080	Digitalno omrežje z integriranimi storitvami (ISDN)	Integrated Services Digital Network (ISDN)

SIST EN 301 060-4 V1.1.4:2005 **en**

ETSI EN 301 060-4 V1.1.4 (1999-08)

European Standard (Telecommunications series)

**Integrated Services Digital Network (ISDN);
Digital Subscriber Signalling System No. one (DSS1) protocol;
Basic call control;
Enhancement at the "b" service entry point for
Virtual Private Network (VPN) applications;
Part 4: Abstract Test Suite (ATS) and partial Protocol
Implementation eXtra Information for Testing (PIXIT)
proforma specification for the user**

Reference
DEN/SPS-05109-4 (9td00ieo.PDF)

Keywords
ISDN, DSS1, ATS, basic, PIXIT, VPN, user

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Contents

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Foreword

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

The present document is part 4 of a multi-part standard covering the Digital Subscriber Signalling System No. one (DSS1) protocol specification for the Digital Subscriber Signalling System No. one (DSS1) protocol; Basic call control extensions at the "b" service entry point for Virtual Private Network (VPN) applications, as described below:

Part 1: "Protocol specification";

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

Part 3: "Test Suite Structure and Test Purposes (TSS&TP) specification for the user";

Part 4: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the user";

Part 5: "Test Suite Structure and Test Purposes (TSS&TP) specification for the network";

Part 6: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the network".

National transposition dates	
Date of adoption of this EN:	6 August 1999
Date of latest announcement of this EN (doa):	30 November 1999
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 May 2000
Date of withdrawal of any conflicting National Standard (dow):	31 May 2000

1 Scope

This fourth part of EN 301 060 is applicable to the Basic call control extensions at the "b" service entry point for VPN applications for the pan-European Integrated Services Digital Network (ISDN) as provided by European public telecommunications operators at the T reference point (as defined in ITU-T Recommendation I.411 [11]) by means of the Digital Subscriber Signalling System No. one (DSS1) protocol. Stage three identifies the protocol procedures and switching functions needed to support a telecommunications service (see ITU-T Recommendation I.130 [10]).

The present document specifies the Abstract Test Suite (ATS), and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma for the user side of the T reference point or coincident S and T reference point of implementation conforming to EN 301 060-1 [6] in compliance with the relevant requirements and in accordance with the relevant guidance given in ISO/IEC 9646.

2 References

The following documents contain provisions which, 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-specific.
- 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.

[1] Void.

[2] Void.

[3] EN 300 195-2: "Integrated Services Digital Network (ISDN); Supplementary service interactions; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification".

[4] Void.

[5] ETS 300 196-2: "Integrated Services Digital Network (ISDN); Generic functional protocol for the support of supplementary services; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification".

[6] EN 301 060-1 (V1.2): "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Basic call control; Enhancement at the "b" service entry point for Virtual Private Network (VPN) applications; Part 1: Protocol specification".

[7] Void.

[8] ISO/IEC 9646-1: "Information technology; Open systems interconnection; Conformance testing methodology and framework; Part 1: General concepts".

[9] ISO/IEC 9646-7: "Information technology; Open systems interconnection; Conformance testing methodology and framework; Part 7: Implementation Conformance Statements".

[10] ITU-T Recommendation I.130 (1988): "Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN".

[11] ITU-T Recommendation I.411 (1993): "ISDN user-network interfaces; Reference configurations".

[12] Void.

[13] Void.

[14] Void.

[15] ISO/IEC 9646-3: "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 3: The Tree and Tabular Combined Notation (TTCN)".

[16] EN 301 060-3 (V1.1): "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Basic call control; Enhancement at the "b" service entry point for Virtual Private Network (VPN) applications; Part 3: Test Suite Structure and Test Purposes (TSS&TP) specification for the user".

[17] ISO/IEC 9646-5: "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 5: Requirements on test laboratories and clients for the conformance assessment process".

[18] ISO/IEC 9646-4: "Information technology; Open Systems Interconnection; Conformance testing methodology and framework; Part 4: Test realization".

[19] ITU-T Recommendation E.164: "The international public telecommunication numbering plan".

[20] ITU-T Recommendation I.112: "Vocabulary of terms for ISDNs".

[21] ITU-T Recommendation I.210: "Principles of telecommunication services supported by an ISDN and the means to describe them".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

3.1.1 Definitions related to conformance testing

abstract test case: refer to ISO/IEC 9646-1 [8]

Abstract Test Suite (ATS): refer to ISO/IEC 9646-1 [8]

active test: test case where the IUT is required to send a particular message, but not in reaction to a received message. This would usually involve the use of PIXIT information to see how this message can be generated and quite often is specified in an ATS using an implicit send event

Implementation Under Test (IUT): refer to ISO/IEC 9646-1 [8]

implicit send event: refer to ISO/IEC 9646-3 [15]

lower tester: refer to ISO/IEC 9646-1 [8]

passive test: test case where the IUT is required to respond to a protocol event (e.g. received message) with another protocol event (e.g. send message) which normally does not require any special operator intervention as associated with the implicit send event

point of control and observation: refer to ISO/IEC 9646-1 [8]

Protocol Implementation Conformance Statement (PICS): refer to ISO/IEC 9646-1 [8]

PICS proforma: refer to ISO/IEC 9646-1 [8]

Protocol Implementation eXtra Information for Testing (PIXIT): refer to ISO/IEC 9646-1 [8]

PIXIT proforma: refer to ISO/IEC 9646-1 [8]

system under test: refer to ISO/IEC 9646-1 [8]

Test Purpose (TP): refer to ISO/IEC 9646-1 [8]

3.1.2 Definitions related to EN 301 060-1

Dummy call reference: see ETS 300 403-1 [8], subclause 4.3

Integrated Services Digital Network (ISDN): see ITU-T Recommendation I.112 [20], definition 308

ISDN number: number conforming to the numbering and structure specified in ITU-T Recommendation E.164 [19]

service; telecommunication service: see ITU-T Recommendation I.112 [20], definition 201

supplementary service: see ITU-T Recommendation I.210 [21], subclause 2.4

T: DSS1 protocol entity at the User side of the user-network interface where a T reference point applies (User is a Private ISDN)

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

ASP	Abstract Service Primitive
ATM	Abstract Test Method
ATS	Abstract Test Suite
BA	Basic Access
CES	Connection Endpoint Suffix
CM	Co-ordination Message
ExTS	Executable Test Suite
ISDN	Integrated Services Digital Network
IUT	Implementation Under Test
LT	Lower Tester
MOT	Means Of Testing
PCO	Point of Control and Observation
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
PRA	Primary Rate Access
SUT	System Under Test
TP	Test Purpose
TSS	Test Suite Structure
TTCN	Tree and Tabular Combined Notation
VPN	Virtual Private Network

4 Abstract Test Method (ATM)

The Remote test method is applied for the basic call user ATS. The Point of Control and Observation (PCO) resides at the service access point between layers 2 and 3. This PCO is named "L" (for Lower). The L PCO is used to control and observe the behaviour of the Implementation Under Test (IUT) and test case verdicts are assigned depending on the behaviour observed at this PCO.

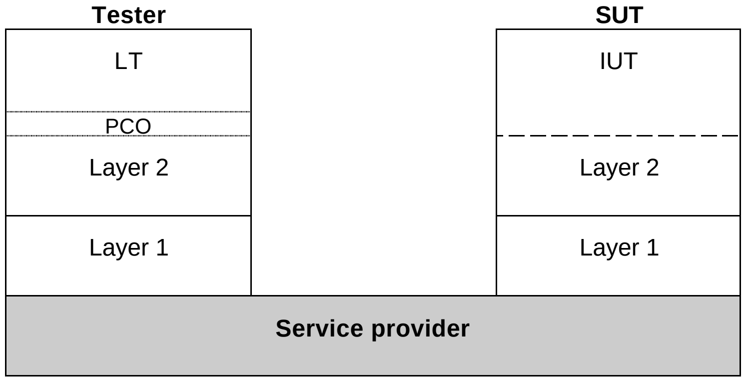

Figure 1: Remote test method

5 Untestable test purposes

There are no untestable test purposes in this ATS.

6 ATS conventions

This clause is structured similarly to the structure of a TTCN ATS. However, the names of the subclauses are arranged in a way more suitable to the present document.

6.1 Declarations part

6.1.1 Type definitions

6.1.1.1 Simple type definitions

Where appropriate, simple types have a length, a value list or a range restriction attached.

Simple types defined as being of some string type (e.g. BIT STRING, OCTET STRING), have a length restriction or a value list attached.

Simple types, defined as being of INTEGER type, have a value list or a range restriction attached.

6.1.1.2 Structured type definitions

6.1.1.2.1 TTCN structured type definitions

All structured type definitions are provided with a full name.

All elements in every structured type definition, defined as being of some string type (e.g. BIT STRING, OCTET STRING), have a length restriction attached.

If an element in a structured type definition is defined as being of a referenced type, the (possible) restriction is defined in that referenced type.

For information elements the identifier, which is unique for each element, has its type defined as a simple type where the value list is restricted to the single value which is the identifier itself. This has the advantage that it allows a test system derived from this ATS to easily identify information elements embedded in messages. An ATS where information element identifiers are represented as unrestricted types can present difficulties for a derived test system in the case where it needs to find one information element embedded in a number of others and the constraints for the other elements have the any-or-omit value. In such a case the test system cannot easily find the beginning of each information element.

6.1.1.2.2 ASN.1 structured type definitions

There are no ASN.1 structured type definitions in the ATS.

6.1.1.3 ASP type definitions

6.1.1.3.1 TTCN ASP type definitions

TTCN ASP type definitions only contain one PDU or no PDU at all.

All TTCN ASP type definitions are provided with a full identifier.

Some ASPs are not parameterized as shown in the example in table 1. Such ASPs are only used for requesting or receiving service from the lower layer.

Table 1: TTCN ASP type definition DL_REL_IN

TTCN ASP Type Definition		
ASP NAME : DL_REL_IN(DL_RELEASE_INDICATION)		
PCO Type : SAP		
Comments :		
Parameter Name	**Parameter Type**	**Comments**
Detailed Comments :		

Table 2 shows an example of a parameterized ASP. All ASPs containing PDUs contain only that PDU and no other parameters.

Table 2: TTCN ASP type definition DL_DATA_RQ

TTCN ASP Type Definition		
ASP NAME : DL_DATA_RQ(DL_DATA_REQUEST)		
PCO Type : SAP		
Comments :		
Parameter Name	**Parameter Type**	**Comments**
mun (MessageUnit)	PDU	
Detailed Comments :		

6.1.1.3.2 ASN.1 ASP type definitions

There are no ASN.1 ASP type definitions in the ATS.

6.1.1.4 PDU type definitions

6.1.1.4.1 TTCN PDU type definitions

The TTCN PDU type reflects the actual data being transferred or received. All PDUs are embedded in ASPs.

If a specific PDU type definition contains elements defined in terms of a pre-defined type, that element has a restriction attached to it.

6.1.1.4.2 ASN.1 PDU type definitions

There are no ASN.1 PDU type definitions in the ATS.

6.1.2 Test suite constants

Each test suite constant is defined in terms of a predefined type or a referenced type. The values given in the value column will remain unchanged throughout the test suite.

6.1.3 Test suite parameters

Each test suite parameter is defined in terms of a predefined type or a referenced type. A referenced type is used when it is necessary to attach restrictions to these type definitions (it is not allowed to include restrictions directly in the test suite parameter table). The referenced type can have a length or value restriction attached to it in its declaration table.

6.1.4 Variables

6.1.4.1 Test suite variables

No Test Suite Variables are used or defined in this ATS.

6.1.4.2 Test case variables

Each test case variable is defined in terms of a predefined type or a referenced type. A referenced type is used when it is necessary to attach restrictions to these type definitions (it is not allowed to include restrictions directly in the test case variable table). The referenced type can have a length or value restriction attached to it in its declaration table.

Where test case variables are used in constraints, they are passed as formal parameters.

6.1.5 Test suite operation definitions

The description part of a test suite operation definition uses either natural language or meta C.

Table 3: Test suite operation definition ASSIGN_CHI

Test Suite Operation Definition
Operation Name : ASSIGN_CHI(basic, primary : CHI; basic_flag : BOOLEAN) **Result Type** : CHI **Comments** : This operation is used to assign a correct Channel identification information element to PDUs dependent on the type of access that is tested.
Description
CHI ASSIGN_CHI(basic,primary,basic_flag) If the value of the basic_flag is set to TRUE, the result of the operation ASSIGN_CHI will be the value represented by the parameter basic which is of type CHI. Else the operation results in the value represented by the parameter primary. Examples: ASSIGN_CHI(CHI1b_R1, CHI1p_R1, TRUE) = CHI1b_R1 ASSIGN_CHI(CHI1b_R1, CHI1p_R1, FALSE) = CHI1p_R1
Detailed comments :