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Technical Specification

**Telecommunications and Internet Protocol
Harmonization Over Networks (TIPHON);
Protocol Implementation Conformance Statement (PICS)
proforma for the support of supplementary services in H.323;
Support of H.450.2: Call transfer
supplementary services for H.323**



Reference

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Contents

Intellectual Property Rights.....	4
Foreword	4
Introduction	4
1 Scope.....	5
2 References.....	5
3 Definitions and abbreviations	5
3.1 Definitions	5
3.2 Abbreviations.....	6
4 Conformance to this PICS proforma specification	6
Annex A (normative): PICS proforma for ITU-T Recommendation H.450.2	7
A.1 Guidance for completing the PICS proforma.....	7
A.1.1 Purposes and structure	7
A.1.2 Abbreviations and conventions	7
A.1.3 Instructions for completing the PICS proforma	9
A.2 Identification of the implementation.....	10
A.2.1 Date of the statement.....	10
A.2.2 Implementation Under Test (IUT) identification	10
A.2.3 System Under Test (SUT) identification.....	10
A.2.4 Product supplier	11
A.2.5 Client (if different from product supplier)	11
A.2.6 PICS contact person.....	12
A.3 PICS/System Conformance Statement (SCS).....	12
A.4 Identification of the protocol	12
A.5 Global statement of conformance	12
A.6 Roles.....	13
A.7 Capabilities.....	13
A.7.1 Major capabilities	13
A.7.2 Subsidiary capabilities	14
A.7.3 Protocol data units	15
A.7.4 Protocol data unit parameters.....	15
A.7.5 Timers.....	16
History	17

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Foreword

This Technical Specification (TS) has been produced by ETSI Project Telecommunications and Internet Protocol Harmonization Over Networks (TIPHON).

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 telecommunication specification. Such a statement is called an Implementation Conformance Statement (ICS).

1 Scope

The present document provides the Protocol Implementation Conformance Statement (PICS) proforma for the Call transfer supplementary service in ITU-T Recommendation H.323 [2] as specified in ITU-T Recommendation H.450.2 [1] in compliance with the relevant requirements and in accordance with the relevant guidance given in ISO/IEC 9646-7 [5].

The supplier of a protocol implementation which is claimed to conform to ITU-T Recommendation H.450.2 [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, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1] ITU-T Recommendation H.450.2 (1998): "Call transfer supplementary service for H.323".

[2] ITU-T Recommendation H.323 (1998): "Packet based multimedia communications systems".

[3] ITU-T Recommendation H.225.0 (1998): "Call signalling protocols and media stream packetization for packet-based multimedia communication systems".

[4] ISO/IEC 9646-1 (1994): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts".

[5] ISO/IEC 9646-7 (1995): "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 the present document, the following terms and definitions apply:

- terms defined in ITU-T Recommendation H.323 [2];
- terms defined in ITU-T Recommendation H.450.2 [1];
- terms defined in ISO/IEC 9646-1 [4] and in ISO/IEC 9646-7 [5].

In particular, the following terms defined in ISO/IEC 9646-1 [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. The PICS can take several forms: protocol PICS, profile PICS, profile specific PICS, information object PICS, etc.

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

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

3.2 Abbreviations

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

APDU	Application Protocol Data Unit
CT	Call Transfer
GK	Gatekeeper
GWY	Gateway
ICS	Implementation Conformance Statement
IUT	Implementation Under Test
MCU	Multipoint Control Unit
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
SCN	Switched Circuit Network
SCS	System Conformance Statement
SS	Supplementary Service
SUT	System Under Test

4 Conformance to this PICS proforma specification

If it claims to conform to the present document, the actual PICS proforma to be filled in by a supplier shall be technically equivalent to the text of the PICS proforma given in annex A, and shall preserve the numbering/naming and ordering of the proforma items.

A PICS which conforms to the present document shall be a conforming PICS proforma completed in accordance with the guidance for completion given in clause A.1.

Annex A (normative): PICS proforma for ITU-T Recommendation H.450.2

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 ITU-T Recommendation H.450.2 may provide information about the implementation in a standardized manner.

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

- guidance for completing the PICS proforma;
- identification of the implementation;
- identification of the protocol;
- global statement of conformance;
- roles;
- major capabilities;
- subsidiary capabilities;
- operations;
- arguments, results and errors;
- timers.

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 a unique conditional status expression which is defined immediately following the table;
i	irrelevant (out-of-scope) - capability outside the scope of the reference specification. No answer is requested from the supplier.

Reference column

The reference column makes reference to ITU-T Recommendation H.450.2, 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, 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).

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 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 1: ?3: IF prof1 THEN Y ELSE N.

It is also possible to provide a comment to an answer in the space provided at the bottom of the table.

NOTE: 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 on a PDU means that the semantics of that parameter are supported.

Values allowed column

The values allowed column contains the type, the list, the range, or the length of values allowed. The following notations are used:

- range of values: <min value> .. <max value>:
 - EXAMPLE 2: 5 .. 20.
- list of values: <value1>, <value2>,, <valueN>:
 - EXAMPLE 3: 2, 4, 6, 8, 9;
 - EXAMPLE 4: '1101'B, '1011'B, '1111'B;
 - EXAMPLE 5: '0A'H, '34'H, '2F'H.
- list of named values: <name1>(<val1>), <name2>(<val2>),, <nameN>(<valN>):
 - EXAMPLE 6: reject(1), accept(2).
- length: size (<min size> .. <max size>):
 - EXAMPLE 7: size (1 .. 8).

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.

References to items.

For each possible item answer (answer in the support column) within the PICS proforma a unique reference exists, 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. If there is more than one support column in a table, the columns are discriminated by letters (a, b, etc.), respectively.

EXAMPLE 8: A.5/4 is the reference to the answer of item 4 in table 5 of annex A.

EXAMPLE 9: A.6/3b is the reference to the second answer (i.e. in the second support column) of item 3 in table 6 of annex A.

Prerequisite line

A prerequisite line takes the form: Prerequisite: <predicate>.

A prerequisite line after a clause or table title indicates that the whole clause or the whole table is not required to be completed if the predicate is FALSE.

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 space at the bottom of the tables, or separately on sheets of paper.

More detailed instructions are given at the beginning of the different subclauses 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

.....

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:

.....

Address:

.....

.....

.....

Telephone number:

.....

Facsimile number:

.....

E-mail address:

.....

Additional information:

.....

.....

.....

A.2.5 Client (if different from product supplier)

Name:

.....

Address:

.....

.....

.....

Telephone number:

.....

Facsimile number:

.....

E-mail address:

.....

Additional information:

.....

.....

A.2.6 PICS contact person

(A person to contact if there are any queries concerning the content of the PICS.)

Name:

.....

Telephone number:

.....

Facsimile number:

.....

E-mail address:

.....

Additional information:

.....

.....

.....

A.3 PICS/System Conformance Statement (SCS)

Provide the relationship of the PICS with the SCS for the system.

A.4 Identification of the protocol

The PICS proforma applies to the following standard.

ITU-T Recommendation H.450.2: "Call transfer supplementary service for H.323".

A.5 Global statement of conformance

Are all mandatory capabilities implemented? (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, on pages attached to the PICS proforma.

A.6 Roles

Table A.1: Roles

Item	Role	Reference	Status	Support Y N n/a
R 1	Transferring endpoint A	7	o.1	
R 2	Transferred entity		o.1	
R 2.1	Transferred endpoint B	8	R 2: o. 2	
R 2.2	Transferred side GK B	10.6.1.1	R 2: o.2	
R 3	Transferred-To entity		o.1	
R 3.1	Transferred-To endpoint C	9	R 3: o.3	
R 3.2	Transferred-To side GK C	10.6.1.2	R 3: o.3	
R 4.1	Incoming GWY (i.e. call originates in the SCN)	10.1	o	
R 4.2	Outgoing GWY (i.e. call terminates in the SCN)	10.1	o	
R 5	MCU		o	
o.1: Support of –at least one of these options is required				
o.2: Support of exactly one of these options is required				
o.3: Support of exactly one of these options is required				
Comments:				

A.7 Capabilities

A.7.1 Major capabilities

Table A.2: Major capabilities

Item	Capability	Reference	Status	Support Y N n/a
MC 1.1	Can transfer an audio only call	1	m	
MC 1.2	Can transfer a video only call	1	o	
MC 1.3	Can transfer a call with audio & video	1	o	
MC 2.1	Support of Transfer with Consultation	5	o.1	
MC 2.2	Support of Single Step Transfer (i.e. Transfer without consultation)	5	o.1	
MC 3.1	Support of Transfer into Active	8.1	MC 2.1: o.2	
MC 3.2	Support of Transfer into Ringing	8.1	MC 2.1: o.2	
MC 4	Messages and information elements	6	m	
o.1: Support of at least one of these options is required				
o.2: Support of at least one of these options is required				
Comments:				

A.7.2 Subsidiary capabilities

Table A.3: Subsidiary capabilities - procedures

Item	Procedure	Reference	Status	Support Y N n/a
SC 1	Transferring endpoint actions	7	R 1:m	
SC 2.1	Transferred endpoint actions	8	R 2.1:m	
SC 2.2	Media properties are inherited from the primary call upon transfer	8.1	SC 2.1: o.1	
SC 2.3	Media properties are automatically negotiated between endpoints B and C upon transfer	8.1	SC 2.1: o.1	
SC 2.4	H.225.0 Call Identifier value in the transferred call is preserved from the primary call	H.323 Implementers Guide	SC 2.1: m	
SC 2.5	<i>call Transfer Setup</i> invoke APDU includes address of user A	8.1	o	
SC 2.6	Transferred endpoint sends <i>call Transfer Update</i> APDU in SETUP message	10.4	o	
SC 3.1	Transferred-to endpoint actions	9	R 3.1: m	
SC 3.2	Transferred-to endpoint sends <i>call Transfer Update</i> APDU in ALERT or CONNECT message	10.4	o	
SC 4.1	GW can act as a transferred endpoint	10.1	c1	
SC 4.2	GW can act as transferred-to endpoint	10.1	c1	
SC 5.1	GK actions	10.6	c2	
SC 5.2	GK passes on all H.450.2 related operations	10.6	c3	
SC 5.3	GK can become destination for a <i>call Transfer Initiate</i> APDU	10.6.1.1	R 2.2: o	
SC 5.4	GK can become destination for a <i>call Transfer Identify</i> APDU	10.6.1.2	R 3.2: o	
SC 5.5	GK can act as destination for both sides of a call transfer	10.6.1	SC 5.1: o	
SC 5.6	Support 'empty' TCS (terminal Capability Set) =0, i.e. 'third party initiated pause and re-routing'	H.323v2 clause 8.4.6	c4	
SC 6	Interworking with H.323 ad-hoc conference	10.5	c5	
o.1: Support of at least one of these options is required				
c1: if R 4.1 or R 4.2 then o else n/a				
c2: if R 2.2 or R 3.2 then m else o				
c3: if (R 2.1 or R 3.1) and SC 5.1 then m else n/a				
c4: If R 2.2 or R 3.2 then m else n/a				
c5: If R 5 then m else o				
Comments:				

A.7.3 Protocol data units

Table A.4: Call Transfer operations

Item	PDU	Sending			Receiving		
		Reference	Status	Support Y N n/a	Reference	Status	Support Y N n/a
O 1.1	Call Transfer Identify invoke APDU	12	R 1:m		12	c1	
O 1.2	Call Transfer Identify return result and return error APDU	12	c1		12	R 1:m	
O 2	Call Transfer Abandon invoke APDU	12	c2		12	c3	
O 3.1	Call Transfer Initiate invoke APDU	12	R 1:m		12	c4	
O 3.2	Call Transfer Initiate return result and return error APDU	12	c4		12	R 1:m	
O 4.1	Call Transfer Set-up invoke APDU	12	c4		12	c1	
O 4.2	Call Transfer Set-up return result and return error APDU	12	c1		12	c4	
O 5	Call Transfer Update invoke APDU	12	o		12	o	
O 6	Subaddress Transfer invoke APDU	12	o		12	o	
O 7.1	Call Transfer Complete invoke APDU	12	c5		12	m	
O 7.2	Call Transfer Active invoke APDU	12	c6		12	m	
c1: if R 3.1 or R 3.2 then m else n/a							
c2: if R 1 and MC 2.1 then m else n/a							
c3: if (R 3.1 or R 3.2) and MC 2.1 then m else n/a							
c4: if R 2.1 or R 2.2 then m else n/a							
c5: if R 2.2 or R 3.2 then m else n/a							
c6: if R.2.2 then m else n/a							
Comments:							

A.7.4 Protocol data unit parameters

Table A.5: APDU coding: optional elements

Item	PDU	Sending			Receiving		
		Reference	Status	Support Y N n/a	Reference	Status	Support Y N n/a
P 1	Transferring Number in CT Set-up Arg	12	o		12	o	
P 2.1	Redirection Info in CT Update Arg	12	o		12	o	
P 2.2	Basic Call Info Elements in CT Update Arg	12	o		12	o	
P 3.1	Basic Call Info Elements in CT Complete Arg	12	o		12	o	
P 3.2	Redirection Info in CT Complete Arg	12	o		12	o	
P 4.1	Basic Call Info Elements in CT Active Arg	12	o		12	o	
P 4.2	Connected Info in CT Active Arg	12	o		12	o	
P 5	Maximum length of BMP string type info supported	12	i	Length: -----	12	i	Length: -----
P 6.1	Use of proprietary extensions to standardized operations of type Extension Seq	12	o		12	o	
P 6.2	Use of proprietary extensions to standardized operations of type Non Standard Parameter	12	o		12	o	
P 6.3	Pass on proprietary information if not understood, if the operation itself is passed on	12	o		12	o	
Comments:							

A.7.5 Timers

Table A.6: Timers

	Timer	Reference	Status	Support Y N n/a	Supported value
T 1	Supports Timer CT-T1	11.6.2	R 1: m		
T 2	Supports Timer CT-T2	11.6.2	R 3: m		
T 3	Supports Timer CT-T3	11.6.2	R 1: m		
T 4	Supports Timer CT-T4	11.6.2	R 2: o		
Comments:					

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