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Digitalno omrežje z integriranimi storitvami (ISDN) - Signalizacija št. 7 - Druga različica ISDN-uporabniškega dela (ISUP) - 36. del: Abstraktni preskušalni niz (ATS) in delna dodatna informacija za preskušanje izvedbe protokola (PIXIT) - Proforma specifikacije za dopolnilne storitve

Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the International interface; Part 36: Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for supplementary services

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Signalling System No.7;
ISDN User Part (ISUP) version 2 for the International interface;
Part 36: Abstract Test Suite (ATS) and partial Protocol
Implementation eXtra Information for Testing (PIXIT) proforma
specification for supplementary services**

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Foreword

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

This ETS is part 36 of a multi-part standard covering the ISDN User Part (ISUP) version 2 for the international interface, as described below:

- Part 1: "Basic services";
 Part 2: "ISDN supplementary services";
 Part 3: "Calling Line Identification Presentation (CLIP) supplementary service";
 Part 4: "Calling Line Identification Restriction (CLIR) supplementary service";
 Part 5: "Connected Line Identification Presentation (COLP) supplementary service";
 Part 6: "Connected Line Identification Restriction (COLR) supplementary service";
 Part 7: "Terminal Portability (TP) supplementary service";
 Part 8: "User-to-User Signalling (UUS) supplementary service";
 Part 9: "Closed User Group (CUG) supplementary service";
 Part 10: "Subaddressing (SUB) supplementary service";
 Part 11: "Malicious Call Identification (MCID) supplementary service";
 Part 12: "Conference call, add-on (CONF) supplementary service";
 Part 14: "Explicit Call Transfer (ECT) supplementary service";
 Part 15: "Diversion supplementary services";
 Part 16: "Call Hold (HOLD) supplementary service";
 Part 17: "Call Waiting (CW) supplementary service";
 Part 18: "Completion of Calls to Busy Subscriber (CCBS) supplementary service";
 Part 19: "Three-Party (3PTY) supplementary service";
 Part 31: "Protocol Implementation Conformance Statement (PICS) proforma specification for basic services";
 Part 32: "Test Suite Structure and Test Purposes (TSS&TP) specification for basic services";
 Part 33: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for basic services";
 Part 34: "Protocol Implementation Conformance Statement (PICS) proforma specification for supplementary services";
 Part 35: "Test Suite Structure and Test Purposes (TSS&TP) specification for supplementary services";
Part 36: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for supplementary services".

NOTE: Part 13 has been withdrawn.

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1 Scope

This thirty-sixth part of ETS 300 356 provides the conformance test specification for the ISDN User Part (ISUP) version 2 supplementary services defined in ETS 300 356-2 [2] to ETS 300 356-19 [18] in compliance with the relevant requirements and in accordance with the relevant guidance given in ISO/IEC 9646-1 [23].

This ETS contains the Abstract Test Suite (ATS) for ISUP version 2 supplementary services, written in Tree and Tabular Combined Notation (TTCN) as specified in ISO/IEC 9646-3 [25]. It is based on ETS 300 356-35 [20] which specifies the Test Suite Structure and Test Purposes (TSS&TP).

This ETS applies only to exchanges having implemented the ISUP version 2 protocol specifications [2-18]. It is applicable for conformance testing of all types of exchanges as specified in the ISUP version 2 protocol specifications [2-18]. This ETS does not deal with compatibility testing.

The main text part of this ETS presents the requirements regarding the chosen test method and the conventions used within the ATS.

The annexes contain the ATS for ISUP version 2 supplementary services (available on electronic media), the partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma and the Protocol Conformance Test Report (PCTR) proforma.

2 Normative references

This ETS incorporates by dated and undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

An ETS is referenced where it (partly) overrides the corresponding ITU-T Recommendation or where a corresponding ITU-T Recommendation does not exist (yet). For convenience, the respective section of an ITU-T Recommendation is referenced when it is not overridden by a corresponding ETS.

- [1] ETS 300 356-1 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 1: Basic services [ITU-T Recommendations Q.761 to Q.764 (1993), modified]".
- [2] ETS 300 356-2 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 2: ISDN supplementary services [ITU-T Recommendation Q.730 (1993), modified]".
- [3] ETS 300 356-3 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 3: Calling Line Identification Presentation (CLIP) supplementary service [ITU-T Recommendation Q.731, clause 3 (1993), modified]".
- [4] ETS 300 356-4 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 4: Calling Line Identification Restriction (CLIR) supplementary service [ITU-T Recommendation Q.731, clause 4 (1993), modified]".
- [5] ETS 300 356-5 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 5: Connected Line Identification Presentation (COLP) supplementary service [ITU-T Recommendation Q.731, clause 5 (1993), modified]".

- [6] ETS 300 356-6 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 6: Connected Line Identification Restriction (COLR) supplementary service [ITU-T Recommendation Q.731, clause 6 (1993), modified]".
- [7] ETS 300 356-7 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 7: Terminal Portability (TP) supplementary service [ITU-T Recommendation Q.733, clause 4 (1993), modified]".
- [8] ETS 300 356-8 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 8: User-to-User Signalling (UUS) supplementary service [ITU-T Recommendation Q.737, clause 1 (1993), modified]".
- [9] ETS 300 356-9 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 9: Closed User Group (CUG) supplementary service [ITU-T Recommendation Q.735, clause 1 (1993), modified]".
- [10] ETS 300 356-10 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 10: Subaddressing (SUB) supplementary service [CCITT Recommendation Q.731, section 8 (1992), modified]".
- [11] ETS 300 356-11 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 11: Malicious Call Identification (MCID) supplementary service".
- [12] ETS 300 356-12 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 12: Conference call, add-on (CONF) supplementary service [ITU-T Recommendation Q.734, clause 15 (1993), modified]".
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- [13] ETS 300 356-14 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 14: Explicit Call Transfer (ECT) supplementary service".
- [14] ETS 300 356-15 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 15: Diversion supplementary services [ITU-T Recommendation Q.732, clauses 2 to 5 (1993), modified]".
- [15] ETS 300 356-16 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 16: Call Hold (HOLD) supplementary service [ITU-T Recommendation Q.733, clause 2 (1993), modified]".
- [16] ETS 300 356-17 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 17: Call Waiting (CW) supplementary service [CCITT Recommendation Q.733, section 1 (1992), modified]".
- [17] ETS 300 356-18 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 18: Completion of Calls to Busy Subscriber (CCBS) supplementary service".
- [18] ETS 300 356-19 (1995): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 19: Three party (3PTY) supplementary service [ITU-T Recommendation Q.734, clause 2 (1993), modified]".

- [19] ETS 300 356-34: "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 34: Protocol Implementation Conformance Statement (PICS) proforma specification for supplementary services".
- [20] ETS 300 356-35: "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface; Part 35: Test Suite Structure and Test Purposes (TSS&TP) specification for supplementary services".
- [21] ETS 300 406: "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".
- [22] ETR 141: "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; The Tree and Tabular Combined Notation (TTCN) style guide".
- [23] ISO/IEC 9646-1: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts".
- [24] ISO/IEC 9646-2: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 2: Abstract Test Suite specification".
- [25] ISO/IEC 9646-3: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 3: The Tree and Tabular Combined Notation (TTCN)".
- [26] 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".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this ETS, the following definitions apply:

- terms defined in the ISUP version 2 reference specifications [1-18];
- terms defined in ISO/IEC 9646-1 [23] and in ISO/IEC 9646-3 [25].

In particular, the following terms apply:

Abstract Test Case (ATC): A complete and independent specification of the actions required to achieve a specific test purpose, defined at the level of abstraction of a particular Abstract Test Method, starting in a stable testing state and ending in a stable testing state (see ISO/IEC 9646-1 [23], subclause 3.3.3).

Abstract Test Method (ATM): The description of how an IUT is to be tested, given at an appropriate level of abstraction to make the description independent of any particular realization of a Means of Testing, but with enough detail to enable abstract test cases to be specified for this method (see ISO/IEC 9646-1 [23], subclause 3.3.5).

Abstract Test Suite (ATS): A test suite composed of abstract test cases (see ISO/IEC 9646-1 [23], subclause 3.3.6).

Implementation Under Test (IUT): An implementation of one or more OSI protocols in an adjacent user/provider relationship, being part of a real open system which is to be studied by testing (see ISO/IEC 9646-1 [23], subclause 3.3.43).

Means Of Testing (MOT): The combination of equipment and procedures that can perform the derivation, selection, parametrization and execution of test cases, in conformance with a reference standardized ATS, and can produce a conformance log (see ISO/IEC 9646-1 [23], subclause 3.3.54).

Point of Control and Observation (PCO): A point within a testing environment where the occurrence of test events is to be controlled and observed, as defined in an abstract test method (see ISO/IEC 9646-1 [23], subclause 3.3.64).

pre-test condition: A setting or state in the IUT which cannot be achieved by providing stimulus from the test environment.

Protocol Implementation Conformance Statement (PICS): A statement made by the supplier of a protocol claimed to conform to a given specification, stating which capabilities have been implemented (see ISO/IEC 9646-1 [23], subclauses 3.3.39 and 3.3.80).

PICS proforma: A document, in the form of a questionnaire, which when completed for an implementation or system becomes the PICS.

Protocol Implementation eXtra Information for Testing (PIXIT): A statement made by a supplier or implementor of an IUT (protocol) which contains or references all of the information related to the IUT and its testing environment, which will enable the test laboratory to run an appropriate test suite against the IUT (see ISO/IEC 9646-1 [23], subclauses 3.3.41 and 3.3.81).

PIXIT proforma: A document, in the form of a questionnaire, which when completed for the IUT becomes the PIXIT.

System Under Test (SUT): The real open system in which the IUT resides (see ISO/IEC 9646-1 [23], subclause 3.3.103).

user: The access protocol entity at the User side of the user-network interface where a T reference point or coincident S and T reference point applies.

3.2 Abbreviations

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For the purposes of this ETS, the following abbreviations apply:

3PTY	Three-Party
ASE	Application Service Entity
ASP	Abstract Service Primitive
ATC	Abstract Test Case
ATM	Abstract Test Method
ATS	Abstract Test Suite
CCBS	Completion of Calls to Busy Subscriber
CDIV	Call Diversion
CFB	Call Forwarding Busy
CFNR	Call Forwarding No Reply
CFU	Call Forwarding Unconditional
CIC	Circuit Identification Code
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction
CntrlE	Controlling Exchange
COLP	Connected Line Identification Presentation
COLR	Connected Line Identification Restriction
CONF	Conference call, add-on
CUG	Closed User Group
CW	Call Waiting
DLE	Destination Local Exchange
DSS1	Digital Subscriber Signalling System No. one
ECT	Explicit Call Transfer
HOLD	Call Hold
InclE	Incoming International Exchange
InterME	Intermediate Exchange
ISC	International Switching Centre
ISDN	Integrated Services Digital Network
ISUP	ISDN User Part
ITE	International Transit Exchange
IUT	Implementation Under Test

IWorkE	Interworking Exchange
LAPD	Link Access Protocol for the D-channel
LT	Lower Tester
MCID	Malicious Call Identification
MOT	Means Of Testing
MTC	Main Test Component
MTP	Message Transfer Part
NNI	Network-Network Interface
NTE	National Transit Exchange
OLE	Originating Local Exchange
OutIE	Outgoing International Exchange
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
SCS	System Conformance Statement
SP	Signalling Point
SPC	Signalling Point Code
SS7	Signalling System No.7
SUB	Subaddressing
SUT	System Under Test
TCP	Test Co-ordination Procedures
TSS&TP	Test Suite Structure and Test Purposes
TTCN	Tree and Tabular Combined Notation
UNI	User-Network Interface
UUS	User-to-User Signalling
UUSn	UUS service n (n = 1..3)

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4 Implementation under test and test methods

4.1 Identification of the system and implementation under test

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The System Under Test (SUT) is an exchange. The Implementation Under Test (IUT) is the ISUP version 2 implementation in this exchange, mainly the part responsible for the supplementary services functionality, as shown in figure 1.

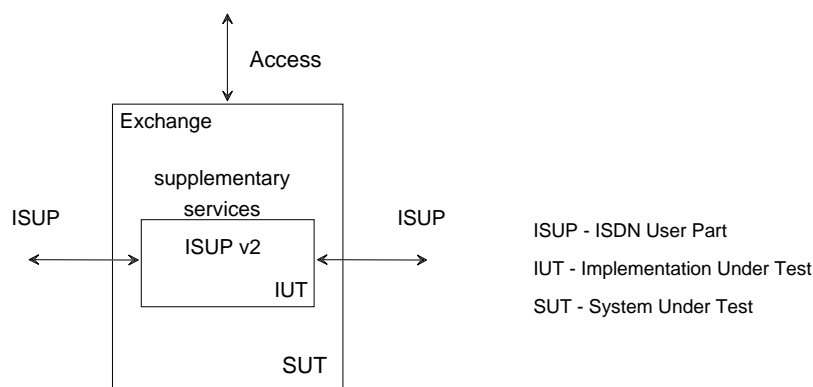


Figure 1: Exchange as SUT

The ISUP signalling protocol can be observed on the SS7 link on the Network-Network Interface (NNI). The effects of signalling procedures of ISUP can be observed on the circuits controlled by the ISUP on the NNI.

The ISUP implementation will in some exchanges have to interwork with the Access signalling system on the User-Network Interface (UNI) and involve call handling in order to establish end-to-end connections.