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European Standard (Telecommunications series)

**Integrated Services Digital Network (ISDN);
Signalling System No.7 (SS7);
Signalling Connection Control Part (SCCP)
(connectionless and connection-oriented class 2)
to support international interconnection;
Part 2: Protocol Implementation Conformance
Statement (PICS) proforma specification**



Reference

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Keywords

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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 Integrated Services Digital Network (ISDN); Signalling System No.7 (SS7); Signalling Connection Control Part (SCCP) (connectionless and connection-oriented class 2) to support international interconnection, as identified below:

- Part 1: "Protocol specification [ITU-T Recommendations Q.711 to Q.716 (1996), modified]";
- Part 2: "Protocol Implementation Conformance Statement (PICS) proforma specification";**
- Part 3: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification".

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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 OSI protocol. Such a statement is called a Protocol Implementation Conformance Statement (PICS).

1 Scope

The present document provides the Protocol Implementation Conformance Statement (PICS) proforma for Signalling Connection Control Part (SCCP) signalling protocol of Signalling System No.7 for use between and, optionally, in public networks as specified in EN 300 009-1 [1] in compliance with the relevant requirements and in accordance with the relevant guidance given in ISO/IEC 9646-7 [4].

The supplier of a protocol implementation that is claimed to conform to EN 300 009-1 [1] is required to complete a copy of the PICS proforma provided in annex A of the present document and is required to provide the information necessary to identify both the supplier and the implementation.

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 EN 300 009-1 (V1.4.3): "Integrated Services Digital Network (ISDN); Signalling System No.7; Signalling Connection Control Part (SCCP) (connectionless and connection-oriented) to support international interconnection; Part 1: Protocol specification [ITU-T Recommendations Q.711 to Q.716 (1996), modified]".
- [2] ISO/IEC 9646-1: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts".
- [3] ITU-T Recommendation Q.701: "Functional description of the message transfer part (MTP) of Signalling System No. 7".
- [4] ISO/IEC 9646-7: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 7: Implementation Conformance Statements".
- [5] ITU-T Recommendation Q.1400: "Architecture framework for the development of signalling and OA&M protocols using OSI concepts".
- [6] ITU-T Recommendation Q.711: "Functional description of the signalling connection control part".
- [7] ITU-T Recommendation Q.712: "Definition and function of signalling connection control part messages".
- [8] ITU-T Recommendation Q.713: "Signalling connection control part formats and codes".
- [9] ITU-T Recommendation Q.714: "Signalling connection control part procedures".
- [10] ITU-T Recommendation Q.704: "Signalling network functions and messages".
- [11] ITU-T Recommendation Q.716: "Signalling System No. 7 - Signalling connection control part (SCCP) performance".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in EN 300 009-1 [1], ISO/IEC 9646-1 [2] and ISO/IEC 9646-7 [4] apply:

Implementation Conformance Statement (ICS): statement made by the supplier of an implementation or system claimed to conform to a given specification, stating which capabilities have been implemented

NOTE: The ICS can take several forms: protocol ICS (PICS), profile ICS, profile specific ICS, and information object ICS.

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

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

3.2 Abbreviations

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

AK	data AcKnowledgegement message
c	conditional
CC	Connection Confirm message
CR	Connection Request message
CREF	Connection REFused message
DPC	Destination Point Code
DT1	Data Form 1 message
DT2	Data Form 2 message
EA	Expedited data Acknowledgement message
ED	Expedited Data message
ERR	protocol data unit ERRor message
GT	Global Title
i	irrelevant
ICS	Implementation Conformance Statement
ISDN	Integrated Services Digital Network
IT	Inactivity Test message
IUT	Implementation Under Test
LUDT	Long Unit DaTa message
LUDTS	Long Unit DaTa message Service
m	mandatory
MTP	Message Transfer Part
n/a	not/applicable
o	optional
OSI	Open System Interconnection
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
RLC	ReLease Complete message
RLSD	ReLeaSeD message
RSC	ReSet Confirm message
RSR	ReSet Request message
SCCP	Signalling Connection Control Part
SCS	System Conformance Statement
SOG	Subsystem Out of service Grant message
SOR	Subsystem Out of service Request message
SPC	Signalling Point Code
SSA	SubSystem Allowed message
SSC	SubSystem Congested

SSN	SubSystem Number
SSP	SubSystem Prohibited message
SST	Subsystem Status Test message
SUT	System Under Test
UDT	UnitDaTa message
UDTS	UnitDaTa Service message
x	eXcluded
XUDT	eXtended UnitDaTa message
XUDTS	eXtended UnitDaTa Service message

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 EN 300 009-1 [1];
- 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 EN 300 009-1

Notwithstanding the provisions of the copyright clause related to the text of the present document, ETSI grants that users of the present document 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 EN 300 009-1 may provide information about the implementation in a standardized manner.

The PICS proforma is subdivided into clauses for the following categories of information:

- guidance for completing the PICS proforma;
- identification of the implementation;
- identification of the protocol;
- global statement of conformance;
- explicit statements about the implemented capabilities.

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.

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, 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.
x	prohibited (excluded) - there is a requirement not to use this capability in the given context.
o.i	qualified optional - for mutually exclusive or selectable options from a set. "i" is an integer which identifies a 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.
c:	Conditional upon the immediately previous item at the next higher level.
i	irrelevant - this capability is outside the scope of the given base standard and hence irrelevant and not subject to conformance testing. No answer is requested from the supplier.

Reference column

The reference column gives reference to ITU-T Recommendations Q.711, Q.712, Q.713 and Q.714 as modified by EN 300 009-1, except where explicitly stated otherwise.

NOTE 1: However, a reference merely indicates the place where the core of a description of an item can be found. Any additional information contained in EN 300 009-1 needs to be taken into account when making a statement about the conformance of that particular item.

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, 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 or i, directly or after evaluation of a conditional status c).

NOTE 2: For automatic test selection, a N/A after evaluation of a conditional status has to be interpreted as not supported (N or n).

NOTE 3: As stated in ISO/IEC 9646-7, 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 of a PDU implies 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

References to items

For each possible item answer (answer in the support column) within the PICS proforma exists a unique reference, used, for example, in the conditional expressions. It is defined as the table identifier, followed by a solidus character "/", followed by the item number in the table.

EXAMPLE: A.5/4 is the reference to the answer of item 4 in table A.5 of annex A.

A.1.3 Instructions for completing the PICS

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 boxes provided, using the notation described in clause A.1.2.

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

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 PICS should be named as the contact person.

A.2.1 Date of the statement

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A.2.2 Implementation Under Test (IUT) identification

IUT name:

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IUT version:

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A.2.3 System Under Test (SUT) identification

SUT name:

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Hardware configuration:

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Operating system:

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A.2.4 Product supplier

Name:

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Address:

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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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.....
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A.2.5 Client

Name:

.....

Address:

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.....
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Telephone number:

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Facsimile number:

.....

E-mail address:

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Additional information:

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A.2.6 PICS 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:

EN 300 009-1 (V1.4.3): "Integrated Services Digital Network (ISDN); Signalling System No.7; Signalling Connection Control Part (SCCP) (connectionless and connection-oriented) to support international interconnection; Part 1: Protocol specification [ITU-T Recommendations Q.711 to Q.716 (1996), 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. Explanations may be entered at the bottom of each table or be attached to the PICS proforma.

The supplier of the implementation will have fully complied with the requirements for a statement of conformance by completing the tabulations contained in the following clause.

A.5 Capabilities

This clause contains the core of the PICS proforma for the SCCP protocol specified in ITU-T Recommendations Q.711, Q.712, Q.713 and Q.714 as modified by EN 300 009-1. The proforma are presented in the form of tables.

NOTE: The compatibility capabilities with CCITT Blue Book (1988) and CCITT Red Book (1984) Recommendations are for further study (ffs).

A.5.1 General requirements

A.5.1.1 Implemented class

The supplier of the implementation shall state whether or not the following service classes are supported.

Table A.1: Service Class

Item	Service Class	Reference	Status	Support
1/1	Class 0	ITU-T Recommendation Q.714, clause 1.1.2.1	m (see note)	
1/2	Class 1	ITU-T Recommendation Q.714, clause 1.1.2.2	o	
1/3	Class 2	ITU-T Recommendation Q.714, clause 1.1.2.3	o	
1/4	Class 3	ITU-T Recommendation Q.714, clause 1.1.2.4	i	
NOTE: A.4/7, remote SCCP unavailability management is mandatory, consequently class 0 is mandatory.				

Comments:

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A.5.1.2 SCCP routing capabilities

The supplier of the implementation shall state whether or not the following routing functionalities are supported.

Table A.2: Routing functionalities

Item	Routing functionality	Reference	Status	Support
2/1	End node	ITU-T Recommendation Q.714, clause 2.3	o.21	
2/1.1	Outgoing routing to remote subsystem after Global Title translation in own node (input: GT+[SSN])	ITU-T Recommendation Q.714, clause 2.3	c:o.22	
2/1.2	Outgoing routing to relay node after Global Title translation in own node (input: GT+[SSN])	ITU-T Recommendation Q.714, clause 2.3	c:o.22	
2/1.3	Outgoing routing to relay node identified by user (input: DPC+GT+[SSN])	ITU-T Recommendation Q.714, clause 2.3	c:o.22	
2/1.4	Incoming routing with translation to local subsystem (received: GT+[SSN])	ITU-T Recommendation Q.714, clause 2.3	c:o.22	
2/1.5	Internal routing to local subsystem (input: own SPC +SSN+[GT])	ITU-T Recommendation Q.714, clause 2.3	c:o	
2/1.6	Internal routing with Global Title translation to local subsystem (input: GT+[SSN])	ITU-T Recommendation Q.714, clause 2.3	c:o	
2/2	Relay node	ITU-T Recommendation Q.714, clause 2.3	o.21	
2/2.1	Incoming routing with translation to remote subsystem (received: GT+[SSN])	ITU-T Recommendation Q.714, clause 2.3	c:o.23	

Item	Routeing functionality	Reference	Status	Support
2/2.2	Incoming routing with translation to relay node (received: GT+[SSN])	ITU-T Recommendation Q.714, clause 2.3	c:o.23	
2/2.3	Hop counter protection	ITU-T Recommendation Q.714, clause 2.3	c:m	
2/2.4	Coupling of connection sections	ITU-T Recommendation Q.714, clause 2.3	c:c.24	
2/3	Translation with selection of backup if the GT translation leads to an unavailable SCCP subsystem in the primary node	ITU-T Recommendation Q.714, clause 2.3	o	
2/4	Translation with selection of backup if the GT translation leads to an unavailable point code or SCCP in the primary node	ITU-T Recommendation Q.714, clause 2.3	o	
2/5	Capabilities to generate a new GT	ITU-T Recommendation Q.714, clause 2.3	o	
2/6	Capabilities to generate a new SSN	ITU-T Recommendation Q.714, clause 2.3	o	
2/7	Outgoing routing to remote subsystem (input: DPC+SSN+[GT])	ITU-T Recommendation Q.714, clause 2.3	m	
2/8	Incoming routing to local subsystem (received: [DPC]+SSN+[GT])	ITU-T Recommendation Q.714, clause 2.3	m	
2/9	Compatibility Test	ITU-T Recommendation Q.714, clause 2.5	c25 (see note)	
2/10	Traffic limitation mechanism (importance parameter)	ITU-T Recommendation Q.714, clause 2.6.2	o	
NOTE: When inter-working with networks only supporting SCCP versions prior to the 1993 edition is required, the compatibility test capability is mandatory.				

- o.21: support of at least one of these options is mandatory
o.22: support of at least one of these options is mandatory
o.23: support of at least one of these options is mandatory
c.24: IF A.1/3 THEN o ELSE n/a -- Class 2 implemented
c.25: IF A.2/2 THEN o ELSE n/a -- Relay node role

Comments:

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A.5.1.3 Called/Calling party address parameter

As these parameters include a lot of options, it is necessary that the supplier of the IUT enter which options are set in his Called/Calling party address parameter.

Table A.3: Called/Calling party address options

Item	Option	Reference	Status	Support	Values	
					Required	Supported
3/1	Translation Type	ITU-T Recommendation Q.713, clause 3.4	c.31 (see note 1)		0	
3/2	Numbering Plan	ITU-T Recommendation Q.713, clause 3.4	c.31 (see note 1)		1 to 7	
3/3	Nature of the address	ITU-T Recommendation Q.713, clause 3.4	c.31 (see note 1)		4	
3/4	Global title indicators	ITU-T Recommendation Q.713, clause 3.4	m		0,4	
3/5	Point code indicator	ITU-T Recommendation Q.713, clause 3.4	m (see note 1)		0/1	
3/6	SSN indicator	ITU-T Recommendation Q.713, clause 3.4	m (see note 2)		1	
3/7	Routeing Indicator	ITU-T Recommendation Q.713, clause 3.4	m (see note 1)		Route-on-SSN, Route-on-GT	

NOTE 1: Which values have to be supported depends on the applications served by the SCCP implementation. For international applications, annex E of ITU-T Recommendation Q.714 as modified by EN 300 009-1 applies.
 NOTE 2: According to EN 300 009-1, the SSN shall always be included in an address on sending a message.

c.31: IF A.2/1.2 OR A.2/1.3 OR A.2/1.4 OR A.2/2 THEN m ELSE o -- Routeing capabilities with global title translation.

Comments:

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A.5.2 Major capabilities - SCCP management

The supplier of the implementation shall state whether or not the (signalling) SCCP management procedures specified in ITU-T Recommendations Q.711, Q.712, Q.713 and Q.714 as modified by EN 300 009-1 are supported, in table A.4.

Table A.4: SCCP management procedures

Item	Procedure	Reference	Status	Support
4/1	Signalling point status management	ITU-T Recommendation Q.714, clause 5.2	m	
4/2	Subsystem status management	ITU-T Recommendation Q.714, clause 5.3	m (see note)	
4/3	Local MTP availability	ITU-T Recommendation Q.714, clause 5.2.5	m	
4/4	Co-ordinated state change between replicas	ITU-T Recommendation Q.714, clause 5.3.5	c41	
4/5	Local broadcast of remote subsystem, SCCP or SPC status changes	ITU-T Recommendation Q.714, clause 5.3.6	m	
4/6	Remote broadcast in case of subsystem or SCCP status changes at local or adjacent SPCs.	ITU-T Recommendation Q.714, clause 5.3.7	o	
4/7	Remote SCCP unavailable	ITU-T Recommendation Q.714, clauses 5.2 and 5.3	m (see note)	
4/8	Signalling Point restart	ITU-T Recommendation Q.714, clause 5.4	m	

NOTE: Mandatory because the 'user part availability control' capability at the underlying layer is mandatory.

c41: IF A.2/1 THEN o ELSE n/a -- end node role

Comments:

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A.5.3 Major capabilities - connectionless SCCP

The supplier of the implementation shall state whether or not the (signalling) connectionless procedures and options for the SCCP specified in ITU-T Recommendations Q.711, Q.712, Q.713 and Q.714 as modified by EN 300 009-1 are supported, in table A.5.

Table A.5: Procedures and options for data transfer in connectionless mode

Item	Procedure or option	Reference	Status	Support
5/1	Data transfer - non sequenced (Class 0), no return option, using UDT or non-segmented XUDT	ITU-T Recommendation Q.714, clause 4.1	m (see note 1)	
5/2	Data transfer, sequenced (Class 1), no return option, using UDT or non-segmented XUDT	ITU-T Recommendation Q.714, clause 4.1	c51 (see note 1)	
5/3	Segmentation/reassembly	ITU-T Recommendation Q.714, clause 4.1.1	c52	
5/4	Message return option	ITU-T Recommendation Q.714, clause 4.2	c53 (see note 2)	
5/5	Message return procedure	ITU-T Recommendation Q.714, clause 4.2	m (see note 3)	
5/6	Syntax error	ITU-T Recommendation Q.714, clause 4.3	m (see note 4)	
5/7	Sending of XUDT for non-segmented messages	ITU-T Recommendation Q.714, clause 4.1	c54 (see note 5)	
5/8	Reception of XUDT for non-segmented messages	ITU-T Recommendation Q.714, clause 4.1	m (see note 5)	
5/9	Sending of XUDT for non-segmented messages manageable	ITU-T Recommendation Q.714, clause 4.1	c55	
5/10	Use of LUDT messages	ITU-T Recommendation Q.714, clause 4.1	o (see note 6)	
5/11	Message change	ITU-T Recommendation Q.714, clause 4.1.2	c56 (see note 7)	
<p>NOTE 1: The 'return option' is not offered to the SCCP-user. SCCP does not set the 'return message on error' special option for the connectionless protocol class in the UDT or non-segmented XUDT.</p> <p>NOTE 2: SCCP offers the 'return option' as a capability to its users in addition to capabilities 5/1 and 5/2.</p> <p>NOTE 3: This capability comprises the 'message return' procedure which evaluates the 'message return on error' special option subfield of the protocol class parameter contained in the received UDT or XUDT message.</p> <p>NOTE 4: Mandatory in end node (complete check) and in relay node (as far as needed to reliable route the message).</p> <p>NOTE 5: To allow the transition from the use of UDT to XUDT also for messages that do not need segmenting, reception of XUDT messages should be prepared (see EN 300 009-1, clause ZA.2). The sending of XUDT messages has to be manageable.</p> <p>NOTE 6: The possibility to use LUDT messages depends on the availability of the capabilities of the MTP-3b.</p> <p>NOTE 7: When inter-working with networks only supporting SCCP versions prior to the 1993 edition is required, the message change capability is mandatory.</p>				

c51: IF A.1/2 THEN m ELSE x -- Class 1 implemented
c52: IF A.1/2 THEN o ELSE x -- Class 1 implemented
c53: IF A.2/1 THEN o ELSE n/a -- End node role
c54: IF A.2/2 THEN m ELSE o -- Relay node role
c55: IF A.5/7 AND A.2/1 THEN m ELSE n/a -- Sending of XUDT implemented and end node role
c56: IF A.2/2 THEN o ELSE n/a -- Relay node role

Comments:

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A.5.4 Major capabilities - connection-oriented SCCP

The supplier of the implementation shall state whether or not the (signalling) connection-oriented procedures and options for the SCCP as specified in ITU-T Recommendations Q.711, Q.712, Q.713 and Q.714 as modified by EN 300 009-1 are supported, in tables A.6 to A.12.

Table A.6: Procedures and options for connection establishment

Item	Procedure or option	Reference	Status	Support
6/1	Explicit setup, Class 2 in end node	ITU-T Recommendation Q.714, clause 3.1	c61	
6/2	Embedded setup, Class 2 in end node	ITU-T Recommendation Q.714, clause 3.1	c62	
6/3	Explicit setup, Class 2 in relay node with coupling	ITU-T Recommendation Q.714, clause 3.1.5	c63	
6/4	Embedded setup, Class 2 in relay node with coupling	ITU-T Recommendation Q.714, clause 3.1.5	c64 (see note)	
6/5	Explicit setup, refusal procedure	ITU-T Recommendation Q.714, clause 3.2	c65	
6/6	Embedded setup, refusal procedure	ITU-T Recommendation Q.714, clause 3.2	c66	
6/7	Responding address in CREF on user refusal	ITU-T Recommendation Q.711, clause 2.1.1.2.2	c61	
6/8	Responding address in CREF on SCCP refusal	ITU-T Recommendation Q.711, clause 2.1.1.2.2	c67	
6/9	Responding address in CC	ITU-T Recommendation Q.711, clause 2.1.1.2.2	c61	
6/10	Class 3 window negotiation	ITU-T Recommendation Q.714, clause 3.1.3	i	
6/11	Class 3 protocol class negotiation	ITU-T Recommendation Q.714, clause 3.1.3.1 and 3.1.5.1	c68	

NOTE: SCCP-user available in the relay node.

- c61: IF A.1/3 AND A.2/1 THEN m ELSE n/a -- SUT = end node for connection-oriented
 c62: IF A.1/3 AND A.2/1 THEN o ELSE n/a -- SUT = end node for connection-oriented
 c63: IF A.1/3 AND A.2/2 AND A.2/2.4 THEN m ELSE n/a -- SUT = relay node for connection-oriented
 -- with coupling of connection sections
 c64: IF A.1/3 AND A.2/2 AND A.2/2.4 THEN o ELSE n/a -- SUT = relay node for connection-oriented
 -- with coupling of connection sections
 c65: IF A.6/1 OR A.6/3 THEN m ELSE n/a -- explicit setup in end node or relay node
 c66: IF A.6/2 OR A.6/4 THEN m ELSE n/a -- embedded setup supported
 c67: IF A.1/3 THEN o ELSE n/a -- class 2 supported
 c68: IF A.6/1 OR A.6/2 OR A.6/3 OR A.6/4 THEN m ELSE n/a -- connection setup supported

Comments:

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Table A.7: Procedures for connection release

Item	Procedure	Reference	Status	Support
7/1	Release procedure in end nodes	ITU-T Recommendation Q.714, clause 3.3.3/5	c71	
7/2	Release procedure in relay nodes with coupling	ITU-T Recommendation Q.714, clause 3.3.4	c72	

c71: IF A.1/3 AND A.2/1 THEN m ELSE x -- Class 2 in end nodes

c72: IF A.1/3 AND A.2/2.4 THEN m ELSE x -- Class 2 in relay node with coupling

Comments:

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Table A.8: Procedure for inactivity control

Item	Procedure	Reference	Status	Support
8/1	Inactivity control for Class 2	ITU-T Recommendation Q.714, clause 3.4	c81	
8/2	Inactivity control for Class 3	ITU-T Recommendation Q.714, clause 3.4	i	

c81: IF A.1/3 THEN m ELSE n/a -- Class 2 provided

Comments:

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Table A.9: Procedures and options for data transfer in connection oriented mode

Item	Procedure or option	Reference	Status	Support
9/1	Data transfer Class 2 in end node	ITU-T Recommendation Q.714, clause 3.5.1	c91	
9/2	Data transfer in relay node with coupling	ITU-T Recommendation Q.714, clause 3.5.1	c92	
9/3	Data transfer Class 3 with flow control	ITU-T Recommendation Q.714, clause 3.5.2	i	
9/4	Data transfer, segmenting/reassembly	ITU-T Recommendation Q.714, clause 3.5.3	c91	
9/5	Expedited data transfer	ITU-T Recommendation Q.714, clause 3.6	i	
9/6	Data acknowledgement	ITU-T Recommendation Q.714, clause 3.6.3	i	
9/7	Data transfer in CR message	ITU-T Recommendation Q.711, clause 2.1.1.2.2	c93	
9/8	Data transfer in CC message	ITU-T Recommendation Q.711, clause 2.1.1.2.2	c93	
9/9	Data transfer in CREF message	ITU-T Recommendation Q.711, clause 2.1.1.2.2	c93	
9/10	Data transfer in RLSD message	ITU-T Recommendation Q.711, clause 2.1.1.2.4	c93	

NOTE 1: In a relay point, the segmenting/reassembly functions are not invoked. The M bit is just passed transparently according to the compatibility rules of ITU-T Recommendation Q.1400 [5], sect.12.

NOTE 2: The transfer of data in CR/CC/CREF/RLSD messages is a user option.

c91: IF A.1/3 AND A.2/1 THEN m ELSE n/a -- Class 2 in end nodes

c92: IF A.1/3 AND A.2/2.4 THEN m ELSE n/a -- Class 2 in relay node with coupling

c93: IF A.1/3 THEN o ELSE n/a -- Class 2

Comments:

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Table A.10: Procedure for reset

Item	Procedure	Reference	Status	Support
10/1	Reset	ITU-T Recommendation Q.714, clause 3.7	i	

Comments:

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Table A.11: Procedure for restart

Item	Procedure	Reference	Status	Support
11/1	Restart	ITU-T Recommendation Q.714, clause 3.8	c111	

c111: IF A.1/3 THEN m ELSE n/a -- Class 2

Comments:

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Table A.12: Procedure for abnormalities

Item	Procedure	Reference	Status	Support
12/1	Abnormalities	ITU-T Recommendation Q.714, clause 3.10, annex B	c121	

c121: IF A.1/3 THEN m ELSE n/a -- Class 2

Comments:

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A.5.5 Timers used in SCCP

The supplier of the implementation shall state whether or not the following timers, used by the SCCP protocol, as specified in ITU-T Recommendations Q.711, Q.712, Q.713 and Q.714 as modified by EN 300 009-1 are supported and their value or range(s), in table A.13.

Table A.13: Timers - SCCP

Item	Timer	Reference	Status	Support	Values	
					Allowed	Supported
13/1	T(conn est)	ITU-T Recommendation Q.714, clause C.4	c131	y	1 mn to 2 min	
13/2	T(ias)	ITU-T Recommendation Q.714, clause C.4	c131	y	1 mn to 10 min (see note)	
13/3	T(iar)	ITU-T Recommendation Q.714, clause C.4	c131	y	3 mn to 21 min (see note)	
13/4	T(rel)	ITU-T Recommendation Q.714, clause C.4	c131	y	10 s to 20 s	
13/5	T(guard)	ITU-T Recommendation Q.714, clause C.4	c131	y	8 mn to 25 min (see note)	
13/6	T(reset)	ITU-T Recommendation Q.714, clause C.4	i	n/a	10 s to 20 s	
13/7	T(reassembly)	ITU-T Recommendation Q.714, clause C.4	c132	y	10 s to 20 s	
13/8	T(coord)	ITU-T Recommendation Q.714, clause C.4	c134	n/a	1 mn to 2 min	
13/9	T(interval)	ITU-T Recommendation Q.714, clause C.4	c131	y	up to 1 min	
13/10	T(repeat rel)	ITU-T Recommendation Q.714, clause C.4	c131	y	up to 20 s	
13/11	T(ignore SST)	ITU-T Recommendation Q.714, clause C.4	c134	n/a	selected by management	
13/12	T(stat info)	ITU-T Recommendation Q.714, clause C.4	c133	y	starting from 5 to 10 s to max. 10 mn to 20 min	
NOTE: Provisional values. These values cover both the provisional ranges specified in ITU-T Recommendation Q.714 as modified by EN 300 009-1, and the finally agreed ranges to be published in the next edition of ITU-T Recommendations.						

c131: IF A.1/3 THEN m ELSE n/a

-- Class 2

c132: IF A.5/3 THEN m ELSE n/a

-- connectionless segmenting/reassembly

c133: IF A.4/2 THEN m ELSE n/a

-- SCCP subsystem management

c134: IF A.4/4 THEN m ELSE n/a

-- co-ordinated state change procedure

Comments:

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A.5.6 Messages

The supplier of the implementation shall state whether or not the messages specified in ITU-T Recommendations Q.711, Q.712, Q.713 and Q.714 as modified by EN 300 009-1 are supported, in table A.14. Support of a message implies full support of all message parameters, unless specifically covered by A.5.7.

The supplier shall indicate for each message the status of support for sending and receiving.

Table A.14: Messages

Item	Message	Reference	Sending		Receiving	
			Status	Support	Status	Support
14/1	CC	ITU-T Recommendation Q.712, clause 1.1	c141		c141	
14/2	CR	ITU-T Recommendation Q.712, clause 1.2	c141		c141	
14/3	CREF	ITU-T Recommendation Q.712, clause 1.3	c141		c141	
14/4	AK	ITU-T Recommendation Q.712, clause 1.4	i		i	
14/5	DT1	ITU-T Recommendation Q.712, clause 1.5	c142		c142	
14/6	DT2	ITU-T Recommendation Q.712, clause 1.6	i		i	
14/7	ED	ITU-T Recommendation Q.712, clause 1.7	i		i	
14/8	EA	ITU-T Recommendation Q.712, clause 1.8	i		i	
14/9	IT	ITU-T Recommendation Q.712, clause 1.9	c143		c143	
14/10	ERR	ITU-T Recommendation Q.712, clause 1.10	c143		c143	
14/11	RLSD	ITU-T Recommendation Q.712, clause 1.11	c141		c141	
14/12	RLC	ITU-T Recommendation Q.712, clause 1.12	c141		c141	
14/13	RSC	ITU-T Recommendation Q.712, clause 1.13	i		i	
14/14	RSR	ITU-T Recommendation Q.712, clause 1.14	i		i	
14/15	SSA	ITU-T Recommendation Q.712, clause 1.15	m		m	
14/16	SOG	ITU-T Recommendation Q.712, clause 1.16	c144		c144	
14/17	SOR	ITU-T Recommendation Q.712, clause 1.17	c144		c144	
14/18	SSP	ITU-T Recommendation Q.712, clause 1.18	c145		m	
14/19	SST	ITU-T Recommendation Q.712, clause 1.19	m		m	
14/20	UDT	ITU-T Recommendation Q.712, clause 1.20	m		m	
14/21	UDTS	ITU-T Recommendation Q.712, clause 1.21	m		c146	
14/22	XUDT	ITU-T Recommendation Q.712, clause 1.22	c147		m	
14/23	XUDTS	ITU-T Recommendation Q.712, clause 1.23	m		c148	
14/24	SSC	ITU-T Recommendation Q.712, clause 1.24	c145		m	
14/25	LUDT	ITU-T Recommendation Q.712, clause 1.25	o		o	
14/26	LUOTS	ITU-T Recommendation Q.712, clause 1.26	o		o	

- c141: IF A.1/3 AND (A.2/1 OR A.2/2.4) THEN m ELSE x -- Class 2 and (end node or relay point with coupling)
c142: IF A.9/1 OR A.9/2 THEN m ELSE n/a -- data transfer provided
c143: IF A.1/3 THEN m ELSE n/a -- class 2
c144: IF A.4/4 THEN m ELSE n/a -- co-ordinated status change implemented
c145: IF A.2/1 THEN m ELSE o -- end node
c146: IF A.5/4 THEN m ELSE x -- message return option supported
c147: IF A.5/7 OR A.5/3 THEN m ELSE n/a -- sending of XUDT for non-segmented messages or
-- segmenting/reassembly supported
c148: IF A.5/4 AND (A.5/7 OR A.5/3) THEN m ELSE n/a -- XUDT messages sent with return option

Comments:

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A.5.7 Message parameters

Unless specifically covered by a table listing message parameters and giving details regarding their status all parameters of a message are required to be fully supported. All parameters in the fixed and variable mandatory part are required to be present. In case parameter field values are irrelevant for certain protocol classes, this is appropriately indicated in the following tables and does not imply the parameter may be absent.

The supplier of the implementation shall state whether or not each message parameter of the messages specified in ITU-T Recommendations Q.711, Q.712, Q.713 and Q.714 as modified by EN 300 009-1 are supported, in tables A.15 to A.22.

The supplier shall indicate the status of support for sending and receiving for each parameter in each message.

NOTE: The status of the message parameters is subject to the implementation of the corresponding message (see table A.14). When an unknown, unsupported or unrecognized optional parameter or value is received, the compatibility rules specified in clause 1.1.4 of ITU-T Recommendation Q.714 as modified by EN 300 009-1 apply.

Table A.15: Connection Request (CR)

Item	Parameter	Reference	Sending		Receiving	
			Status	Support	Status	Support
15/1	Message Type Code	ITU-T Recommendation Q.713, clause 2.1	m		m	
15/2	Source Local Reference Number	ITU-T Recommendation Q.712, clause 2.9	m		m	
15/3	Called Party Address	ITU-T Recommendation Q.712, clause 2.3	m		m	
15/4	Calling Party Address	ITU-T Recommendation Q.712, clause 2.3	o		o	
15/5	Protocol class	ITU-T Recommendation Q.712, clause 2.10	m		m	
15/6	Credit	ITU-T Recommendation Q.712, clause 2.4	i		i (see note 2)	
15/7	User Data	ITU-T Recommendation Q.712, clause 2.5	c151 (see note 1)		c151	
15/8	Hop Counter	ITU-T Recommendation Q.712, clause 2.19	c152		c152	
15/9	End of Optional Parameters	ITU-T Recommendation Q.712, clause 2.8	c153		c154	

NOTE 1: Dependent on user data being provided by the application in the originated node.

NOTE 2: The base specifications only specify that an unrecognized parameter in a received message has to be ignored. They do not specify any treatment for not supported parameters in a received message.

c151: IF A.9/7 THEN m ELSE n/a

-- user data in CR is supported

c152: IF A.2/2.3 THEN m ELSE n/a

-- hop counter protection provided

c153: IF A.15/4 OR A.15/7 OR A.15/8 THEN m ELSE n/a

-- mandatory when optional parameters are present

c154: IF A.15/4 OR A.15/6 OR A.15/7 OR A.15/8 THEN m ELSE n/a

-- mandatory when optional parameters are present

Comments:

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Table A.16: Connection Confirm (CC)

Item	Parameter	Reference	Sending		Receiving	
			Status	Support	Status	Support
16/1	Message Type Code	ITU-T Recommendation Q.713, clause 2.1	m		m	
16/2	Destination Local Reference Number	ITU-T Recommendation Q.712, clause 2.9	m		m	
16/3	Source Local Reference Number	ITU-T Recommendation Q.712, clause 2.9	m		m	
16/4	Called Party Address	ITU-T Recommendation Q.712, clause 2.3	c161		c161	
16/5	Protocol class	ITU-T Recommendation Q.712, clause 2.10	m		m	
16/6	Credit	ITU-T Recommendation Q.712, clause 2.4	i		i	
16/7	User Data	ITU-T Recommendation Q.712, clause 2.5	c162		c162	
16/8	End of Optional Parameters	ITU-T Recommendation Q.712, clause 2.8	c163		c163	

c161: IF A.6/9 THEN m ELSE n/a

-- responding address in CC message

c162: IF A.9/8 THEN m ELSE n/a

-- user data in CC is supported

c163: IF A.16/4 OR A.16/7 THEN m ELSE n/a

-- mandatory when optional parameters are present

Comments:

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Table A.17: Connection Refused (CREF)

Item	Parameter	Reference	Sending		Receiving	
			Status	Support	Status	Support
17/1	Message Type Code	ITU-T Recommendation Q.713, clause 2.1	m		m	
17/2	Destination Local Reference Number	ITU-T Recommendation Q.712, clause 2.9	m		m	
17/3	Called Party Address	ITU-T Recommendation Q.712, clause 2.3	c171		c171	
17/4	User Data	ITU-T Recommendation Q.712, clause 2.5	c172		c172	
17/5	Refusal Cause	ITU-T Recommendation Q.712, clause 2.12	m		m	
17/6	End Of Optional Parameters	ITU-T Recommendation Q.712, clause 8	c173		c173	

c171: IF A.6/7 THEN m ELSE n/a

-- responding address in CREF message

c172: IF A.9/9 THEN m ELSE n/a

-- user data in CREF is supported

c173: IF A.17/3 OR A.17/4 THEN m ELSE n/a

-- mandatory when optional parameters are present

Comments:

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Table A.18: Released (RLSD)

Item	Parameter	Reference	Sending		Receiving	
			Status	Support	Status	Support
18/1	Message Type Code	ITU-T Recommendation Q.713, clause 2.1	m		m	
18/2	Destination Local Reference Number	ITU-T Recommendation Q.712, clause 2.9	m		m	
18/3	Source Local Reference Number	ITU-T Recommendation Q.712, clause 2.9	m		m	
18/4	Release Cause	ITU-T Recommendation Q.712, clause 2.13	m		m	
18/5	User Data	ITU-T Recommendation Q.712, clause 2.5	c181		c181	
18/6	End of Optional Parameters	ITU-T Recommendation Q.712, clause 2.8	c182		c182	

c181: IF A.9/10 THEN m ELSE n/a -- data transport in RLSD is supported

c182: IF A.18/5 THEN m ELSE n/a -- mandatory when optional parameters are present

Comments:

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Table A.19: Protocol Data Unit Error (ERR)

Item	Parameter	Reference	Sending		Receiving	
			Status	Support	Status	Support
19/1	Message Type Code	ITU-T Recommendation Q.713, clause 2.1	m		m	
19/2	Destination Local Reference Number	ITU-T Recommendation Q.712, clause 2.9	m		m	
19/3	Error Cause	ITU-T Recommendation Q.712, clause 2.7	m		m	

Comments:

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Table A.20: Inactivity Test (IT)

Item	Parameter	Reference	Sending		Receiving	
			Status	Support	Status	Support
20/1	Message Type Code	ITU-T Recommendation Q.713, clause 2.1	m		m	
20/2	Destination Local Reference Number	ITU-T Recommendation Q.712, clause 2.9	m		m	
20/3	Source Local Reference Number	ITU-T Recommendation Q.712, clause 2.9	m		m	
20/4	Protocol class	ITU-T Recommendation Q.712, clause 2.10	m		m	
20/5	Sequencing/Segmenting	ITU-T Recommendation Q.712, clause 2.17	i (see note)		i (see note)	
20/6	Credit	ITU-T Recommendation Q.712, clause 2.4	i (see note)		i (see note)	

NOTE: These parameter field values are relevant for protocol class 3 only.

Comments:

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Table A.21: Extended UnitData (XUDT)

Item	Parameter	Reference	Sending		Receiving	
			Status	Support	Status	Support
21/1	Message Type Code	ITU-T Recommendation Q.713, clause 2.1	m		m	
21/2	Protocol class	ITU-T Recommendation Q.712, clause 2.10	m		m	
21/3	Hop counter	ITU-T Recommendation Q.712, clause 2.19	m		m	
21/4	Called Party Address	ITU-T Recommendation Q.712, clause 2.3	m		m	
21/5	Calling Party Address	ITU-T Recommendation Q.712, clause 2.3	m		m	
21/6	UserData	ITU-T Recommendation Q.712, clause 2.5	m		m	
21/7	Segmentation (see note)	ITU-T Recommendation Q.712, clause 2.20	c211		c211	
21/8	End Of Optional Parameters	ITU-T Recommendation Q.712, clause 2.8	c212		c212	

NOTE: Should not be present in case of a single-segment XUDT message.

c211: IF A.5/3 THEN m ELSE n/a

-- segmenting/reassembly supported

c212: IF A.21/7 THEN m ELSE n/a

-- mandatory when optional parameters are present

Comments:

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Table A.22: Extended UnitData Service (XUDTS)

Item	Parameter	Reference	Sending		Receiving	
			Status	Support	Status	Support
22/1	Message Type Code	ITU-T Recommendation Q.713, clause 2.1	m		m	
22/2	Return Cause	ITU-T Recommendation Q.712, clause 2.15	m		m	
22/3	Hop counter	ITU-T Recommendation Q.712, clause 2.19	m		m	
22/4	Called Party Address	ITU-T Recommendation Q.712, clause 2.3	m		m	
22/5	Calling Party Address	ITU-T Recommendation Q.712, clause 2.3	m		m	
22/6	UserData	ITU-T Recommendation Q.712, clause 2.5	m		m	
22/7	Segmentation (see note)	ITU-T Recommendation Q.712, clause 2.20	c221		c221	
22/8	End Of Optional Parameters	ITU-T Recommendation Q.712, clause 2.8	c222		c222	

NOTE: Should not be present in case of a single-segment XUDTS message.

c221: IF A.5/3 THEN m ELSE n/a

-- segmenting/reassembly supported

c222: IF A.22/7 THEN m ELSE n/a

-- mandatory when optional parameters are present

Comments:

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A.5.8 Multi-layer dependencies

The supplier of the implementation shall provide information relevant to the support for other layer standards in table A.23. Where appropriate, the supplier shall provide an external reference to the completed PICS for that layer standard. The purpose of this clause is to identify the implementation support for specific requirements on the underlying layers, not made mandatory by the underlying layer protocol specifications.

Table A.23: Underlying layers protocols

Item	Procedure	Reference	PICS references
23/1	MTP	ITU-T Recommendation Q.701 to Q.704	

Comments:

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Annex B (informative): Bibliography

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

ITU-T Recommendation Q.715: "Signalling connection control part user guide".

History

Document history		
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