Changes to ANSI/IEEE Std 802.3-2000, Clause 30

EDITORIAL NOTES - This supplement is based on the current edition of IEEE Std 802.3, 2000 as modified by Draft 3.1 of IEEE P802.3ae, 10Gb/s Ethernet. The editing instructions define how to merge the material contained here into this base document set to form the new comprehensive standard as created by the addition of IEEE P802.3af.

Editing instructions are shown in ***bold italic***. Three editing instructions are used: change, delete, and insert. ***Change*** is used to make small corrections in existing text or tables. The editing instruction specifies the location of the change and describes what is being changed either by using ~~strikethrough~~ (to remove old material) or underscore (to add new material). ***Delete*** removes existing material. ***Insert*** adds new material without disturbing the existing material. Insertions may require renumbering. If so, renumbering instructions are given in the editing instruction. Editorial notes will not be carried over into future editions.

Editors' Notes: *To be removed prior to final publication.*

References:
None.

Definitions:
None.

Abbreviations:
None.

Revision History:

Draft 1.0, July 2001	Initial draft for review. This draft is based on the IETF Power Ethernet (DTE Power via MDI) MIB of June 2001 and the notes from the Management Ad Hoc meeting held 8th January (http://www.ieee802.org/3/af/public/documents/management_ad_hoc_report.pdf) at the IEEE P802.3af January 2001Interim meeting in Irvine, CA.

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30. 10 Mb/s, 100 Mb/s, 1000 Mb/s~~,~~ and 10 Gb/s

30.1 Overview

Change the first paragraph of this subclause as follows:

This clause provides the Layer Management specification for DTEs, repeaters, and MAUs based on the CSMA/CD access method. The clause is produced from the ISO framework additions to Clause 5, Layer Management; Clause 19, Repeater Management; and Clause 20, MAU Management. It incorporates additions to the objects, attributes, and behaviors to support 100 Mb/s, 1000 Mb/s and 10 Gb/s, full duplex operation, MAC Control, ~~and~~ Link Aggregation and DTE Power via MDI.

30.1.1 Scope

Change the first paragraph of this subclause as follows:

This clause includes selections from Clauses 5, 19, and 20. It is intended to be an entirely equivalent specification for the management of 10 Mb/s DTEs, 10 Mb/s baseband repeater units, and 10 Mb/s integrated MAUs. It also includes the additions for management of MAC Control, DTEs and repeaters at speeds greater than 10 Mb/s, DTE Power via MDI, embedded MAUs, and PHYs. Implementations of management for DTEs, repeater units, and embedded MAUs should follow the requirements of this clause (e.g., a 10 Mb/s implementation should incorporate the attributes to indicate that it is not capable of 100 or 1000 Mb/s operation, a half duplex DTE should incorporate the attributes to indicate that it is not capable of full duplex operation, etc.).

30.1.4 Management model

Change the second last paragraph of this subclause as follows:

The above items are defined in 30.3, 30.4, 30.5, 30.6, 30.7, ~~and~~ 30.8 and 30.9 of this clause in terms of the template requirements of ISO/IEC 10165-4: 1991.

30.1.2.1 Text description of managed objects

Insert the following text immediately after the description of oWIS:

oPSE

The managed object of that portion of the containment tree shown in Figure 30-3. The attributes and actions defined in this subclause are contained within the o??? managed object.

oPD

The managed object of that portion of the containment tree shown in Figure 30-3. The attributes and actions defined in this subclause are contained within the o??? managed object.

Change the Figure 30-3 as follows:

Comments:
1 It is assumed that it is permissible to allow a Repeater to be a PD even though that is actually Repeater Power via MDI rather that DTE Power via the MDI.

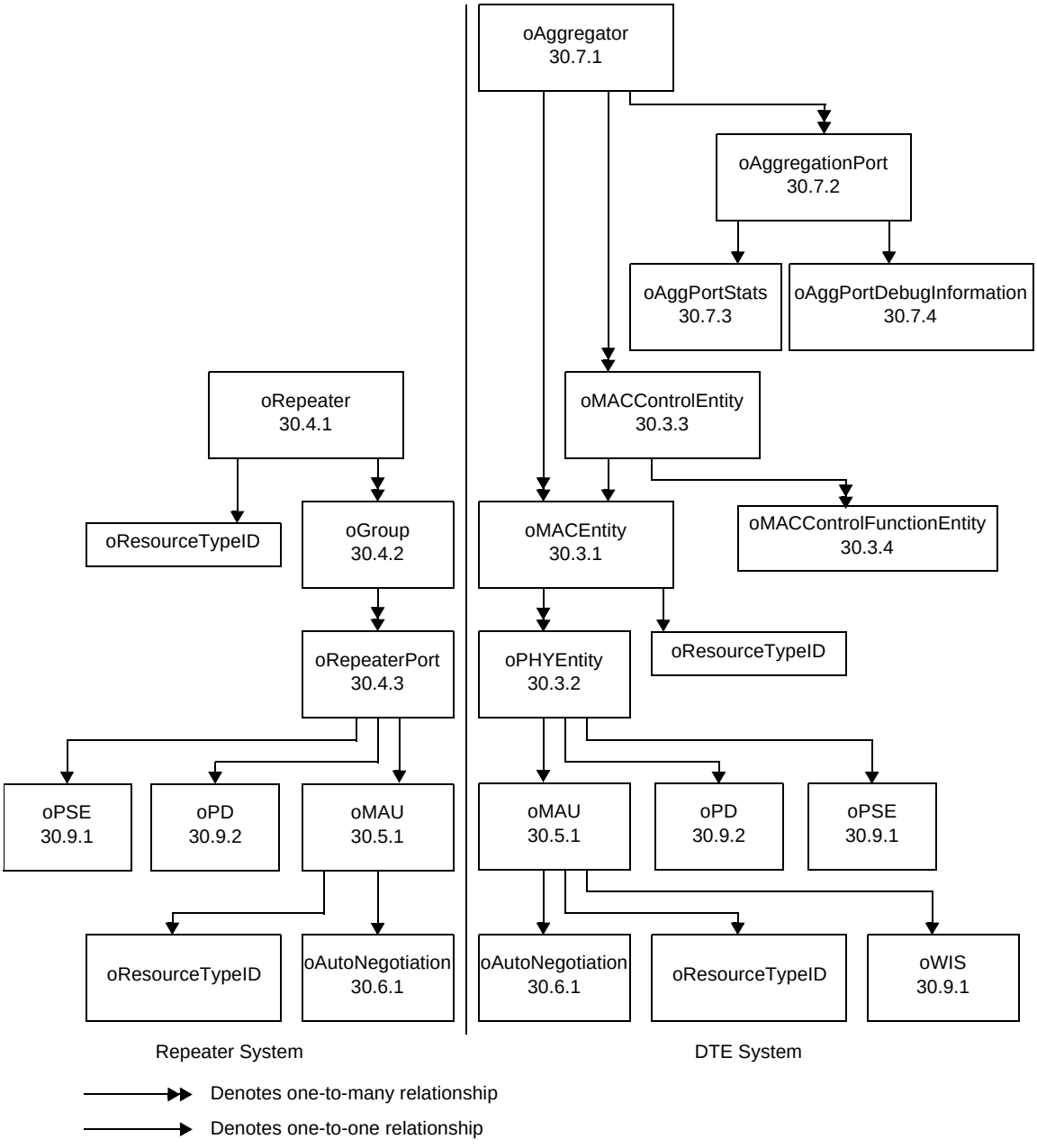

Figure 30–3—Entity relationship diagram

30.1.5 Capabilities

Change the first paragraph of this subclause as follows:

This standard makes use of the concept of *packages* as defined in ISO/IEC 10165-4: 1992 as a means of grouping behaviour, attributes, actions, and notifications within a managed object class definition. Packages may either be mandatory, or be conditional, that is to say, present if a given condition is true. Within this standard *capabilities* are defined, each of which corresponds to a set of packages, which are components of a number of managed object class definitions and which share the same condition for presence. Implementation of the appropriate basic and mandatory packages is the minimum requirement for claiming conformance to IEEE 802.3 Management. Implementation of an entire optional capability is required in order to claim conformance to that capability. The capabilities and packages for IEEE 802.3 Management are specified in Tables 30–1, 30–2 ~~and~~ 30–3 and 30–4.

Insert the following new table after Table 30-3

Table 30–4—PSE and PD Capabilities

				PSE Basic Package (Mandatory)	PSE Recommended Package (Optional)	PD Basic Package (Mandatory)	PD Recommended Package (Optional)
oPSE managed object class (30.9.1)							
	aPSEID	ATTRIBUTE	GET	X			
	aPSEAdminState	ATTRIBUTE	GET-SET	X			
	aPSEPowerPairsControlAbility	ATTRIBUTE	GET		X		
	aPSEPowerPairs	ATTRIBUTE	GET-SET		X		
	aPSEPowerDetectionControl	ATTRIBUTE	GET-SET		X		
	aPSEPowerDetectionStatus	ATTRIBUTE	GET		X		
	aPSEPowerStatus	ATTRIBUTE	GET		X		
	acPSEPowerStatusClear	ACTION			X		
oPD managed object class (30.9.2)							
	aPDID	ATTRIBUTE	GET			X	
	aPDPowerStatus	ATTRIBUTE	GET				X
	aPDPowerStatus	ATTRIBUTE	GET				X

30.9Management for Power Sourcing Equipment (PSE) and Powered Device (PD)

30.9.1 PSE managed object class

This subclause formally defines the behaviours for the oPSE managed object class, attributes and actions.

30.9.1.1 PSE attributes

30.9.1.1.1 aPSEID

ATTRIBUTE

APPROPRIATE SYNTAX:
INTEGER

BEHAVIOUR DEFINED AS:
The value of aPSEID is assigned so as to uniquely identify a PSE among the subordinate managed objects of the containing object.;

30.9.1.1.2 aPSEAdminState

ATTRIBUTE

APPROPRIATE SYNTAX:
An ENUMERATED VALUE that has one of the following entries:
auto PSE function enabled
off PSE function disabled

BEHAVIOUR DEFINED AS:
A read-write value that identifies the operational state of the PSE. A GET operation returns the current operational state of the PSE. A SET operation changes the current operational state of the PSE to the indicated value. An interface which can provide the PSE functions specified in Clause 33 will be enabled to do so when this attribute has the enumeration “auto”. When this attribute has the enumeration “off” the interface will act as it would if it had no PSE function. If a Clause 22 MII or Clause 35 GMII is present, then this will map to the Power Enable bit specified in 33.22.1.1.8.;

30.9.1.1.3 aPSEPowerPairsControlAbility

ATTRIBUTE

APPROPRIATE SYNTAX:
BOOLEAN

BEHAVIOUR DEFINED AS:
Indicates the ability to control which PSE Pinout Alternative (see 33.2.1) is used for PD detection and power. When “true” the PSE Pinout Alternative used can be controlled through the aPSEPowerPairs attribute. When “false” the PSE Pinout Alternative used cannot be controlled through the aPSEPowerPairs attribute. If a Clause 22 MII or Clause 35 GMII is present, then this will map to the Pair Control Ability bit specified in 33.22.1.1.7.;

30.9.1.1.4 aPSEPowerPairs

ATTRIBUTE

APPROPRIATE SYNTAX:
An ENUMERATED VALUE that has one of the following entries:
signal PSE Pinout Alternative A

spare	PSE Pinout Alternative B
both	PSE Pinout Alternative A and B

BEHAVIOUR DEFINED AS:

A read-write value that identifies the supported PSE Pinout Alternative specified in 33.2.1. A GET operation returns the current PSE Pinout Alternative in use. A SET operation changes the PSE Pinout Alternative used to the indicated value only if the attribute aPSEPowerPairsControlAbility is “true”. If the attribute aPSEPowerPairsControlAbility is “false” a SET operation has no effect.

The enumeration “signal” indicates that PSE Pinout Alternative A is used for PD detection and power. The enumeration “spare” indicates that PSE Pinout Alternative B is used for PD detection and power. The enumerations “both” indicates that PSE Pinout Alternative A and B are used for PD detection although only PSE Pinout Alternative A or PSE Pinout Alternative B can be used to supply power. If a Clause 22 MII or Clause 35 GMII is present, then this will map to the PSE Pair Control bit specified in 33.22.1.1.6.;

Comments:
1 Is the behaviour defined for the enumeration “both” correct as this is not clear from subcluase 33.2.1.

30.9.1.1.5 aPSEPowerDetectionControl

ATTRIBUTE

APPROPRIATE SYNTAX:

An ENUMERATED VALUE that has one of the following entries:

off	PD Detection disabled
auto	PD Detection normal
test	PD Detection test mode

BEHAVIOUR DEFINED AS:

A read-write value that identifies the current mode of operation of the PD Detection function specified in 33.2.3. A GET operation returns the current mode of operation of the PD Detection function. A SET operation changes the mode of operation of the PD Detection function to the indicated value.

The enumeration “off” indicates that the PD Detection function is disabled. The enumeration “auto” indicates that the PD Detection function is enabled. The enumeration “test” indicates that the PD Detection function is enabled however power will not be supplied if a valid PD is detected. If a Clause 22 MII or Clause 35 GMII is present, then this will map to the Detection Control bits specified in 33.22.1.1.5.;

30.9.1.1.6 aPSEPowerDetectionStatus

ATTRIBUTE

APPROPRIATE SYNTAX:

An ENUMERATED VALUE that has one of the following entries:

off
searching
deliveringPower
fault

BEHAVIOUR DEFINED AS:

A read-only value that indicates the current status of the PD Detection function specified in 33.2.3.

The enumeration “off” indicates that the PD Detection function has been disabled. The

enumeration “searching” indicates that PD Detection function is enabled but has not detected a valid PD. The enumeration “deliveringPower” indicates that PD Detection function is enabled, has detected a valid PD and is delivering power. The enumeration “fault” indicates that the PD Detection function is enabled but has detected a fault, faults reported are vendor-specific. If a Clause 22 MII or Clause 35 GMII is present, then this will map to the Detection Status bits specified in 30.9.1.1.6.;

Comments:
1 There is no enumeration provided in aPSEPowerDetectionStatus to report the situation where aPSE-PowerDetectionControl is in the “test” state and the PD Detection function has detected a valid PD since in the “test” state power is not actually delivered. Also what about the condition where a valid PD has been detected yet the PSE chooses not to power it as it hasn’t sufficient power supply capacity to power this additional port. Suggest an additional enumeration “detected” for these situations.

30.9.1.1.7 aPSEPowerStatus

ATTRIBUTE

APPROPRIATE SYNTAX:

An ENUMERATED VALUE that has one of the following entries:

ok	current normal
underCurrent	under current condition has been detected
overCurrent	over current condition has been detected
both	under current and over current conditions have been detected

BEHAVIOUR DEFINED AS:

A read-only value that indicates the current status of the PD Power Supply function specified in 33.?.?.

The enumeration “ok” indicates neither a under current or over current condition has been detected since the attribute was last cleared. The enumeration “underCurrent” indicates a under current condition has been detected since the attribute was last cleared. The enumeration “overCurrent” indicates a over current condition has been detected since the attribute was last cleared. The enumeration “both” indicates that both a under current and over current condition has been detected since the attribute was last cleared. This attribute is cleared through the acPSEPowerStatusClear action.

A under current condition is detected when the current drawn from the PSE at the MDI is less than Off mode current 2 for a duration greater that the Under load time limit. A over current condition is detected when the current drawn from the PSE at the MDI is greater than Over load current limit for a duration greater that the Over load time limit. The values Over load current limit, Over load time limit, Off mode current 2 and Under load time limit are specified in Table 33-5. If a Clause 22 MII or Clause 35 GMII is present, then this will map to the Under Current and Over Current

bits specified in 33.22.1.1.3 and 33.22.1.1.2.;

Comments:
1 What is the exact intent of the "ok" enumeration. Should this be returned only when a valid PD has been detected and the current being supplied between the values underCurrent and overCurrent. In this case when no PD is attached this attribute would return the enumeration "underCurrent". It could be possible to say that the enumeration "ok" should be returned when no PD was detected but what then is the definition of when to return the "underCurrent" enumeration, maybe something like a current less than Off mode current 2 but greater than some leakage current value.
2 In addition the intent of the "underCurrent" enumeration seems slightly unclear when compared to the "overCurrent" enumeration. The "underCurrent" enumeration will be set for normal operation, that is a PD being disconnected or powered down. The "overCurrent" enumeration seems to only occur when there is a fault condition.
3 It is assumed that the definition of the under current condition and the over current condition given above is correct. In addition it would be better if these definitions where moved to the body of the DTE Power Clause.

30.9.1.2 PD actions

30.9.1.2.1 acPSEPowerStatusClear

ACTION

APPROPRIATE SYNTAX:
None required

BEHAVIOUR DEFINED AS:
This action provides a means to clear aPSEPowerStatus.;

Comments:
1 There has been some discussion in the IEEE P802.3ae project about the use of latching function in the MIB as SNMP can have multiple management accessing the same MIB. This means that two managers can be observing this attribute for a single port. One manager decides he has read the information they need so they clear the attribute through theacPSEPowerStatusClear action, the other mandatory has now lost the information and will read this attribute as if no events have occurred. Normally within IEEE P802.3, and this is what was decided for IEEE P802.3ae, a live bit is provided for the event and then a counter to count how may times it has happened, a good example is in subcluase 30.5.1.1.6 aJabber.

30.9.2 PD managed object class

This subclause formally defines the behaviours for the oPD managed object class and attributes.

30.9.2.1 PD attributes

30.9.2.1.1 aPDID

ATTRIBUTE

APPROPRIATE SYNTAX:
INTEGER

BEHAVIOUR DEFINED AS:
The value of aPDID is assigned so as to uniquely identify a PD among the subordinate managed objects of the containing object.;

30.9.2.1.2 aPDPowerStatus

ATTRIBUTE

APPROPRIATE SYNTAX:

An ENUMERATED VALUE that has one of the following entries:

off	PD not receiving Power
receivingPower	PD receiving Power

BEHAVIOUR DEFINED AS:

A read-only value that indicates the current status of the PD??? function specified in 33.?.?.

The enumeration “off” indicates that the PD is drawing a current less than I_{Port} as specified in Table 33-10. The enumeration “receivingPower” indicates that the PD is drawing a current greater than I_{Port} as specified in Table 33-10. If a Clause 22 MII or Clause 35 GMII is present, then this will map to the PD Power Status bits specified in 33.22.1.2.3.;

30.9.2.1.3 aPDPowerPairs

ATTRIBUTE

APPROPRIATE SYNTAX:

An ENUMERATED VALUE that has one of the following entries:

signal	PD Pinout Mode A
spare	PD Pinout Mode B
both	PD Pinout Mode A and B

BEHAVIOUR DEFINED AS:

A read-only value that indicates the supported PD Pinout Mode as specified in 33.3.1.

The enumeration “signal” indicates that only PD Pinout Mode A is supported by the PD. The enumeration “spare” indicates that only PD Pinout Mode B is supported by the PD. The enumeration “both” indicates that both PD Pinout Mode A and are supported by the PD. If a Clause 22 MII or Clause 35 GMII is present, then this will map to the PD Pair Control bits specified in 30.9.2.1.3.;