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**Integrated Services Digital Network (ISDN);
Digital Subscriber Signalling System No. one (DSS1) protocol;
Data link layer;
Part 5: Protocol Implementation Conformance Statement (PICS)
proforma specification for the frame relay protocol**

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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 5 of a multi-part standard covering the Integrated Services Digital Network (ISDN) Digital Subscriber Signalling System No. one (DSS1) data link layer specification as described below:

- Part 1: "General aspects [ITU-T Recommendation Q.920 (1993), modified]";
- Part 2: "General protocol specification [ITU-T Recommendation Q.921 (1993), modified]";
- Part 3: "Frame relay protocol specification";
- Part 4: "Protocol Implementation Conformance Statement (PICS) proforma specification for the general protocol";
- Part 5: "PICS proforma specification for the frame relay protocol";**
- Part 6: "Test Suite Structure and Test Purposes (TSS&TP) specification for the general protocol";
- Part 7: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification for the general protocol".

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 Open Systems Interconnection (OSI) protocol. Such a statement is called an Implementation Conformance Statement (ICS). An ICS stating what capabilities and options have been implemented for a particular protocol is called a protocol ICS. This is commonly abbreviated to "PICS".

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1 Scope

This fifth part of ETS 300 402 provides the Protocol Implementation Conformance Statement (PICS) proforma for the Integrated Services Digital Network (ISDN) Digital Subscriber Signalling System No. one (DSS1) data link layer frame relay protocol as specified in ETS 300 402-3 [1] in compliance with the relevant requirements and in accordance with the relevant guidance given in ISO/IEC 9646-7 [3].

The supplier of an implementation that is claimed to conform to ETS 300 402-3 [1] is required to complete a copy of the PICS proforma provided in annex A of this ETS.

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.

- [1] ETS 300 402-3: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Data link layer; Part 3: Frame relay protocol specification".
- [2] ISO/IEC 9646-1 (1994): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts".
- [3] ISO/IEC 9646-7 (1994): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 7: Implementation Conformance Statements".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this ETS, the following definitions apply, in addition to those in ETS 300 402-3 [1], ISO/IEC 9646-1 [2] and ISO/IEC 9646-7 [3]:

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, profile ICS, profile specific ICS, and information object ICS (see ISO/IEC 9646-1 [2]).

network: The DSS1 protocol entity at the network side of the user-network interface.

Protocol Implementation Conformance Statement (PICS): An ICS for an implementation or system claimed to conform to a given specification (see ISO/IEC 9646-1 [2]).

PICS proforma: A document, in the form of a questionnaire, which when completed for an implementation or system becomes a PICS (see ISO/IEC 9646-1 [2]).

user: The DSS1 protocol entity at the user side of the user-network interface.

3.2 Abbreviations

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

BECN	Backward Explicit Congestion Notification
CPE	Customer Premises Equipment
D/C	DLCI or DL-CORE control indicator
DE	Discard Eligibility indicator
DLCI	Data link Connection Identifier
FCS	Frame Check Sequence
FECN	Forward Explicit Congestion Notification
FR	Frames
IUT	Implementation Under Testing
ISDN	Integrated Services Digital Network
PDU	Protocol Data Unit
M	Mandatory requirement (to be observed in all cases)
N/A	Not applicable, not supported or the conditions for status are not met
No	not supported
O	Option (may be selected to suit the implementation, provided that any requirements applicable to the option are observed)
O.n	Options, but support required for either at least one or only one of the options in the group labelled with the same numeral "n"
OSI	Open Systems Interconnection
PC	Protocol Capabilities
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation eXtra Information for Testing
SCS	System Conformance Statement
SUT	System Under Test
Yes	supported

4 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 300 402-3 [1];
- b) be a conforming PICS proforma, which has been completed in accordance with the instructions for completion given in clause A.1; and
- c) include the information necessary to uniquely identify both the supplier and the implementation.

Annex A (normative): PICS proforma for ETS 300 402-3

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 Instructions for completing the PICS proforma

A.1.1 Purpose 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 300 402-3 [1] may provide information in a standardized manner.

The PICS proforma is subdivided into clauses as follows:

- A.1: instructions for completing the various parts of the PICS proforma;
- A.2: identification of the implementation;
- A.3: identification of the protocol to which this PICS proforma applies;
- A.4: global statement of conformance;
- A.5: questions about protocol capabilities;
- A.6: questions about supported Protocol Data Units (PDUs); and
- A.7: questions about system parameters.

A.1.2 Symbols, 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 [3].

Item column:

The item column contains a unique reference (a mnemonic plus a number) for each item within the PICS proforma.

Item description column:

The item description contains a brief summary of the static requirement for which a support answer is required.

Status column:

The following notations, defined in ISO/IEC 9646-7 [3], are used for the status column:

NOTE:	To support a capability means that the capability is implemented in conformance to ETS 300 402-3 [1].
M	Mandatory - the capability is required to be supported.
O	Optional - the capability may be supported or not.
O.i	qualified optional - for mutually exclusive or selectable options from a set. "i" is an integer that identifies an unique group of related optional items and the logic of their selection, defined below the table.
N/A	Not Applicable - in the given context, it is impossible to use the capability.

Reference column:

Except where explicitly stated, the reference column refers to the appropriate parts of ETS 300 402-3 [1] describing the particular item. Note, however, that a reference merely indicates the place where the core of a description of an item can be found. Any additional information contained in ETS 300 402-3 [1] has to be taken into account when making a statement about the conformance of that particular item.

Support column:

The following notation, defined in ISO/IEC 9646-7 [3], is used for the support column:

Yes No Tick "Yes" if item is supported, tick "No" if item is not supported.

N/A Tick "N/A" if the item is "not applicable".

A.1.3 Instructions for completing the PICS proforma

The supplier of the implementation shall complete the PICS proforma. For each row in each PICS proforma table the supplier shall enter an explicit answer (i.e., by ticking the appropriate "Yes", "No", or "N/A" in each of the support column boxes provided. Where a support column box is left blank, or where it is marked "N/A" without any tick box, no answer is required. If necessary, the supplier may enter additional comments at the end of each table, or separately.

More detailed instructions may be found at the beginning of each clause of the 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 to provide as much detail as possible regarding version numbers and configuration options.

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

A person who can answer queries regarding information supplied in the PICS 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:

.....
.....
.....

Operating system:

.....
.....

A.2.4 Product supplier

Name:

.....

E-mail address:

.....

Address:

.....
.....
.....

Telephone number:

.....

Facsimile number:

.....

Additional information:

.....
.....
.....

A.2.5 Client

Name:

.....

E-mail address:

.....

Address:

.....

.....

.....

Telephone number:

.....

Facsimile number:

.....

Additional information:

.....

.....

.....

A.2.6 PICS contact person

Name:

.....

E-mail address:

.....

Address:

.....

.....

.....

Telephone number:

.....

Facsimile number:

.....

Additional information:

.....
.....
.....

A.3 Identification of the protocol to which this PICS proforma applies

This PICS proforma applies to the following standard:

Final draft prETS 300 402-3 (1996): "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Data link layer; Part 3: Frame relay protocol specification".

A.4 Global statement of conformance

The implementation described in this PICS meets 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. Explanations may be entered in the comments field at the bottom of each table or on attached pages.

A.5 Protocol capabilities

Each question in table A.1 refers to a major function of the protocol or to the special cases of procedures such as information transfer, etc. which require clarification in the PICS.

Answering "Yes" to a particular question states that the implementation supports all the mandatory procedures for that function defined in the referenced subclauses of ETS 300 402-3 [1]. Answering "No" to a particular question states that the implementation does not support that function of the protocol.

Some of the items are optional and in some cases the option is dependant on the implementation of other items. In these cases, if the invoking capability is supported, the ability to support the item is mandatory. These conditions are made clear in the text of each item.

Table A.1

Item	Protocol feature	Status	Reference	Support
Transmission features				
PC1	Does the CPE set to "1" FECN bit?	O	5.3.3	[]Yes []No
PC2	Does the CPE set to "1" BECN bit?	O	5.3.4	[]Yes []No
PC3	Does the CPE set to "1" DE bit?	O	5.3.5	[]Yes []No
PC4	Does the CPE set to "1" D/C bit?	O	5.3.7	[]Yes []No
PC5	If the CPE supports address field of two octets: does the CPE send a DLCI with a length of 10 bits?	M	5.3.6	[]N/A []Yes []No
PC6.1	If the CPE supports address field of three octets: does the CPE send a DLCI with a length of 10 bits with D/C bit set to "1"?	O.1	5.3.6, 5.3.7	[]N/A []Yes []No
PC6.2	does the CPE send a DLCI with a length of 16 bits with D/C bit set to "0"?	O.1	5.3.6, 5.3.7	[]Yes []No
PC7.1	If the CPE supports address field of four octets: does the CPE send a DLCI with a length of 17 bits with D/C bit set to "1"?	O.2	5.3.6, 5.3.7	[]N/A []Yes []No
PC7.2	does the CPE send a DLCI with a length of 23 bits with D/C bit set to "0"?	O.2	5.3.6, 5.3.7	[]Yes []No
Reception features				
PC8	Does the CPE receive FECN bit set to "1" ?	M	5.3.3	[]Yes []No
PC9	Does the CPE receive BECN bit set to "1" ?	M	5.3.4	[]Yes []No
PC10	Does the CPE receive DE bit set to "1" ?	M	5.3.5	[]Yes []No
PC11	If the CPE supports address field of three octets or address field of four octets: does the CPE receive D/C bit set to "1"?	M	5.3.6	[]N/A []Yes []No
PC12	If the CPE supports address field of two octets: does the CPE receive a DLCI with a length of 10 bits?	M	5.3.6	[]N/A []Yes []No
PC13.1	If the CPE supports address field of three octets: does the CPE receive a DLCI with a length of 10 bits with D/C bit set to "1"?	O.3	5.3.6, 5.3.7	[]N/A []Yes []No
PC13.2	does the CPE receive a DLCI with a length of 16 bits with D/C bit set to "0"?	O.3	5.3.6, 5.3.7	[]Yes []No
PC14.1	If the CPE supports address field of four octets: does the CPE receive a DLCI with a length of 17 bits with D/C bit set to "1"?	O.4	5.3.6, 5.3.7	[]N/A []Yes []No
PC14.2	does the CPE receive a DLCI with a length of 23 bits with D/C bit set to "0" ?	O.4	5.3.6, 5.3.7	[]Yes []No
Error handling features				
PC15	Are the six cases of invalid frames recognized?	M	4.9	[]Yes []No
PC16	Are all invalid received frames discarded and no action is taken by CPE?	M	4.9	[]Yes []No
PC17.1	If the CPE discriminates a received frame which is too long (i.e. with information field exceeding N203 value) from an invalid received frame: Does the CPE discard the frame which is too long?	O.5	4.9	[]N/A []Yes []No
PC17.2	Does the CPE send the complete frame toward the destination with a valid FCS?	O.5	4.9	[]Yes []No
PC18	Are frames with at least seven contiguous "1" bits aborted by the CPE?	M	4.10	[]Yes []No
O.1	Support of one, and only one, of these items is required.			
O.2	Support of one, and only one, of these items is required.			
O.3	Support of one, and only one, of these items is required.			
O.4	Support of one, and only one, of these items is required.			
O.5	Support of one, and only one, of these items is required.			
Comments:				

A.6 Frames - protocol data units

Indication of support for an item in table A.2 states that the implementation has the capability to support the frames, i.e. the Protocol Data Units (PDUs) that may exist.

Table A.2

Item	Protocol feature	Status	Reference	Support
Common features				
FR1	All frames start and end with a flag?	M	4.2	[]Yes []No
FR2	Address field default of two octets?	O.6	4.3	[]Yes []No
FR3	Address field extended to three octets?	O.6	4.3	[]Yes []No
FR4	Address field extended to four octets?	O.6	4.3	[]Yes []No
FR5	Field mapping convention (lowest bit number represents the lowest order value)?	M	4.8	[]Yes []No
Transmitting features				
FR6	Does the CPE generate a single flag (the closing flag is also the open flag of the next frame)?	O	4.2	[]Yes []No
FR7	Transparency (does the CPE insert a "0" bit after five "1" bits?)	M	4.6	[]Yes []No
FR8	Order of bit transmission (ascending numerical order)?	M	4.8	[]Yes []No
FR9	FCS field (transmitting functions)?	M	4.7	[]Yes []No
FR10.1	Interframe filling: Does the CPE transmit contiguous "1" bits?	O.7	4.2	[]Yes []No
FR10.2	Does the CPE transmit consecutive flags?	O.7	4.2	[]Yes []No
Reception features				
FR11	Does the CPE accept the closing flag as the open flag of the next frame?	M	4.2	[]Yes []No
FR12	Transparency (does the CPE discard a "0" bit after five "1" bits?)	M	4.6	[]Yes []No
FR13	Order of bit receiving (ascending numerical order)?	M	4.8	[]Yes []No
FR14	FCS field (receiving functions)	M	4.7	[]Yes []No
FR15	Interframe filling (does the CPE receive either consecutive flags or contiguous "1" bits?)	M	4.2	[]Yes []No
FR16	Does the CPE accept one or more consecutive flag?	M	4.2	[]Yes []No
O.6 Support of one, and only one, of these items is required.				
O.7 Support of one, and only one, of these items is required.				
Comments:				

A.7 System parameters

Indication of support for an item in table A.3 states that the implementation has a parameter that operates in accordance with ETS 300 402-3 [1]. Specific values for the implemented parameters should be stated here, or, where appropriate, in the Protocol Implementation eXtra Information for Testing (PIXIT).

Table A.3

Index	Protocol feature	Status	Reference	Support	Supported value(s)
SP1	Minimum number of octets in information field	M	7	[]Yes []No	
SP2	Default maximum number of octets in information field (N203)	M	7	[]Yes []No	
Comments:					

Annex B (informative): Bibliography

- CCITT Recommendation Q.922 (1992): "ISDN data link layer specification for frame mode bearer services".

History

Document history			
August 1995	Public Enquiry	PE 90:	1995-08-21 to 1995-12-15
May 1996	Vote	V 102:	1996-05-06 to 1996-08-09