IEEE Standard for Information technology—

Telecommunications and information exchange between systems—

Local and metropolitan area networks—

Specific requirements

Part 3:Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications

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Abstract: The media access control characteristics for the Carrier Sense Multiple Access with Collision De-tection (CSMA/CD) access method for shared medium local area networks are described. The control charac-teristics for full duplex dedicated channel use are also described. Specifications are provided for MAU types 1BASE5 at 1 Mb/s; Attachment Unit Interface (AUI) and MAU types 10BASE5, 10BASE2, FOIRL (fiber optic inter-repeater link), 10BROAD36, 10BASE-T, 10BASE-FL, 10BASE-FB, and 10BASE-FP at 10 Mb/s; Media Independent Interface (MII) and PHY types 100BASE-T4, 100BASE-TX, 100BASE-FX, and 100BASE-T2 at 100 Mb/s; and the Gigabit MII (GMII) and 1000BASE-X PHY types, 1000BASE-SX, 1000BASE-LX, and 1000BASE-CX, which operate at 1000 Mb/s (Gigabit Ethernet) as well as PHY type 1000BASE-T. Repeater specifications are provided at each speed. Full duplex specifications are provided at the Physical Layer for 10BASE-T, 10BASE-FL, 100BASE-TX, 100BASE-FX, 100BASE-T2, and Gigabit Ethernet. System consider-ations for multisegment networks at each speed and management information base (MIB) specifications and additions to support Virtual Bridged Local Area Networks (VLANs) as specified in IEEE P802.1Q are also pro-vided. Also specified is an optional Link Aggregation sublayer which multiple physical links to be aggregated together to form a single logical link.

Keywords: Aggregated Link; Aggregator; Auto Negotiation; Category 5; copper; data processing; Ethernet; gigabit; information interchange, Link Aggregation; local area networks, management; MASTER-SLAVE; medium dependent interface; mode of data transmission; models; network interconnection; physical coding sublayer; Physical Layer; physical medium attachment; repeater; type field; VLAN TAG

8.8 Protocol Implementation Conformance Statement (PICS) proforma for Clause 8, Medium Attachment Unit and baseband medium specifications, type 10BASE5[21]

8.8.1 Overview

The supplier of a protocol implementation that is claimed to conform to Clause 8, Medium Attachment Unit and baseband medium specifications, type 10BASE5, shall complete the following PICS proforma.

A completed PICS proforma is the PICS for the implementation in question. The PICS is a statement of which capabilities and options of the protocol have been implemented. The PICS can be used for a variety of purposes by various parties, including the following:

— As a checklist by the protocol implementor, to reduce the risk of failure to conform to the standard through oversight;
— As a detailed indication of the capabilities of the implementation, stated relative to the common basis for understanding provided by the standard PICS proforma, by the supplier and acquirer, or potential acquirer, of the implementation;
— As a basis for intially checking the possibility of interworking with another implementation by the user, or potential user, of the implementation (note that, while interworking can never be guaranteed, failure to interwork can often be predicted from incompatible PICs);
— As the basis for selecting appropriate tests against which to assess the claim for conformance of the implementation, by a protocol tester.

8.8.2 Abbreviations and special symbols

8.8.2.1 Status symbols

The following abbreviations are used in the PICS proforma tables:

M   mandatory

O   optional

O. <n>   optional, but support of at least one of the group of options labeled by the same numeral <n> is required

X   prohibited

<item>: conditional-item symbol, dependent upon the support for <item>

!   logical negation, applied to a conditional item symbol

8.8.2.2 Abbreviations

Ref   reference section

8.8.3 Instructions for completing the PICS proforma

8.8.3.1 General structure of the PICS proforma

The structure of this PICS proforma is based on the guidelines given in ISO/IEC 9646-1: 1994 and ISO/IEC 9646-2: 1994. The first part of the PICS proforma, Implementation Identification and Protocol Summary, is

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[21]*Copyright release for PICS proformas:* Users of this standard may freely reproduce the PICS proforma in this subclause so that it may be used for its intended purpose and may further publish the completed PICS.

to be completed as indicated with the information necessary to identify fully both the supplier and the particular MAU.

The main part of the PICS proforma is a fixed-format questionnaire. Each item is identified by an item reference in the first column; the second column contains the question to be asked or the parameter to be measured; the third column contains the reference(s) to the material that specifies the item in the main body of this standard; the fourth column records the status of the item—whether support is mandatory, optional, prohibited, or conditional—and provides space for the answers; the fifth column provides additional comments and/or value(s) for measurable parameters. The tables below group related items into separate subsubclauses. This satisfies the requirement of ISO/IEC 9646-2 that all PICS proforma clauses be individually identified.

A supplier wishing to submit a 10BASE5 MAU for conformance testing against this standard must fill in the column headed Support in the PICS proforma tables and submit the resulting PICS with the equipment for test. One of the boxes in this column must be checked, with Yes indicating that the implementation is intended to meet the particular mandatory or optional requirement, No indicating that the option has not been implemented (or enabled where switchable) or that the requirement is not met, or N/A indicating the item is not applicable (for example, an item that is conditional). It should be noted that any instances of No checked against a mandatory requirement will result in the implementation failing the static conformance test.

8.8.3.2 Additional information

Any additional information that is needed to ensure that the MAU or the coaxial cable submitted for test is configured as a 10BASE5 MAU or coaxial cable should be entered into the PIXIT (Protocol Implementation eXtra Information for Testing) document supplied by the conformance testing organization. Relevant information on 10BASE5 MAUs includes the following:

  a) Enable/disable mechanisms for SQE Test
  b) Enable/disable mechanisms for features that allow compatibility with nonstandard implementations
  c) Operational instructions for DTEs or repeaters in cases where the MAU is embedded
  d) Environmental conditions
  e) Power supply voltage range

The above list is illustrative and is neither mandatory nor exhaustive.

8.8.3.3 Exception information

It may occasionally happen that a supplier will wish to answer an item with mandatory or prohibited status (after any conditions have been applied) in a way that conflicts with the indicated requirement. No preprinted answer will be found in the Support column for this. Instead, the supplier shall write the missing answer into the Support column, together with an X<i> reference to an item of Exception Information, and shall provide the appropriate rationale in the Exception item itself.

An implementation for which an Exception item is required in this way does not conform to this standard.

8.8.3.4 Conditional items

The PICS proforma contains a number of conditional items. These are items for which both the applicability of the item itself, and its status if it applies—mandatory, optional, or prohibited—are dependent upon whether or not certain other items are supported.

Individual conditional items are indicated by a conditional symbol of the form "<item>:<s>" in the Status column, where "<item>" is the section number and item reference that appears in the first column of the

table for some other item, and "<s>" is a status symbol, M, O, O.<n>, or X. The "!" symbol, prefixed to an item reference, means logical negation.

If the item referred to by the conditional symbol is marked as supported, the conditional item is applicable, and its status is given by "<s>"; the support column is to be completed in the usual way. Otherwise, the conditional item is not relevant and the Not Applicable (N/A) answer is to be marked.

Each item whose reference is used in a conditional symbol is indicated by an asterisk in the Item column.

8.8.4 Identification

8.8.4.1 Implementation identification

The MAU supplier shall complete the relevant fields in this section to identify the supplier and the particular MAU.

Supplier	
Contact point for queries about the PICS	
Implementation name(s) and version(s)	

8.8.4.2 Protocol summary

The supplier will complete this section to identify the precise protocol implemented.

Identification of protocol specification	IEEE Std 802.3, 2000 Edition, Clause 8, Medium Attachment Unit and baseband medium specifications, type 10BASE5
Identification of amendments and corrigenda to this PICS proforma which have been completed as part of this PICS	
Have any Exception items been required? (The answer Yes means that the implementation does not conform to this standard.)	Yes [ ] No [ ]

Date of Statement	

8.8.5 Global statement of conformance

The supplier must indicate below whether or not the implementation implements all the mandatory requirements. Answering No to this question indicates nonconformance to the protocol specification. Nonsupported mandatory capabilities are to be identified in the PICS, with an explanation of why the implementation is non-conforming.

This implementation meets all mandatory requirements	Yes [ ] No [ ]

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