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Zasebno omreġje z integriranimi storitvami (PISN) ï Signalizacijski protokol med centralami ï Dopolnilna storitev: dokonļanje klica za vstopno toļko VPN "b" storitve ï 2. del: Abstraktni preskuġalni niz (ATS) in delna dodatna informacija za preskuġanje izvedbe protokola (PIXIT) ï Proforma specifikacija

Private Integrated Services Network (PISN); Inter-exchange signalling protocol; Call completion supplementary service for the VPN b service entry point; Part 2: Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Services and Protocols for Advanced Networks (SPAN).

The present document is part 2 of a multi-part deliverable covering the Private Integrated Services Network (PISN); Inter-exchange signalling protocol; Call Completion supplementary service for the VPN "b" service entry point, as described below:

Part 1: "Test Suite Structure and Test Purposes (TSS&TP) specification";

Part 2: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification".

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Date of adoption of this EN:	18 January 2002
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1 Scope

The present document specifies the Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma for the VPN "b" entry point of implementations conforming to the standard for the Call completion supplementary service (SS-CC) as described in ETS 300 366 [1].

EN 301 452-1 specifies the Test Suite Structure and Test Purposes (TSS&TP) related to this ATS and partial PIXIT proforma specification.

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 and/or edition number or version number) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

[1] ETSI ETS 300 366 (1995): "Private Integrated Services Network (PISN); Inter-exchange signalling protocol; Call completion supplementary services [ISO/IEC 13870 (1995) modified]".

[2] ETSI TR 101 101 (V1.1.1): "Methods for Testing and Specification (MTS); TTCN interim version including ASN.1 1994 support [ISO/IEC 9646-3] (Second Edition Mock-up for JTC1/SC21 Review)".

[3] ISO/IEC 9646 (all parts): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework".

[4] ISO/IEC 8825-1: "Information technology - ASN.1 encoding rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER)". See also ITU-T Recommendation X.690 (1994)

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3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in ISO/IEC 9646 [3] apply.

3.2 Abbreviations

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

ASN	Abstract Syntax Notation
ATM	Abstract Test Method
ATS	Abstract Test Suite
BER	Basic Encoding Rules
CCBS	Call Completion to Busy Subscriber
CCNR	Call Completion on No Reply
ETS	Executable Test Suite
ISDN	Integrated Services Digital Network
IUT	Implementation Under Test
MOT	Means Of Testing
MTC	Main Test Component

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PCO	Point of Control and Observation
PCTR	Protocol Conformance Test Report
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
PTC	Parallel Test Component
SCTR	System Conformance Test Report
SUT	System Under Test
TP	Test Purpose
TTCN	Tree and Tabular Combined Notation
VPN	Virtual Private Network

4 Abstract Test Method (ATM)

4.1 Description of ATM used

The multi-party test method is applied for testing the IUT. The general configuration used is shown in figure 1.

A Point of Control and Observation (PCO) resides at the service access point between layers 2 and 3 in the test system. The PCO used by the MTC is named "L0" (for Lower). This 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.

A second "informal" PCO, called "O" (for Operator) is used to specify control but not observation above the IUT; events at this PCO are never used to generate test case verdicts. Messages sent by the tester at this PCO explicitly indicate to the operator actions which are to be performed on the SUT. This is regarded as a preferred alternative to the use of the implicit send event.

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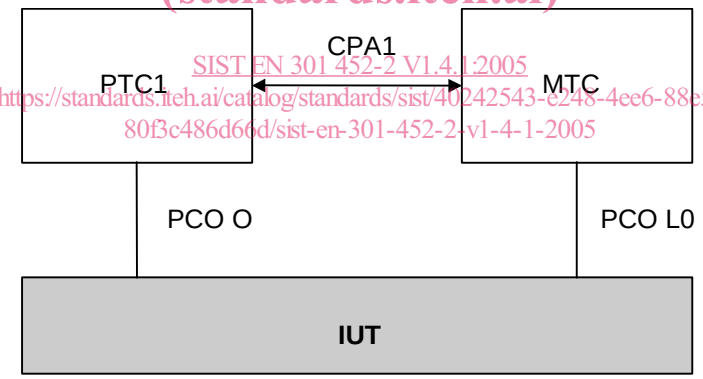

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Figure 1: Multi-party test method

The relationship between the IUT and the tester is as follows:

When the IUT is either in the Originating configuration or in the Terminating configuration, the IUT is connected to the MTC. The verdict depends on the behaviour observed at the PCO between the IUT and the MTC. The PCO O is used to specify control above the IUT, using the PTC process

5 Untestable test purposes

There are no untestable test cases associated with this ATS and ATM.

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6 ATS conventions

6.1 Version of TTCN used

The version of TTCN used is that defined in TR 101 101 [2].

6.2 Use of ASN.1

6.2.1 Situations where ASN.1 is used

ASN.1 has been used for three major reasons. First, types defined in ASN.1 can model problems that "pure" TTCN cannot. For instance, data structures modelling ordered or unordered sequences of data are preferably defined in ASN.1. Second, ASN.1 provides a better restriction mechanism for type definitions by using sub-type definitions. Third, it is necessary to use ASN.1 to reproduce the type definitions for remote operation components as specified in the base standards in ASN.1.

The possibility to use TTCN and ASN.1 in combination is used, i.e. referring to an ASN.1 type from a TTCN type.

6.2.2 Specification of encoding rules

There is a variation in the encoding rules applied to ASN.1 types and constraints specified in this ATS and therefore a mechanism is needed to differentiate the encoding rules. However the mechanism specified in ISO/IEC 9646-3/AM2 [3] and in TR 101 101 [2] does not facilitate definition of the encoding rules as needed for this ATS. A solution is therefore used which is broadly in the spirit of ISO/IEC 9646-3/AM2 [3] in which comment fields have been used as a means of encoding rules.

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For ASN.1 used in this ATS, two variations of encoding rules are used. One is the commonly known Basic Encoding Rules (BER) as specified in ISO/IEC 8825-1 [4]. In the second case the encoding is according to ISDN, i.e. the ASN.1 data types are a representation of structures contained within the ISDN specification (basic call, Generic functional protocol or individual supplementary service). For example, if octets of an information element are specified in ASN.1 as a SEQUENCE then this should be encoded in an Executable Test Suite (ETS) as any other ISDN information element specified using tabular TTCN. This ISDN encoding variation is the default encoding rule for this ATS. This means that all ASN.1 constraint tables are encoded using ISDN (non-BER) encoding unless stated otherwise. BER encoding should never be applied to an ASN.1 constraint where BER encoding has not been specified. This encoding rule is sometimes named "Direct Encoding".

For BER encoding, an indication is given in the comments field of the table header. For this ATS such indications appear in the ASN.1 type constraint declaration tables only. In the table header comment field, the notation "ASN1_Encoding: BER" is used.

In this particular ATS all ASN.1 type constraints which are of type "Component" are to be encoded using BER.

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Table 1 shows an example of a ASN.1 type Constrained Declaration used in this ATS.

Table 1: ASN.1 type constraint declaration showing use of encoding variation

ASN.1 Type Constraint Declaration	
Constraint Name:	CCBSRequestInv_S1 (INV_ID: InvokeIDType)
ASN.1 Type:	Component
Derivation Path:	
Comments:	Sent Component: CCBSRequest Invoke component, maintain signalling connection is required (i.e. retain_sig_connection TRUE) ASN1_Encoding: BER
Description	
cCBSRequest_Comp cCBSRequest_InvokeComp { invokeID INV_ID, -- the invoke identifier operation_value localValue 40, -- value for operation argument {numberA PX_Number_A1, numberB PX_Number_B, service PX_PSS1_IE, -- BCAP/HLC/LLC embedded subaddrA OMIT, subaddrB OMIT, can_retain_service OMIT, retain_sig_connection TRUE, extension OMIT } }	
Detailed comments:	

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7 ATS to TP map

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The identifiers used for the TPs are reused as test case names. Thus there is a straightforward one-to-one mapping.

8 PCTR conformance

A test laboratory, when requested by a client to produce a PCTR, is required, as specified in ISO/IEC 9646-5 [3], to produce a PCTR conformant with the PCTR template given in annex B of ISO/IEC 9646-5 [3].

Furthermore, a test laboratory, offering testing for the ATS specification contained in annex C, when requested by a client to produce a PCTR, is required to produce a PCTR conformant with the PCTR proforma contained in annex A.

A PCTR which conforms to this PCTR proforma specification shall preserve the content and ordering of the clauses contained in annex A. clause A.6 of the PCTR may contain additional columns. If included, these shall be placed to the right of the existing columns. Text in italics may be retained by the test laboratory.