

Annex F Protocol implementation conformance statement (PICS) proforma

(normative)

F.1 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 IEEE 802 standard. Such a statement is called an Implementation Conformance Statement (ICS)

F.2 Scope

This annex provides the ICS proforma for the IEEE Std 802.21 in compliance with the relevant requirements, and in accordance with the relevant guidance, given in ITU-T Recommendation X.296.

EDITOR'S INSTRUCTION NOTE: Shall add X.290 and X.296 to Clause 2 (Normative References)

ITU-T Recommendation X.290 (1995), OSI conformance testing methodology and framework for protocol Recommendations for ITU-T applications - General concepts.

ITU-T Recommendation X.296 (1995), OSI conformance testing methodology and framework for protocol Recommendations for ITU-T applications - Implementation conformance statements.

EDITOR'S INSTRUCTION NOTE: Definition clause as per X.296 shall include the terms (PICS proforma and PICS and static conformance review). However according to IEEE 802 we only include definitions that are not part of IEEE Standard Dictionary. PICS is already included, PICS Proforma and static conformance review are not. Static conformance review added since the definition of static conformance

PICS Proforma - a normative document to express in compact form the static conformance requirements of a specification. As such, it serves as a reference to the static conformance review.

Static conformance requirement - One of the requirements that specify the limitations on the combinations of implemented capabilities permitted in a real open system which is claimed to conform to the relevant specification(s).

Static conformance review - A review of the extent to which the static conformance requirements are claimed to be supported by the system under test, by comparing the answers in the implementation conformance statement(s) and the system conformance statement with the static conformance requirements expressed in the relevant specifications.

F.3 Conformance

If it is claimed to conform to IEEE Std 802.21, the actual PICS Proforma to be filled in by a supplier shall be technically equivalent to the text of the PICS Proforma in this annex, and shall preserve the number/naming and ordering of the PICS Proforma items.

A PICS which conforms to this IEEE Std 802.21 shall be a conforming PICS proforma completed in accordance with the instructions for completion given in Clause F.4.

1 EDITOR'S INSTRUCTION NOTE: Need to add a footnote on the first page using the following text:
 2 "Copyright release for PICS proformas: Users of this IEEE Std 802.21 may freely reproduce this PICS pro-
 3 forma so that it can be used for its intended purpose and may further publish the completed PICS."
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 6 EDITOR'S INSTRUCTION NOTE: "Unless otherwise specified" needs to be added to the main IEEE
 7 copyright.
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10 F.4 Instructions

11 F.4.1 Purpose and Structure

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 17 The supplier of a protocol implementation that is claimed to conform to IEEE Std 802.21, shall complete the
 18 following protocol implementation conformance statement (PICS) proforma.
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20 The PICS proforma expresses in compact form the static conformance requirements of this standard. It
 21 serves as a reference to the static conformance review. ITU-T Recommendation X.296, clause 6.7, provides
 22 examples of uses and users of proformas.
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 24

25 A completed PICS proforma is the PICS for the implementation in question. The PICS is a statement of
 26 which capabilities and options of the protocol have been implemented.
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 28

29 This PICS proforma has the following structure. Within this, the instructions clause, are the purpose and
 30 scope; symbols, abbreviations, and terms; and explicit instructions for completing the implementation con-
 31 formance statement. After the instructions are the subclauses for identifying the implementation, the proto-
 32 col, and corrigenda (if any). The final subclause contains the questionnaire in tabular form. Within this final
 33 subclause a separate table is used to cover these categorizes: global statement of conformance, roles, major
 34 capabilities, protocol data units (PDUs), PDU parameters, and timers.
 35
 36

37 The structure of the individual tables varies. Except for the tables for the identification of the protocol and
 38 the identification of any corrigenda, at a minimum all tables have columns for item number, item descrip-
 39 tion, status, and support. For most the status columns includes both a status and a predicate. Some tables
 40 have a column for a mnemonic, which makes for easier cross-referencing within the PICS proforma. Most
 41 tables contain a reference column. A few tables (e.g., PDU parameters and timers) contain a column for
 42 entering supported value(s).
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47 F.4.2 Symbols, abbreviations, and terms

48	M	mandatory
49	O	optional
50	O.<n>	optional, but support of at least one of the group of options labeled by the same numeral <n> is
51		required
52	pred:	conditional symbol, including predicate identification (mnemonic)
53		
54	N/A	not applicable
55		
56	GBLx	mnemonic for global statement of conformance, where x is an integer
57		
58	MCx	mnemonic for major capabilities, where x is an integer
59		
60	PDUx	mnemonic for protocol data unit, where x is an integer
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62		
63		
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1 RLx mnemonic for role, where x is an integer
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4 **F.4.3 Explicit instructions** 5

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7 The blank spaces in the identification of the implementation part is to be completed with the information
8 necessary to identify fully both the implementation and supplier, as well as the name of a person to contact if
9 there are any queries concerning the contents of the PICS
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11
12 For the identification of the protocol, indicate in the support column “Yes”, if this is the protocol being sup-
13 ported.
14

15 For the identification of corrigenda to the protocol, indicate if any corrigenda have been applied by entering
16 the corrigenda information in the space provided. If none are applicable, then leave it blank.
17
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19 The main part of the PICS proforma is a fixed questionnaire in tabular form, divided into subclauses, each
20 containing a number of individual items. Answers to the questionnaire items are to be provided in the col-
21 umn labelled support, either by simply marking an answer to indicate a restricted choice (i.e., Yes or No) or
22 by entering a value or a set or a range of values in the supported range column. (Note that there are some
23 items where two or more choices from a set of possible answers may apply. All relevant choices are to be
24 marked in these cases.)
25
26

27
28 Each item is identified by an item number, which is given in the first column. The second column (labelled
29 item description) contains the question to be answered. The remaining columns may be labeled: references,
30 status, support, allowed value(s), supported value(s), or mnemonic. The reference column contains the refer-
31 ence or references to the appropriate static conformance requirements or other clauses in the IEEE Std
32 802.21. The status column contains the status value (mandatory, optional, not applicable, or conditional (see
33 F.4.6)) of the item. The answer to the item is to be entered in the support column by either entering Yes or
34 No in the space provided or, if present, mark the appropriate tick box beside the appropriate answer. For
35 items that contain a supported value(s) column, in addition to answering the support column, enter the value
36 or values supported for the item in the space provided.
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40 A supplier may also provide further information, categorized as either Additional Information or Exception
41 Information. When present, each kind of further information is to be provided in a further subclause of items
42 labeled A<I> or X<I>, respectively, for cross-referencing purposes, where <I> is any unambiguous identifi-
43 cation for the item (e.g., simply a numeral). There are no other restrictions on its format or presentation.
44
45

46 A completed PICS proforma, including any Additional Information and Exception Information, is the PICS
47 for the implementation in question.
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49
50 NOTE—Where an implementation is capable of being configured in more than one way, a single PICS may
51 be able to describe all such configurations. However, the supplier has the choice of providing more than one
52 PICS, each covering some subset of the implementation’s capabilities, if this makes for easier and clearer
53 presentation of the information.
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56 **F.4.4 Additional information** 57

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59 Items of Additional Information allow a supplier to provide further information intended to assist in the
60 interpretation of the PICS. It is not intended or expected that a large quantity of information will be supplied,
61 and a PICS can be considered complete without any such information. Examples of such Additional Infor-
62 mation might be an outline of the ways in which an (single) implementation can be set up to operate in a
63 variety of environments and configurations, or information about aspects of the implementation that are out-
64 side the scope of this standard but have a bearing upon the answers to some items.
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1 References to items of Additional Information may be entered next to any answer in the questionnaire, and
2 may be included in items of Exception Information.
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4 5 **F.4.5 Exception information** 6

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8 It may happen occasionally that a supplier will wish to answer an item with mandatory status (after any con-
9 ditions have been applied) in a way that conflicts with the indicated requirement. No preprinted answer will
10 be found in the Support column for this. Instead, the supplier shall write the missing answer into the Support
11 column, together with an X<I> reference to an item of Exception Information, and shall provide the appro-
12 priate rationale in the Exception Information item itself.
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15 An implementation for which an Exception Information item is required in this way does not conform to this
16 standard.
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19 NOTE— A possible reason for the situation described above is that a defect in this standard has been reported, a cor-
20 rection for which is expected to change the requirement not met by the implementation.
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22 23 **F.4.6 Conditional status** 24

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26 The PICS proforma contains a number of conditional items. These are items for which both the applicability
27 of the item itself, and its status if it does apply, mandatory or optional, are dependent upon whether or not
28 certain other items are supported.
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31 In this PICS proforma conditional items are represented through the use of nesting item numbering and by
32 using individual conditional items as indicated in the status column.
33

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35 If the value of the predicate is true, the conditional item is applicable, and its status is given by S and the sup-
36 port column is to be completed in the usual way. Otherwise, the conditional item is not relevant and the N/A
37 answer is to be marked.
38

39
40 A predicate is an mnemonic for an item in the PICS proforma. The value of the predicate is true if the item is
41 marked as supported, and is false otherwise.
42

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44 Each item referenced in a predicate is indicated by an asterisk in the item number column.
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46 **F.5 Identification of the implementation** 47

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49 In the space provided in the following subclauses provide all information that will uniquely identify both the
50 supplier (or client of the test laboratory) and the implementation and the system on which it resides. Also
51 provide a person as a point of contact for any queries concerning the contents of the PICS.
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53 54 **F.5.1 Implementation and the system** 55

56 57 58 59 60 61 62 63 64 **F.5.2 Supplier or client of the test laboratory** 65

1 Name:

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3 Address:

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9 **F.5.3 Contact**

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11 Name:

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13 Address:

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20 **F.6 Identification of the protocol**

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Item number	Identification of protocol specification	Support
F.7.1	IEEE Std 802.21 (2009)	

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34 **F.7 Identification of corrigenda to the protocol**

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Identification of corrigenda implemented	
Specification	Corrigenda implemented
IEEE Std 802.21 (2009)	

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49 **F.8 PICS proforma tables**

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51 **F.8.1 Global statement of conformance**

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Item number	Item description	Status	Support	Mnemonic
F.9.1	Have all mandatory capabilities been implemented?	M	Yes [] No []	GBL1

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62 Answering “No” to this question indicates non-conformance to the IEEE Std 802.21. Non-supported manda-
63 tory capabilities are to be identified in the implementation conformance statement, with an explanation of
64 why the implementation is non-conforming.
65

F.8.2 Roles

Item number	Item description	References	Status	Support	Mnemonic
F.9.2.1	Is MIHF supported in a mobile node?	5.4	O.1	Yes [] No []	RL1
F.9.2.2	Is MIHF supported in a network entity?	5.4	O.1	Yes [] No []	RL2

F.8.3 Major capabilities

Item number	Item description	References	Status	Support	Mnemonic
*F.9.3.1	Is the Event Service (ES) supported?	6.3	O.2	Yes [] No []	MC1
*F.9.3.2	Is the Command Service (CS) supported?	6.4	O.2	Yes [] No []	MC2
*F.9.3.3	Is the Information Service (IS) supported?	6.5	O.2	Yes [] No []	MC3
F.9.3.3.1	Is the TLV query method supported?	6.5.6.1, 6.5.6.2	MC3:O.3	Yes [] No [] N/A []	MC3.1
F.9.3.3.2	Is the RDF query method supported?	6.5.6.1, 6.5.6.3	MC3:O.3	Yes [] No [] N/A []	MC3.2
*F.9.3.4	Is Capability Discovery supported?	6.2.3	M	Yes [] No []	MC4
F.9.3.4.1	Is Unsolicited Capability Discovery supported?	8.2.3.3.3	O	Yes [] No []	MC4.1
F.9.3.4.2	Is Solicited Capability Discovery supported?	8.2.3.3.4	M	Yes [] No []	MC4.2
*F.9.3.5	Is the Registration Service supported?	6.2.4	O	Yes [] No []	MC5
F.9.3.6	Is Mobile Initiated Handover supported?	6.4.3.2.3	O.4	Yes [] No []	MC6
F.9.3.7	Is Network Initiated Handover supported?	6.4.3.2.4	O.4	Yes [] No []	MC7
F.9.3.8	Is MIH Acknowledgement protocol support?	8.2.1	O	Yes [] No []	MC8

F.8.4 PDUs

Item number	Item description	References	Status	Support	Mnemonic
F.9.4.1	MIH_Link_Detected indication?	8.6.2.1	MC1:M	Yes [] No [] N/A []	PDU1
F.9.4.2	MIH_Link_Up indication?	8.6.2.2	MC1:M	Yes [] No [] N/A []	PDU2
F.9.4.3	MIH_Link_Down indication?	8.6.2.3	MC1:M	Yes [] No [] N/A []	PDU3
F.9.4.4	MIH_Link_Going_Down indication?	8.6.2.5	MC1:M	Yes [] No [] N/A []	PDU4
F.9.4.5	MIH_Link_Parameters_Report indication?	8.6.2.4	MC1:M	Yes [] No [] N/A []	PDU5
F.9.4.6	MIH_Link_Handover_Imminent indication?	8.6.2.6	MC1:O	Yes [] No [] N/A []	PDU6
F.9.4.7	MIH_Link_Handover_Complete indication?	8.6.2.7	MC1:O	Yes [] No [] N/A []	PDU7
F.9.4.8	MIH_Link_Get_Parameters request?	5.3.3.1, 8.6.3.1	MC2:M	Yes [] No [] N/A []	PDU8
F.9.4.9	MIH_Link_Get_Parameters response?	5.3.3.1, 8.6.3.2	MC2:M	Yes [] No [] N/A []	PDU9
F.9.4.10	MIH_Link_Configure_Thresholds request?	5.3.3.1, 8.6.3.3	MC2:M	Yes [] No [] N/A []	PDU10
F.9.4.11	MIH_Link_Configure_Thresholds response?	5.3.3.1, 8.6.3.4	MC2:M	Yes [] No [] N/A []	PDU11
F.9.4.12	MIH_Link_Action request?	5.3.3.1, 8.6.3.5	MC2:M	Yes [] No [] N/A []	PDU12
F.9.4.13	MIH_Link_Action response?	5.3.3.1, 8.6.3.6	MC2:M	Yes [] No [] N/A []	PDU13
F.9.4.14	MIH_Net_HO_Candidate_Query request?	5.3.3.1, 8.6.3.7	MC2:M	Yes [] No [] N/A []	PDU14
F.9.4.15	MIH_Net_HO_Candidate_Query response?	5.3.3.1, 8.6.3.8	MC2:M	Yes [] No [] N/A []	PDU15
F.9.4.16	MIH_MN_HO_Candidate_Query request?	5.3.3.1, 8.6.3.9	MC2:M	Yes [] No [] N/A []	PDU16
F.9.4.17	MIH_MN_HO_Candidate_Query response?	5.3.3.1, 8.6.3.10	MC2:M	Yes [] No [] N/A []	PDU17
F.9.4.18	MIH_N2N_HO_Query_Resources request?	5.3.3.1, 8.6.3.11	MC2:M	Yes [] No [] N/A []	PDU18
F.9.4.19	MIH_N2N_HO_Query_Resources response?	5.3.3.1, 8.6.3.12	MC2:M	Yes [] No [] N/A []	PDU19
F.9.4.20	MIH_Net_HO_Commit request?	5.3.3.1, 8.6.3.13	MC2:M	Yes [] No [] N/A []	PDU20
F.9.4.21	MIH_Net_HO_Commit response?	5.3.3.1, 8.6.3.14	MC2:M	Yes [] No [] N/A []	PDU21
F.9.4.22	MIH_N2N_HO_Commit request?	5.3.3.1, 8.6.3.15	MC2:M	Yes [] No [] N/A []	PDU22

F.9.4.23	MIH_N2N_HO_Commit response?	5.3.3.1, 8.6.3.16	MC2:M	Yes [] No [] N/A []	PDU23
F.9.4.24	MIH_MN_HO_Complete request?	5.3.3.1, 8.6.3.17	MC2:M	Yes [] No [] N/A []	PDU24
F.9.4.25	MIH_MN_HO_Complete response?	5.3.3.1, 8.6.3.18	MC2:M	Yes [] No [] N/A []	PDU25
F.9.4.26	MIH_N2N_HO_Complete request?	5.3.3.1, 8.6.3.19	MC2:M	Yes [] No [] N/A []	PDU26
F.9.4.27	MIH_N2N_HO_Complete response?	5.3.3.1, 8.6.3.20	MC2:M	Yes [] No [] N/A []	PDU27
F.9.4.28	MIH_Get_Information request?	8.6.4.1	MC3:M	Yes [] No [] N/A []	PDU28
*F.9.4.29	MIH_Get_Information response?	8.6.4.2	MC3:M	Yes [] No [] N/A []	PDU29
F.9.4.30	MIH_Capability_Discover request?	8.6.1.1	MC4:M	Yes [] No [] N/A []	PDU30
F.9.4.31	MIH_Capability_Discover response?	8.6.1.2	MC4:M	Yes [] No [] N/A []	PDU31
F.9.4.32	MIH_Register request?	8.6.1.3	MC5:M	Yes [] No [] N/A []	PDU32
F.9.4.33	MIH_Register response?	8.6.1.4	MC5:M	Yes [] No [] N/A []	PDU33
F.9.4.34	MIH_DeRegister request?	8.6.1.5	MC5:M	Yes [] No [] N/A []	PDU34
F.9.4.35	MIH_DeRegister response?	8.6.1.6	MC5:M	Yes [] No [] N/A []	PDU35
F.9.4.36	MIH_Event_Subscribe request?	8.6.1.7	M	Yes [] No []	PDU36
F.9.4.37	MIH_Event_Subscribe response?	8.6.1.8	M	Yes [] No []	PDU37
F.9.4.38	MIH_Event_Unsubscribe request?	8.6.1.9	M	Yes [] No []	PDU38
F.9.4.39	MIH_Event_Unsubscribe response?	8.6.1.10	M	Yes [] No []	PDU39

F.8.5 PDU parameters

Item number	Item description	References	Status	Support	Supported Value
F.9.5.1	Maximum supported MIH_Get_Information response message size (in octets)?	8.6.4.2	PDU29: M	Yes [] No [] N/A []	

F.8.6 Timers

Item number	Item description	References	Status	Support	Allowed values (s)	Supported values (s)
F.9.6.1	TransactionLifeTime Timer	8.2.2.5	M	Yes [] No []		
F.9.6.2	RetransmissionInterval Timer	8.2.2.8.2	M	Yes [] No []		

F.8.7 Negotiation capabilities

There are no dynamic negotiations permitted in this protocol.

EDITOR'S INSTRUCTION NOTE: This clause to be deleted.

F.8.8 Protocol error handling

This protocol only specifies one method of handling errors on receipt of non-supported PDUs or parameters.

EDITOR'S INSTRUCTION NOTE: This clause to be deleted.