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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 2: Protocol Implementation Conformance Statement (PICS)
proforma specification

ETSI

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Foreword

This final draft European Telecommunication Standard (ETS) has been produced by the Signalling Protocols and Switching (SPS) Technical Committee of the European Telecommunications Standards Institute (ETSI), and is now submitted for the Voting phase of the ETSI standards approval procedure.

This ETS is part 2 of a multi-part standard covering the Service Specific Co-ordination Function (SSCF) for support of signalling at the User-Network Interface (UNI) for the Broadband Integrated Services Digital Network (B-ISDN) as described below:

Part 1: **"Specification of SSCF at UNI [ITU-T Recommendation Q.2130, modified]";**

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

> NOTE: Further parts covering conformance testing will be identified later.

Proposed transposition dates	
Date of latest announcement of this ETS (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	6 months after doa

Introduction

To evaluate conformance of a particular implementation, it is necessary to have a statement of which capabilities and options have been implemented for a given protocol. Such a statement is called a Protocol Implementation Conformance Statement (PICS).

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1 Scope

This second part of ETS 300 437 provides the Protocol Implementation Conformance Statement (PICS) proforma for the Service Specific Co-ordination Function (SSCF) at the Signalling ATM Adaptation Layer (SAAL) for support of signalling at the User-Network Interface (UNI) for the Broadband Integrated Services Digital Network (B-ISDN) as specified in ETS 300 437-1 [2] in compliance with the relevant requirements and in accordance with the relevant guidance given in ISO/IEC 9646-7 [4].

This PICS proforma applies to the B-ISDN SSCF for UNI signalling and the Service Specific Connection-Oriented Protocol (SSCOP, see ETS 300 436-1 [1]) implementation used to support it. Certain mandatory SSCOP functions are not necessary for the support of UNI signalling, but may be needed to support other SSCFs. This PICS proforma identifies such mandatory functions as optional for UNI signalling.

The supplier of a protocol implementation that is claimed to conform to ETS 300 437-1 [2] is required to complete a copy of the PICS proforma provided in annex A of this ETS and is required to provide the information necessary to identify both the supplier and the implementation.

2 Normative references

This ETS incorporates by dated or 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.

[1]   ETS 300 436-1: "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]".

[2]   ETS 300 437-1: "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]".

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

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

3 Definitions

For the purposes of this ETS, the definitions in ISO/IEC 9646-1 [3] and ISO/IEC 9646-7 [4] apply. In particular, the following terms defined in ISO/IEC 9646-1 [3] apply:

Implementation Conformance Statement (ICS): A statement made by the supplier of an implementation or system claimed to conform to a given specification, stating which capabilities have been implemented. The ICS can take several forms: protocol ICS (PICS), profile ICS, profile specific ICS, and information object ICS.

Protocol Implementation Conformance Statement (PICS): An ICS for an implementation or system claimed to conform to a given protocol specification.

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

The following definitions also apply:

network: The DSS2 protocol entity at the network side of the user-network interface.

user: The DSS2 protocol entity at the user side of the user-network interface.

4 Abbreviations

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

AA-…	Signal across the boundary between SSCF and SSCOP
AAL-…	Primitive across the boundary between SAAL and SAAL user
AAL	ATM Adaptation Layer
ATM	Asynchronous Transfer Mode
B-ISDN	Broadband Integrated Services Digital Network
BGAK	Begin Acknowledge (PDU)
BGN	Begin (PDU)
BGREJ	Begin Reject (PDU)
c	Conditional
CC	Connection Control
END	End (PDU)
ENDAK	End Acknowledge (PDU)
ER	Error Recovery (PDU)
ERAK	Error Recovery Acknowledge (PDU)
ICS	Implementation Conformance Statement
IUT	Implementation Under Test
m	Mandatory
MaxCC	Maximum value for the Connection Control state variable VT(CC) (count)
MaxPD	Maximum value for the Poll Data state variable VT(PD) (count)
MaxSTAT	Maximum number of list elements placed in STAT PDU (count)
MD	Management Data (PDU)
n/a	Not Applicable
o	Optional
o.<n>	Optional, but, if chosen, support is required for either at least one or only one of the options in the group labelled by the same numeral <n>
OSI	Open Systems Interconnection
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation Extra Information for Testing
POLL	Poll (PDU)
RESYNC	Resynchronization (primitive)
RS	Resynchronization (PDU)
RSAK	Resynchronization Acknowledge (PDU)
SAAL	Signalling ATM Adaptation Layer
SCS	System Conformance Statement
SD	Sequenced Data (PDU)
SDU	Service Data Unit
SSCF	Service Specific Co-ordination Function
SSCOP	Service Specific Connection-Oriented Protocol
STAT	Status (PDU)
SUT	System Under Test
Timer_CC	Timer which protects the protocol against loss during establishment (BGN PDU), release (END PDU), resynchronization (RS PDU), or error recovery (ER PDU) of the connection
Timer_IDLE	Timer which assures that the peer receiver is polled with the lowest permissible polling rate via POLL PDUs when there are no outstanding acknowledgements or new data pending receipt of credit (idle phase)
Timer_KEEP-ALIVE	Timer which assures that the peer receiver is polled via POLL PDUs when there are no outstanding acknowledgements or new data pending receipt of credit (transient phase)
Timer_NO-RESPONSE	Timer which indicates the maximum time interval during which at least one STAT PDU needs to be received

Timer_POLL	Timer which assures that the peer receiver is polled often enough in the via POLL PDUs when there are outstanding acknowledgements or new data pending receipt of credit (active phase)
U-UNI	Upper boundary of SSCF at the UNI
UD	Unit Data (PDU)
UNI	User Network Interface
UNIT DATA	Unit Data (Primitive)
USTAT	Unsolicited Status (PDU)
UU	User-to-User
x	Excluded

5   Conformance

A PICS proforma that conforms to this PICS proforma specification shall be technically equivalent to annex A, and shall preserve the numbering and ordering of the items in annex A.

A PICS that conforms to this PICS proforma specification shall:

a)   describe an implementation which conforms to ETS 300 437-1 [2];

b)   be a conforming PICS proforma, which has been completed in accordance with the instructions for completion given in clause A.1;

c)   include the information necessary to uniquely identify both the supplier and the implementation.

Annex A (normative): PICS proforma for ETS 300 437-1

Notwithstanding the provisions of the copyright clause related to the text of this ETS, ETSI grants that users of this ETS may freely reproduce the PICS proforma in this annex so that it can be used for its intended purposes and may further publish the completed PICS.

A.1 Guidance for completing the PICS proforma

A.1.1 Purposes and structure

The purpose of this PICS proforma is to provide a mechanism whereby a supplier of an implementation of the requirements defined in ETS 300 437-1 [2] may provide information about the implementation in a standardized manner.

The ICS proforma is subdivided into subclauses for the following categories of information:

- guidance for completing the ICS proforma;
- identification of the implementation;
- identification of the protocol;
- global statement of conformance;
- SSCOP;
    - protocol capabilities;
    - protocol data units;
    - system parameters;
- SSCOP-SSCF UNI protocol capabilities.

> NOTE: Annex B of ITU-T Recommendation Q.2130 as modified by ETS 300 437-1 [2] is not covered by the PICS proforma.

A.1.2 Abbreviations and conventions

The PICS proforma contained in this annex is comprised of information in tabular form in accordance with the guidelines presented in ISO/IEC 9646-7 [4].

Item column

The item column contains a number which identifies the item in the table.

Item description column

The item description column describes in free text each respective item (e.g. parameters, timers, etc.). It implicitly means "is <item description> supported by the implementation?".

Status column

The following notations, defined in ISO/IEC 9646-7 [4], are used for the status column:

M   mandatory - the capability is required to be supported.

O   optional - the capability may be supported or not.

N/A   not applicable - in the given context, it is impossible to use the capability.

O.i   qualified optional - for mutually exclusive or selectable options from a set. "i" is an integer which identifies an unique group of related optional items and the logic of their selection which is defined immediately following the table.

ci   conditional - the requirement on the capability ("m", "o", "x" or "n/a") depends on the support of other optional or conditional items. "i" is an integer identifying an unique conditional status expression which is defined immediately following the table.

Reference column

The reference column gives reference to ETS 300 437-1 [2], except where explicitly stated otherwise.

Support column

The support column shall be filled in by the supplier of the implementation. The following common notations, defined in ISO/IEC 9646-7 [4], are used for the support column:

Y or y   supported by the implementation

N or n   not supported by the implementation

N/A, n/a or -   no answer required (allowed only if the status is n/a, directly or after evaluation of a conditional status)

NOTE: As stated in ISO/IEC 9646-7 [4], support for a received PDU requires the ability to parse all valid parameters of that PDU. Supporting a PDU while having no ability to parse a valid parameter is non-conformant. Support for a parameter on a PDU means that the semantics of that parameter are supported.

If this PICS proforma is completed in order to describe a multiple-profile support in a system, it is necessary to be able to answer that a capability is supported for one profile and not supported for another. In that case, the supplier shall enter the unique reference to a conditional expression, preceded by "?" (e.g. ?3). This expression shall be given in the space for comments provided at the bottom of the table. It uses predicates defined in the System Conformance Statement (SCS), each of which refers to a single profile and which takes the value TRUE if and only if that profile is to be used.

EXAMPLE: ?3:   IF prof1 THEN Y ELSE N

Values supported column

The values supported column shall be filled in by the supplier of the implementation. In this column, the values or the ranges of values supported by the implementation shall be indicated.

A.1.3   Instructions for completing the PICS proforma

The supplier of the implementation shall complete the PICS proforma in each of the spaces provided. In particular, an explicit answer shall be entered, in each of the support or supported column boxes provided, using the notation described in subclause A.1.2.

If necessary, the supplier may provide additional comments in the space at the bottom of the tables or separately.

NOTE: Where an implementation is capable of being configured in more than one way, a single PICS may be able to describe all such configurations. However, the supplier has the choice of providing more than one PICS, each covering some subset of the implementation's configuration capabilities, in case this provides easier or clearer presentation of the information.

More detailed instructions are given at the beginning of the different clauses of the PICS proforma.

A.2   Identification of the implementation

Identification of the Implementation Under Test (IUT) and the system in which it resides (the System Under Test (SUT)) should be filled in so as to provide as much detail as possible regarding version numbers and configuration options.

The product supplier information and client information should both be filled in if they are different.

A person who can answer queries regarding information supplied in the ICS should be named as the contact person.

A.2.1   Date of the statement

....

A.2.2   Implementation Under Test (IUT) identification

IUT name:

....

....

IUT version:

....

A.2.3   System Under Test (SUT) identification

SUT name:

....

....

Hardware configuration:

....

....

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Operating system:

....

A.2.4   Product supplier

Name:

....

Address:

....

....

....

Telephone number:

....

Facsimile number:

....

E-mail address:

....

Additional information:

....

....

....

A.2.5   Client

Name:

....

Address:

....

....

....

Telephone number:

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Facsimile number:

....

E-mail address:

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Additional information:

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A.2.6   ICS contact person

Name:

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Telephone number:

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Facsimile number:

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E-mail address:

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Additional information:

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....

A.3   Identification of the protocol

This PICS proforma applies to the following standard:

ETS 300 437-1: "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]".

A.4   Global statement of conformance

Does the implementation described in this PICS meet all the mandatory requirements of the referenced standard?

[ ] **Yes**

[ ] **No**

> NOTE: Answering "No" to this question indicates non-conformance to the protocol specification. Non-supported mandatory capabilities are to be identified in the PICS, with an explanation of why the implementation is non-conforming.

A.5   SSCOP

A.5.1   SSCOP Protocol Capabilities (PC)

Each item able A.1 refers to a capability offered by the SSCOP protocol. Answering "Yes" to a particular question states that the SSCOP implementation supports all the mandatory procedures for that function as defined in the referenced parts of ITU-T Recommendation Q.2110 as modified by ETS 300 436-1 [1]. Answering "No" to a particular question states that the SSCOP implementation does not support that function of the protocol.

Items PC2, PC4 (BGREJ, MD), PC5.3, PC16 are optional, indicating that at UNI SSCF does not invoke this functionality even if it is provided by SSCOP. Item PC9 is optional, indicating a local implementation option of the SSCOP protocol which is not detectable by the peer SSCOP entity.

Table A.1

Item	Protocol feature	Reference	Status	Support
PC1	Does IUT support Keep Alive function?	5 e)	M	
PC2	Does IUT support the Local Data Retrieve function?	5 f)	O	
PC3	Does the IUT support SSCOP initiated error recovery due to protocol error?	5 i)	M	
PC4	Does the IUT recognize the following Messages regardless of state?	table 2		
	BGN		M	
	BGAK		M	
	BGREJ		O	
	END		M	
	ENDAK		M	
	ER		M	
	ERAK		M	
	POLL		M	
	STAT		M	
	USTAT		M	
	RS		M	
	RSAK		M	
	SD		M	
	UD		M	
	MD		O	
PC5.1	In the absence of protocol error, does the IUT support assured data transfer with sequence integrity?	5 a); 5 h); 7.1 j)	M	
PC5.2	Does IUT support the sending of the Unassured Data PDU?	5 h); 7.1 n)	M	
PC5.3	Does IUT support the sending of the Management Data PDU?	7.1 o)	O	
PC6	Does IUT support user invoked resynchronization procedures?	5 g)	M	
PC7	Does IUT support the establishment procedures for an SSCOP connection?	5 g)	M	
PC8	Does IUT support release procedures for an SSCOP connection?	5 g)	M	
PC9	Does IUT support polling after retransmission?	SDL	O	
PC10	Does IUT support the segmenting of STAT PDUs?	7.2.5	M	
PC11	Can the IUT initiate SSCOP connection?	5 g)	M	
PC12	Can the IUT reject (BGREJ) the establishment of an SSCOP connection from its peer?	SDL	N/A	
PC13	Does IUT support error reporting to layer management?	5 d)	M	
PC14	Does IUT support the Protocol error detection function?	5 i)	M	
PC15	When no SSCOP connection exists, is a connection established only upon receipt of a BGN or a request from the SSCOP user?	SDL	M	
PC16	Does SSCOP permit the conveyance of SSCOP User-to-User Information between users of the SSCOP?	5 g); 6.1.2 b)	O	
Comments:				

A.5.2 SSCOP Protocol Data Units (PD)

Indicating support for an item in table A.2 states that the SSCOP implementation complies with the definition of the basic structure of SSCOP PDU format such as coding conventions and contents of reserved fields.

All references are to ITU-T Recommendation Q.2110 as modified by ETS 300 436-1 [1].

Table A.2

Item	Protocol feature	Reference	Status	Support
Order of Octet Transmission				
PD1	Are octets transmitted in ascending numerical order?	7.2.1	M	
Field Mapping Convention				
PD2	Does the lowest bit number carry the lowest order value?	7.2.1	M	
PD3	Are PDU formats 32 bit aligned?	7.2	M	
PD4	Are all reserved bits coded as zeroes?	7.2.3	M	
Comments:				

A.5.3 SSCOP System Parameters (SP)

Indicating support for an item in table A.3 states that the implementation has a parameter that operates in accordance with the description in ITU-T Recommendation Q.2110 as modified by ETS 300 436-1 [1]. Specific values for the parameters implemented should be stated here, or, where appropriate, in the PIXIT.

All references are to ITU-T Recommendation Q.2110 as modified by ETS 300 436-1 [1] unless otherwise stated.

Table A.3

Item	Protocol feature	Reference	Status	Support	Supported value
SP1	Is the parameter supported which defines the maximum number of transmissions of a BGN, END, ER, or RS PDU (MaxCC)?	7.7 a); [2] table 4	M		
SP2	Is the parameter supported which defines the maximum number of SD PDUs before transmission of a POLL PDU (MaxPD)?	7.7 b); [2] table 4	M		
SP3	Is the parameter supported which defines the maximum number of List Elements in a STAT (MaxSTAT)?	7.7 c)	M		
SP4	Is the parameter supported which defines the maximum SSCOP SDU size?	7.2.4; [2] table 4	M		
SP5	Is Timer_POLL supported?	7.6 a); [2] table 4	M		
SP6	Is Timer_KEEP-ALIVE supported?	7.6 b); [2] table 4	M		
SP7	Is Timer_NO-RESPONSE supported?	7.6 c); [2] table 4	M		
SP8	Is Timer_IDLE supported?	7.6 c); [2] table 4	M		
SP9	Is Timer_CC supported?	7.6 d); [2] table 4	M		
SP10	If PC16 is supported, what is the maximum size of the SSCOP-UU?	6.1.2 b); [2] table 4	M		
Comments:					

A.6   SSCOP-SSCF UNI Protocol Capabilities (SUPC)

Table A.4 contains questions about the combined SSCOP and SSCF functional block. It is divided into three logical parts, covering the establishment and release of a SSCOP connection, data transfer, and re-establishment of a SSCOP connection. Each is further subdivided depending on the direction of information flow through the combined SSCOP and SSCF functional block. The following terminology is used:

-    the U-UNI represents the upper boundary of the SSCF;

-    the primitives exchanged between the SSCF and the SSCOP are shown between square brackets "[ ]" in the PICS questions. These primitives do not constrain an implementation;

-    the SSCOP represents the peer-to-peer messages (e.g., PDUs).

Indicating support for an item in table A.4 states that the implementation supports all the mandatory elements of the procedures for that function as defined in the referenced parts of ITU-T Recommendation Q.2130 as modified by ETS 300 437-1 [2]. Answering "No" to a particular question states that the implementation does not support that function of the protocol.

All references are to ITU-T Recommendation Q.2130 as modified by ETS 300 437-1 [2].

Table A.4

Item	Protocol feature	Reference	Status	Support
ESTABLISHMENT/RELEASE				
SSCOP → Upper boundary of SSCF UNI (U-UNI)				
SUPC1	Does the receipt of SSCOP PDU BGN [AA-ESTABLISH.indication] generate AAL-ESTABLISH.indication at U-UNI?	table 3 figure I-1	M	
SUPC2	In addition to SUPC1, does SSCOP send PDU BGAK [AA-ESTABLISH. response] to accept the connection request?	table 3 figure I-1	M	
SUPC3	On receipt of SSCOP PDU END [AA-RELEASE.indication], does IUT generate AAL-RELEASE.indication at U-UNI, and does the SSCOP send PDU ENDAK [AA-RELEASE.response]?	table 3 figure I-6	M	
Upper boundary of SSCF UNI (U-UNI) → SSCOP				
SUPC4	Does an AAL-ESTABLISH.request (U-UNI) generate an SSCOP PDU BGN [AA-ESTABLISH.request]?	table 3 figure I-1	M	
SUPC5	Does the receipt of an SSCOP PDU BGAK [AA-ESTABLISH.confirm] in response to the sending of an SSCOP PDU BGN generate an AAL-ESTABLISH.confirm at U-UNI?	table 3 figure I-1	M	
SUPC6	Does an AAL-RELEASE.request (U-UNI) generate an SSCOP PDU END [AA-RELEASE.request]?	table 3 figure I-6	M	
SUPC7	Does the receipt of an SSCOP PDU ENDAK [AA-RELEASE.confirm] in response to the sending of an SSCOP END PDU generate a AAL-RELEASE.confirm at U-UNI?	table 3 figure I-6	M	
DATA TRANSFER				
SSCOP → Upper boundary of SSCF UNI (U-UNI)				
SUPC8	Does receipt of an in-sequence SSCOP PDU SD [AA-DATA.indication] generate AAL-DATA.indication at U-UNI?	table 3	M	
SUPC9	Does receipt of an SSCOP PDU UD [AA-UNITDATA.indication] generate AAL-UNITDATA.indication at U-UNI?	table 3	M	
Upper boundary of SSCF UNI (U-UNI) → SSCOP				
SUPC10	Does an AAL-UNITDATA.request (U-UNI) generate an SSCOP PDU UD [AA-UNITDATA.request]?	table 3	M	
SUPC11	Does an AAL-DATA.request (U-UNI) generate an SSCOP PDU SD [AA-DATA.request] while a connection is established and credit is available?	table 3	M	

(continued)

Table A.4 (concluded)

Item	Protocol feature	Reference	Status	Support
RE-ESTABLISHMENT				
SSCOP → Upper boundary of SSCF UNI (U-UNI)				
SUPC12	Does the receipt of SSCOP PDU RS [AA-RESYNC.indication] generate AAL-ESTABLISH.indication at U-UNI?	table 3 figure I-10	M	
SUPC13	In addition to SUPC12, does SSCOP send PDU RSAK [AA-RESYNC.response] to accept the connection request ?	table 3 figure I-10	M	
SUPC14	On receipt of SSCOP PDU ER [AA-RECOVER.indication], does IUT generate AAL-ESTABLISH .indication at U-UNI, and does the SSCOP send PDU ERAK [AA-RECOVER.response]?	table 3 figure I-15	M	
SUPC15	On receipt of SSCOP PDU ERAK [AA-RECOVER.indication], does IUT generate AAL-ESTABLISH.indication at U-UNI?	table 3 figure I-15	M	
Upper boundary of SSCF UNI (U-UNI) → SSCOP				
SUPC16	Does an AAL-ESTABLISH.request (U-UNI) generate an SSCOP PDU RS [AA-RESYNC.request]?	table 3 figure I-10	M	
SUPC17	Does the receipt of an SSCOP PDU RSAK [AA-RESYNC.confirm] in response to the sending of an SSCOP PDU RS generate an AAL-ESTABLISH.confirm at U-UNI?	table 3 figure I-10	M	
Comments:				

History

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