

# Port Extenders based on PBB-TE

## Proposal for 802.1Qbh/802.1BR

**Abstract:** This amendment to IEEE Std. 802.1Q specifies support of the MAC Service by Extended Bridges, the principles of operation of networks built with Extended Bridges, the operation of VLAN-aware Bridges features for the Controlling Bridge used in an Extended Bridge, and the control of Port Extenders used in an Extended Bridge including management, protocols and algorithms.

**Abstract:** Bridged Local Area Networks, LANs, local area networks, metropolitan area networks, MAC Bridges, MANs, Virtual Bridged Local Area Networks, Edge Virtual Bridging, Data Center Bridging, EVB, DCB.

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# PBB-TE Port Extension Proposal

## Editorial Notes

This amendment specifies changes to IEEE Std 802.1Q-2011 that support connecting a Bridge Port to a Port Extender to extend the bridge MAC Relay functionality to the Ports provided by a Port Extender. Changes are applied to the base text of P802.1Q-2011 as amended by IEEE P802.1Qbb, P802.1Qbc, P802.1Qbe, P802.1Qbf, and P802.1Qbg. Text shown in ***bold italics*** in this amendment defines the editing instructions for changes to this base text. Three editing instructions are used: ***change***, ***delete***, and ***insert***. ***Change*** is used to make a change to existing material. The editing instruction specifies the location of the change and describes what is being changed. Changes to existing text may be clarified using ~~strikeout~~ markings to indicate removal of old material, and underline markings to indicate addition of new material. ***Delete*** removes existing material. ***Insert*** adds new material without changing 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 of IEEE Std.802.1Q.

## 1. Overview

***Insert the following paragraph at the end of this subclause:***

This standard specifies a capability to extend MAC service over Port Extenders to form an Extended Bridge. This capability may be used, for example, to extend MAC service between multiple physical stations (which may include devices such as physical servers and server blades) or to enable MAC service to virtual end station.

### 1.3 Introduction

***Insert the following text at the end of this subclause, renumbering the list items and NOTES appropriately:***

This standard allows bridge port extension of a Controlling Bridge's Ports to Ports provided by a Port Extender. To this end it:

- a) Specifies a Controlling Bridge as comprising a VLAN Bridge, a Provider Bridge, or a Provider Edge Bridge and the ability to support one or more Port Extenders.
- b) Specifies the operations that a Controlling Bridge takes to control attached Port Extenders and monitor their status.
- c) Establishes the requirements for Bridge Management to support Port Extension, identifying the managed objects and defining the management operations.

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### 3. Definitions

*Insert the following definitions in clause 3, numbering them appropriately and renumbering other definitions as needed:*

**3.1 Cascade Port:** A Port of a Controlling Bridge or Port Extender which connects to an Upstream Port.

**3.2 Controlling Bridge:** A Bridge that supports one or more Port Extenders and is composed of a primary VLAN-aware component, T-components and B-components.

**3.3 Controlling Bridge internal Backbone Edge Bridge (CB-BEB):** A BEB internal to a Controlling Bridge composed of a single B-component and one or more T-components.

**3.4 Extended Bridge:** A Controlling Bridge and at least one Port Extender under the Controlling Bridge's control.

**3.5 E-channel:** An instance of the MAC service supported by a TESI and identified by an E-channel identifier.

**3.6 E-channel Identifier (E-CID):** An E-channel identifier that identifies an E-channel along with its TESI.

**3.7 Extended Port:** An external Port of a Port Extender that is supported by a 2-Port VLAN-aware component.

**3.8 Port Extender:** A type of Backbone Edge Bridge used to extend the MAC service of a VLAN-aware Bridge.

**3.9 Port Extender Backbone Edge Bridge Network (PE-PBBN):** A PBBN composed of CB-BEBs and the B-components and T-components of attached Port Extenders.

**3.10 Port Extender Control and Status Agent:** The entity within a Port Extender that implements the Port Extender Control and Status Protocol.

**3.11 Port Extender Control and Status Protocol (PE CSP):** A protocol used between a Controlling Bridge and Port Extenders that provides the ability to assert control over and retrieve status information from the Port Extenders.

**3.12 Replication Group:** The set of Bridge Ports within the primary component of a Controlling Bridge whose frames pass through a single Cascade Port of the Controlling Bridge.

*Editor's Note: This definition is not necessary since a CNP is already a defined term. It is added here temporarily in case we decide to re-name this port to provide a Port Extender context.*

**3.13 Internal CB-BEB Customer Network Port (CNP):** An internal T-component Port within a Controlling Bridge that attaches, by an internal LAN, the T-component Port to a VLAN Bridge Port of the primary component.

**3.14 Upstream Port:** A Port on a Port Extender that connects to a Cascade Port.

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1 **4. Abbreviations**  
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3 *Insert the following abbreviations in clause 4 in the appropriate locations:*  
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7 E-CID	E-channel Identifier
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9 PE CSP	Port Extender Control and Status Protocol
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11 CB-BEB	Controlling Bridge internal Backbone Edge Bridge
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13 PE-PBBN	Port Extender Provider Backbone Bridge Network
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## 5. Conformance

*Change subclause 5.2 as shown:*

### 5.2 Conformant components and equipment

This subclause specifies requirements and options for the following core components:

- a) VLAN-aware Bridge component (5.4);
- b) VLAN-unaware Bridge component (5.14);

for the following components that use that core functionality:

- c) C-VLAN component (5.5);
- d) S-VLAN component (5.6);
- e) I-component (5.7);
- f) B-component (5.8);
- g) TPMR component (5.15);
- h) T-component (5.17);
- i) Edge relay (5.20.1);

and for the following systems that include instances of the above components:

- j) VLAN Bridge (5.9);
- k) S-VLAN Bridge (5.11.1);
- l) Provider Edge Bridge (5.11.2);
- m) Backbone Edge Bridge (5.12);
- n) TPMR (5.16);
- o) Edge Virtual Bridging Bridge (5.19);
- p) Edge Virtual Bridging Station (5.20);
- q) [Port Extender \(5.21\)](#);
- r) [Controlling Bridge \(5.22\)](#).

NOTE-A VLAN Bridge can also be referred to as a Customer Bridge or a C-VLAN Bridge. Both S-VLAN Bridges and Provider Edge Bridges are examples of Provider Bridges.

*Insert new subclauses 5.21 and 5.22, renumbering existing subclauses as necessary, as shown:*

#### 5.21 Port Extender requirements

A Port Extender shall comprise a single conformant B-component capable of providing TESI (25.10) and zero or more conformant T-components (5.15) each coupled to a conformant 2-Port VLAN aware component.

Each 2-Port VLAN aware component shall comprise exactly two Ports, a single Extended Port and a single VLAN Bridge Port coupled as specified in clause 44 to a T-component.

Each externally accessible port shall be capable of being configured as one of, and may be capable of being configured as any of the following:

- a) An Extended Port;

- b) A Cascade Port;
- c) An Uplink Port.

as specified in Clause 44.

A conformant Port Extender shall:

- d) Have a single conformant B-component (5.8) capable of providing TESIs (25.10);
- e) Disable learning for a set of B-VIDs allocated to TE-MSTID as specified in 8.4 and in 8.9;
- f) Discard frames with unregistered destination addresses for B-VIDs allocated to TE-MSTID (8.8.1);
- g) Have a T-component (5.15) for each Extended Port (Clause 44);
  - 1) Implement MAC status propagation at the T-components (Clause 23);
  - 2) Implement B-DA resolution for Extended Ports at the PIP (44.4, 44.13, 6.10);
  - 3) Implement B-SA echo cancellation at the PIP (6.10);
- h) Support the Port Extender Control and Status Protocol (Clause 45);
- i) Support LLDP (IEEE Std. 802.1AB) nearest non-TPMR database including the Port Extension TLV (D.2.1.5);
- j) Implement the LLDP Port Extension TLV (IEEE Std 802.1Q subclause D.2.1.5);
- k) Use the Nearest non-TPMR Bridge group address to carry all Port Extension TLVs;
- l) Support the requirements for at least one of:
  - 1) the Network Interface Port Extender (5.21.1),
  - 2) Campus Port Extender (5.21.2),
  - 3) Provider Port Extender (5.21.3).

#### 5.21.1 Network Interface Port Extender

In addition to the filling the requirements of subclause 5.21, a conformant Network Interface Port Extender shall:

- m) Fill the requirements for an EVB Station (5.20);
- n) Supports a 2-Port Edge Relay (5.20.1) on each Extended Port (clause 44);
- o) Each 2-Port Edge Relay component supported shall have learning disabled;
- p) Support Congestion Notification (5.4.2) on all E-channels;
- q) Support enhanced transmission selection on all components (5.4.1).

A conformant Network Interface Port Extender may:

- r) Support a 2-Port C-VLAN aware component (5.5) attached to each Extended Port (clause 44)
- s) Each 2-Port C-VLAN component supported shall have learning disabled;
- t) Each 2-Port C-VLAN component supported shall support the Bridge Group Address pass-through as specified in 13.39.

#### 5.21.2 Campus Port Extender

In addition to the filling the requirements of subclause 5.21, a conformant Campus Port Extender shall:

- u) Support a 2-Port C-VLAN aware component (5.5) attached to each Extended Port (clause 44);
- v) Each 2-Port C-VLAN component supported shall have learning disabled;
- w) Each 2-Port C-VLAN component supported shall support the Bridge Group Address pass-through as specified in 13.39.

#### 5.21.3 Provider Port Extender

In addition to the filling the requirements of subclause 5.21, a conformant Provider Port Extender shall:

- x) Fill the Backbone Edge Bridge PBB-TE requirements (5.11.1);
- y) Support a 2-Port S-VLAN aware component (5.6) attached to each Extended Port (clause 44);
- z) Each 2-Port S-VLAN component supported shall have learning disabled;
- aa) Support CFM operation on the B-components, T-components and 2-Port S-components (5.4.1.4).

## 5.22 Controlling Bridge requirements

A Controlling Bridge shall comprise a single conformant C-VLAN (5.5) or S-VLAN (5.6) aware component supporting the requirements of Bridge Port Extension specified in clause 44 (called the primary component of the Extended Bridge) and one or more conformant B-component (5.8) capable of providing TESI (25.10) coupled to one or more conformant T-components (5.15).

Each externally accessible Port shall be capable of being configured as one of, and may be capable of being configured as any of:

- a) A C-VLAN Bridge Port;
- b) A Provider Network Port;
- c) A Cascade Port.

A conformant Controlling Bridge shall:

- d) Support the requirements for at least one of:
  - 1) Data Center Controlling Bridge (5.21.1),
  - 2) Campus Controlling Bridge (5.21.2),
  - 3) Provider Controlling Bridge (5.21.3).
- e) Have one or more conformant B-components (5.8) capable of providing TESI (25.10) which:
  - 1) Disable learning for a set of B-VIDs allocated to TE-MSTID as specified in 8.4 and in 8.9;
  - 2) Discard frames with unregistered destination addresses for B-VIDs allocated to TE-MSTID (8.8.1);
- f) Have a T-component (5.15) for each Bridge Port of the primary component (clause 44) which:
  - 1) Implements MAC status propagation at the T-components (Clause 23);
  - 2) Implements B-DA resolution for Extended Ports at the PIP (44.4, 44.13, 6.10);
  - 3) Implements the B-SA echo cancellation address selection at the PIP (44.4, 44.13).
- g) Support the Bridge Port Extension requirements specified in clause 44;
- h) Implement the Port Extender Control and Status Protocol (clause 45);
- i) Implement LLDP (IEEE Std. 802.1AB);
- j) Implement the LLDP Port Extension TLV (IEEE Std 802.1Q subclause D.2.1.5);

A conformant Controlling Bridge may:

- k) Support the Bridge Port Extension Management Objects (12.26);
- l) Support the IEEE-PE MIB module (17.2.16, 17.7.16).

### 5.22.1 Data Center Controlling Bridge

In addition to the filling the requirements of subclause 5.22, a conformant Data Center Controlling Bridge shall:

- m) Support a conformant C-VLAN component (5.5) as the primary component of the Extended Bridge;
- n) Fill the requirements for an EVB Bridge (5.19);
- o) Support Congestion Notification (5.4.2) on each E-channel;
- p) Support enhanced transmission selection on all components (5.4.1);
- q) Support DCBX on the C-VLAN component (5.4.1).

1 **5.22.2 Campus Controlling Bridge**

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3 In addition to the filling the requirements of subclause 5.22, a conformant Campus Controlling Bridge shall:

- 4  
5 r) Support a conformant C-VLAN component (5.5) as the primary component of the Extended Bridge.

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7 **5.22.3 Provider Controlling Bridge**

8  
9 In addition to the filling the requirements of subclause 5.22, a conformant Provider Controlling Bridge shall:

- 10  
11 s) Support a conformant S-VLAN component (5.6) as the primary component of the Extended Bridge;  
12 t) Each B-component along with attached T-components shall fill the Backbone Edge Bridge PBB-TE  
13 requirements (5.11.1);  
14 u) Support CFM operation (5.4.1.4).

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## 6. Support of the MAC Service

*Insert the following paragraph prior to Note 4 near the end of 6.6.1:*

In addition, the `connection_identifier` is used in support of Bridge Port Extension (Clause 44).

### 6.10 Support of the ISS/EISS by Provider Instance Ports

*Insert the following paragraph in 6.10 just after the list item d):*

Each Virtual Instance Port may support the following parameter:

e) An `echoCancellationSA`.

*Insert at the end of 6.10:*

The `echoCancellationSA` parameter allows the PIP to perform echo cancellation by discarding indications from the PIP-ISS which have a B-SA matching the `echoCancellationSA`.

*Insert the following paragraph in 6.10.1 just after the list item f):*

g) The `source_address` parameter of the received `M_UNITDATA.indication` primitive is the `echoCancellationSA`.

*Change the third paragraph in 6.10.2 as follows:*

If this PIP is not supporting a CNP within a CB-BEB then the value of the `source_address` is the PIP MAC address. If this PIP is supporting a CNP within a CB-BEB and

- a) the `connection_identifier` is NULL then the value of the `source_address` is the PIP MAC address;
- a) the port is a member of the port map delivered in the `connection_identifier` then the value of the `source_address` is the PIP MAC address;
- b) the port is not a member of the port map delivered in the `connection_identifier` then the value of the `source_address` is the PIP MAC address.

## 8. Principles of bridge operation

*Editor's Note: This section needs to be updated with the text from the new draft 802.1Qbh which passes the port-map in the connection\_identifier*

### 8.3 Model of Operation

*Insert the following into the list of Higher Layer Entities, renumbering the list as appropriate:*

- 5) Port Extension Control and Status Protocol;

#### 8.6.1 Active topology enforcement

*Change the initial paragraph of 8.6.1 as shown:*

To prevent data loops and unwanted learning of source MAC addresses, the Forwarding Process determines the values (TRUE, or FALSE) of the learning and forwarding controls (8.4) appropriate to each received frame and Bridge Port. If learning is true for the receiving Port and ingress filtering (8.6.2) would not cause the received frame to be discarded, the source address and VID are submitted to the Learning Process. If forwarding is true for the reception Port and the reception Port is attached to a Port Extender, then each Bridge Port with forwarding true is identified as a potential transmission Port. Otherwise, if ~~H~~

#### 8.8.12 Connection\_Identifier

*Insert the following paragraph at the end of 8.8.12:*

In addition, the connection\_identifier is used within a Controlling Bridge to pass parameters related to the use of the Bridge Port Extension remote replication capability (44.15).

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## 12. Bridge management

*Editor's Note: If a TE-SID were used in place of the E-CID then this the corresponding objects need to be updated here.*

### 12.1.1 Configuration Management

*Insert the following facility at the end of the list in 12.1.1, re-lettering the list as needed:*

- g) The ability to monitor the functional elements of Bridge Port Extension.
- h) The ability to identify E-Channels in use and through which Ports of the Controlling Bridge and Port Extenders they pass.

### 12.3 Data types

*Insert the following data types in the list in 12.3, re-lettering the list as needed:*

- q) E-Channel Identifier, an Unsigned value used to identify an E-Channel. Valid values are in the range of 1 through 16 382.
- r) Port Map—a set of control indicators, one of each Port of a Bridge or Bridge component, indicating that Port's inclusion within or exclusion from the specified set of Ports.

*Insert the following to the end of the clause, re-numbering the paragraphs as needed:*

### 12.26 Bridge Port Extension Entries

The Bridge enhancements for support of Bridge Port Extension are defined in Clause 44 and 45.

The objects that comprise this managed resource are

- a) Port Extension Port Table
- b) Port Extension Remote Replication Table

#### 12.26.1 Port Extension Port Table

There is one row of the Port Extension Port Table per Port of the VLAN-aware bridge component of a Controlling Bridge that connects to a Port on a Port Extender. Each table row contains the set of parameters detailed in Table 12-26.

The pepPortComponentID and PepPort parameters specify a Port in the Controlling Bridge. The pepPortType parameter specifies the type of Port on the Port Extender corresponding to the Port in the Controlling Bridge. If the Port Extender Port is an Extended Port, then the objects related to pepPortType enumerations pepCascade and pepUpstream will not exist. If the Port Extender Port is a Cascade Port, then the objects related to the pepPortType enumeration pepExtended will not exist and the objects related to pepPortType enumeration pepUpstream refer to the Upstream Port to which the Cascade Port is attached.

The remaining parameters refer to the corresponding Port on the Port Extender (see Clause 44).

#### 12.26.2 Port Extension Remote Replication Table

There is one row of the Port Extension Remote Replication Table for each Remote Replication Registration entry (44.15.1). The table row contains the set of parameters detailed in Table 12-27.

**Table 12-26—Port Extension Port Table row elements**

Name	Data type	Operations supported*	Conformance <sup>†</sup>	References
pepPortComponentID	ComponentID		B	12.3
pepPort	Port Number		B	12.3
pepPortType	enum {pepCascade, pepUpstream, pepExtended}		B	44.5
pepUpstreamCSPAddress	MAC Address	R	B	45.2
pepEcid	E-Channel Identifier	R	B	45.2
pepPortNumber	Port Number	R	B	12.3
pepPortInFrames	Counter64	R	B	
pepPortInOctets	Counter64	R	B	
pepPortOutFrames	Counter64	R	B	
pepPortInDiscards	Counter64	R	B	
pepLackOfBuffersDiscards	Counter64	R	B	
pepDelayExceededDiscards	Counter64	R	B	
pepPortOutOctets	Counter64	R	B	

\*R = Read only access

<sup>†</sup>B = required for bridge or bridge component support of Bridge Port Extension

**Table 12-27—Port Extension Remote Replication Table row elements**

Name	Data type	Operations supported*	Conformance <sup>†</sup>	References
pepPortComponentID	ComponentID		B	12.3
perrE-CID	E-Channel Identifier	R	B	44.15.1
perrPortMap	Port Map	R	B	44.15.1

\*R = Read only access

<sup>†</sup>B = required for bridge or bridge component support of Bridge Port Extension

## 17. Management Information Base (MIB)

### 17.2 Structure of the MIB

*Insert the following new row at the end of Table 17-25:*

**Table 17-25—Structure of the MIB modules**

IEEE8021-PE MIB	17.2.16	802.1Qbh	5.9.1	Initial version of IEEE Std 802.1Qbh
-----------------	---------	----------	-------	--------------------------------------

*Insert the following new subclause at the end of the existing sub clauses of 17.2, renumbering if necessary:*

#### 17.2.16 Structure of the IEEE8021-PE MIB

The IEEE8021-PE MIB module provides objects to configure and manage a Controlling Bridge. Objects in this MIB module are arranged into subtrees. Each subtree is organized as a set of related objects. Where appropriate, the corresponding Clause 12 management reference is also included. Table 17-22 that follows indicates the structure of the IEEE8021-PE MIB module.

**Table 17-22—PE MIB structure and object cross reference**

MIB table	MIB object	References
	ieee8021BridgePENotifications subtree	
	ieee8021BridgePEObjects subtree	
	ieee8021BridgePEPortTable	12.26.1
	ieee8021BridgePEPortComponentID*	—
	ieee8021BridgePEPort*	—
	ieee8021BridgePEPortType*	—
	ieee8021BridgePEPortUpstreamCSPAddress	—
	ieee8021BridgePEPortEcid	—
	ieee8021BridgePEPortNumber	—
	ieee8021BridgePEPortInFrames	—
	ieee8021BridgePEPortInOctets	—
	ieee8021BridgePEPortOutFrames	—
	ieee8021BridgePEPortInDiscards	—

**Table 17-22—PE MIB structure and object cross reference**

MIB table	MIB object	References
	ieee8021BridgePELackOfBuffersDiscards	—
	ieee8021BridgePEDelayExceededDiscards	—
	ieee8021BridgePEPortOutOctets	—
	ieee8021BridgePERemoteReplicationTable	12.26.2
	ieee8021BridgePEPortComponentID*	—
	ieee8021BridgePERREcid*	—
	ieee8021BridgePERRPortMap	—
	ieee8021BridgePEConformance subtree	
	ieee8021BridgePEGroups	
	ieee8021BridgePEGroup	
	ieee8021BridgePECompliances	
	ieee8021BridgePECompliance	

\*This object is an INDEX of the table in which it resides.

### 17.3 Relationship to other MIBs

*Insert the following new subclause at the end of the existing sub clauses of 17.3, renumbering if necessary:*

#### 17.3.16 Relationship of the IEEE8021-PE MIB to other MIB modules

The IEEE8021-PE MIB module provides objects that extend the core management functionality of a Bridge, as defined by the IEEE8021-BRIDGE MIB (17.7.2), in order to support the management functionality needed for a Controlling Bridge as defined in 5.9.1. As support of the objects defined in the IEEE8021-PE MIB module also requires support of the IEEE8021-TC-MIB, the provisions of 17.3.2 apply to implementations claiming support of the IEEE8021-PE MIB module. In addition, while there is no direct relationship, support of the MIB objects specified in Ildpv2Xdot1PortExtensionCompliance of the LLDP MIB (D.10.5) is required by Controlling Bridges and Port Extenders.

### 17.4 Security considerations

*Insert the following new subclause at the end of the existing sub clauses of 17.4, renumbering if necessary:*

#### 17.4.16 Security considerations of the IEEE8021-PE MIB

All of the objects in the IEEE8021-PE MIB have a MAX-ACCESS of not-accessible or read only. However,

1 access to the objects within this module can reveal sensitive information in some network environments. It is  
2 thus important to control access to these objects and possibly even encrypt their values when sending them  
3 over the network via SNMP.  
4

5 The following read-only tables and objects in this MIB could be used by an attacker to determine which  
6 attacks might be useful to attempt against a given device, or could be used to understand the logical topology  
7 of the network:  
8

9  
10 ieee8021BridgePEPortTable  
11 ieee8021BridgePEPortComponentID  
12 ieee8021BridgePEPort  
13 ieee8021BridgePEPortType  
14 ieee8021BridgePEPortUpstreamCSPAddress  
15 | ieee8021BridgePEPortEcid  
16 ieee8021BridgePEPortNumber  
17 ieee8021BridgePEPortInFrames  
18 ieee8021BridgePEPortInOctets  
19 ieee8021BridgePEPortOutFrames  
20 ieee8021BridgePEPortInDiscards  
21 ieee8021BridgePELackOfBuffersDiscards  
22 ieee8021BridgePEDelayExceededDiscards  
23 ieee8021BridgePEPortOutOctets  
24 ieee8021BridgePERemoteReplicationTable  
25 | ieee8021BridgePEPortComponentID  
26 | ieee8021BridgePERREcid  
27 ieee8021BridgePERRPortMap  
28  
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1 **17.7 MIB modules**

2  
3 *Insert the following new subclause at the end of the existing sub clauses of 17.7,*  
4 *renumbering if necessary:*  
5

6 **17.7.16 IEEE8021-PE Port Extension MIB Module**

```
7  
8 IEEE8021-PE-MIB DEFINITIONS ::= BEGIN  
9  
10 -- =====  
11 -- MIB for IEEE 802.1Q devices  
12 -- =====  
13 IMPORTS  
14     MODULE-IDENTITY, OBJECT-TYPE,  
15     Unsigned32,  
16     Counter64  
17         FROM SNMPv2-SMI  
18     MacAddress, TEXTUAL-CONVENTION  
19         FROM SNMPv2-TC  
20     MODULE-COMPLIANCE, OBJECT-GROUP  
21         FROM SNMPv2-CONF  
22     ieee802dot1mibs, IEEE8021PbbComponentIdentifier,  
23     IEEE8021BridgePortNumber,  
24     IEEE8021BridgePortNumberOrZero  
25         FROM IEEE8021-TC-MIB  
26     PortList  
27         FROM Q-BRIDGE-MIB  
28  
29     ;  
30  
31     ieee8021BridgePEMib MODULE-IDENTITY  
32         LAST-UPDATED "201103310000Z" -- March 31, 2011  
33         ORGANIZATION "IEEE 802.1 Working Group"  
34         CONTACT-INFO  
35             " WG-URL: http://grouper.ieee.org/groups/802/1/index.html  
36             WG-EMail: stds-802-1@ieee.org  
37  
38             Contact: <TBD>  
39             Postal: C/O IEEE 802.1 Working Group  
40                 IEEE Standards Association  
41                 445 Hoes Lane  
42                 P.O. Box 1331  
43                 Piscataway  
44                 NJ 08855-1331  
45                 USA  
46             E-mail: STDS-802-1-L@LISTSERV.IEEE.ORG"  
47  
48     DESCRIPTION  
49         "The PE MIB module for managing devices that support  
50         Edge Virtual Bridging.  
51  
52         Unless otherwise indicated, the references in this MIB  
53         module are to IEEE Std 802.1Q-2011.  
54  
55         Copyright (C) IEEE.  
56         This version of this MIB module is part of IEEE802.1Q;  
57         see the draft itself for full legal notices."  
58  
59     REVISION      "201103310000Z" -- March 31, 2011
```

```
1      DESCRIPTION
2          "Published as part of P802.1Qbh Draft 2.0"
3
4      REVISION      "201012200000Z" -- December 20, 2010
5      DESCRIPTION
6          "Initial revision."
7          ::= { ieee802dot1mibs 101 }
8
9
10     -- =====
11     -- subtrees in the EVBB MIB
12     -- =====
13
14     ieee8021BridgePENotifications
15         OBJECT IDENTIFIER ::= { ieee8021BridgePEMib 1 }
16
17     ieee8021BridgePEObjects
18         OBJECT IDENTIFIER ::= { ieee8021BridgePEMib 2 }
19
20     ieee8021BridgePEConformance
21         OBJECT IDENTIFIER ::= { ieee8021BridgePEMib 3 }
22
23     --
24     -- Textual Conventions
25     --
26     IEEE802BridgePEEPathIDTC ::= TEXTUAL-CONVENTION
27         DISPLAY-HINT "d"
28         STATUS current
29         DESCRIPTION
30             "Textual convention of an E-Path Identifier."
31         SYNTAX Unsigned32 (1..16382)
32
33     --
34     -- PE port table entry managed object
35     --
36     ieee8021BridgePEPortTable OBJECT-TYPE
37         SYNTAX      SEQUENCE OF Ieee8021BridgePEPortEntry
38         MAX-ACCESS  not-accessible
39         STATUS      current
40         DESCRIPTION
41             "A table that contains per port information
42             related to Port Extension.  A row is created in this
43             table for any port on a Controlling Bridge that is
44             extended using Port Extension, including those ports
45             that provide communication to the Port Extenders
46             themselves."
47         REFERENCE   "12.26.1"
48         ::= { ieee8021BridgePEObjects 1 }
49
50     ieee8021BridgePEPortEntry OBJECT-TYPE
51         SYNTAX      Ieee8021BridgePEPortEntry
52         MAX-ACCESS  not-accessible
53         STATUS      current
54         DESCRIPTION
55             "A list of per port Port Extension objects."
56         INDEX      {ieee8021BridgePEPortComponentId,
```

```
1         ieee8021BridgePEPort,
2         ieee8021BridgePEPortType }
3 ::= { ieee8021BridgePEPortTable 1 }
4
5 Ieee8021BridgePEPortEntry ::=
6     SEQUENCE {
7         ieee8021BridgePEPortComponentId
8             IEEE8021PbbComponentIdentifier,
9         ieee8021BridgePEPort
10            IEEE8021BridgePortNumber,
11        ieee8021BridgePEPortType
12            INTEGER,
13        ieee8021BridgePEPortUpstreamCSPAddress
14            MacAddress,
15        ieee8021BridgePEPortEpid
16            IEEE802BridgePEPathIDTC,
17        ieee8021BridgePEPortNumber
18            IEEE8021BridgePortNumberOrZero,
19        ieee8021BridgePEPortInFrames
20            Counter64,
21        ieee8021BridgePEPortInOctets
22            Counter64,
23        ieee8021BridgePEPortOutFrames
24            Counter64,
25        ieee8021BridgePEPortInDiscards
26            Counter64,
27        ieee8021BridgePEPortLackOfBuffersDiscards
28            Counter64,
29        ieee8021BridgePEPortDelayExceededDiscards
30            Counter64,
31        ieee8021BridgePEPortOutOctets
32            Counter64
33    }
34
35 ieee8021BridgePEPortComponentId OBJECT-TYPE
36     SYNTAX IEEE8021PbbComponentIdentifier
37     MAX-ACCESS not-accessible
38     STATUS current
39     DESCRIPTION
40         "The component identifier is used to distinguish between the
41         multiple virtual bridge instances within a PBB. In simple
42         situations where there is only a single component the default
43         value is 1."
44     ::= { ieee8021BridgePEPortEntry 1 }
45
46 ieee8021BridgePEPort OBJECT-TYPE
47     SYNTAX IEEE8021BridgePortNumber
48     MAX-ACCESS not-accessible
49     STATUS current
50     DESCRIPTION
51         "The port number of the port for which this entry
52         contains bridge management information."
53     ::= { ieee8021BridgePEPortEntry 2 }
54
55 ieee8021BridgePEPortType OBJECT-TYPE
56     SYNTAX INTEGER {
57         pepCascade(1),
58         pepUpstream(2),
59         pepExtended(3)
```



```
1         }
2     MAX-ACCESS not-accessible
3     STATUS current
4     DESCRIPTION
5         "The operational mode of a port participating in
6         Port Extension."
7     REFERENCE "12.26.1"
8     ::= { ieee8021BridgePEPortEntry 3 }
9
10    ieee8021BridgePEPortUpstreamCSPAddress OBJECT-TYPE
11    SYNTAX MacAddress
12    MAX-ACCESS read-only
13    STATUS current
14    DESCRIPTION
15        "The MAC address used for communication of the PE CSP
16        protocol of the device connected to the upstream port
17        of the Port Extender (which may be the Controlling
18        Bridge or an upstream Port Extender). This provides
19        the hierarchal relationship in a cascade of Port
20        Extenders"
21    REFERENCE "12.26.1"
22    ::= { ieee8021BridgePEPortEntry 4 }
23
24    ieee8021BridgePEPortEpid OBJECT-TYPE
25    SYNTAX IEEE802BridgePEEPathIDTC
26    MAX-ACCESS read-only
27    STATUS current
28    DESCRIPTION
29        "The default EPID assignend to this port and the port
30        on the Port Extender to which this port corresponds."
31    REFERENCE "12.26.1"
32    ::= { ieee8021BridgePEPortEntry 5 }
33
34    ieee8021BridgePEPortNumber OBJECT-TYPE
35    SYNTAX IEEE8021BridgePortNumberOrZero
36    MAX-ACCESS read-only
37    STATUS current
38    DESCRIPTION
39        "The Port number on the of the Port on the Port Extender,
40        or zero for the Upstream Port."
41    REFERENCE "12.26.1"
42    ::= { ieee8021BridgePEPortEntry 6 }
43
44    ieee8021BridgePEPortInFrames OBJECT-TYPE
45    SYNTAX Counter64
46    UNITS "frames"
47    MAX-ACCESS read-only
48    STATUS current
49    DESCRIPTION
50        "The number of frames that have been received by this
51        port."
52    REFERENCE "12.26.1"
53    ::= { ieee8021BridgePEPortEntry 7 }
54
55    ieee8021BridgePEPortInOctets OBJECT-TYPE
56    SYNTAX Counter64
57    UNITS "octets"
58    MAX-ACCESS read-only
59    STATUS current
```

```
1      DESCRIPTION
2          "The number of octets that have been received by this
3          port."
4      REFERENCE    "12.26.1"
5      ::= { ieee8021BridgePEPortEntry 8 }
6
7  ieee8021BridgePEPortOutFrames OBJECT-TYPE
8      SYNTAX Counter64
9      UNITS "frames"
10     MAX-ACCESS read-only
11     STATUS current
12     DESCRIPTION
13         "The number of frames that have been transmitted by this
14         port."
15     REFERENCE    "12.26.1"
16     ::= { ieee8021BridgePEPortEntry 9 }
17
18  ieee8021BridgePEPortInDiscards OBJECT-TYPE
19     SYNTAX Counter64
20     UNITS "frames"
21     MAX-ACCESS read-only
22     STATUS current
23     DESCRIPTION
24         "The number of frames received on this port that were
25         discarded for any reason."
26     REFERENCE    "12.26.1"
27     ::= { ieee8021BridgePEPortEntry 10 }
28
29  ieee8021BridgePELackOfBuffersDiscards OBJECT-TYPE
30     SYNTAX Counter64
31     UNITS "frames"
32     MAX-ACCESS read-only
33     STATUS current
34     DESCRIPTION
35         "The number of frames received on this port that were
36         discarded due to lack of buffers."
37     REFERENCE    "12.26.1"
38     ::= { ieee8021BridgePEPortEntry 11 }
39
40  ieee8021BridgePEDelayExceededDiscards OBJECT-TYPE
41     SYNTAX Counter64
42     UNITS "frames"
43     MAX-ACCESS read-only
44     STATUS current
45     DESCRIPTION
46         "The number of frames received on this port that were
47         discarded due to exceeding the transit delay."
48     REFERENCE    "12.26.1"
49     ::= { ieee8021BridgePEPortEntry 12 }
50
51  ieee8021BridgePEPortOutOctets OBJECT-TYPE
52     SYNTAX Counter64
53     UNITS "octets"
54     MAX-ACCESS read-only
55     STATUS current
56     DESCRIPTION
57         "The number of octets that have been transmitted
58         by this port."
```

```
1      REFERENCE    "12.26.1"
2      ::= { ieee8021BridgePEPortEntry 13 }
3      --
4      -- PE Remote Replication entry table managed object
5      --
6      ieee8021BridgePERemoteReplicationTable OBJECT-TYPE
7          SYNTAX      SEQUENCE OF Ieee8021BridgePERemoteReplicationEntry
8          MAX-ACCESS  not-accessible
9          STATUS      current
10         DESCRIPTION
11             "A table that contains one row for each Remote Replication
12             entry in the filtering database."
13         REFERENCE   "12.26.2"
14         ::= { ieee8021BridgePEObjects 2 }
15
16     ieee8021BridgePERemoteReplicationEntry OBJECT-TYPE
17         SYNTAX      Ieee8021BridgePERemoteReplicationEntry
18         MAX-ACCESS  not-accessible
19         STATUS      current
20         DESCRIPTION
21             "A list of Remote Replication objects."
22         INDEX       { ieee8021BridgePEPortComponentId,
23                     ieee8021BridgePERREpid }
24         ::= { ieee8021BridgePERemoteReplicationTable 1 }
25
26     Ieee8021BridgePERemoteReplicationEntry ::=
27         SEQUENCE {
28             ieee8021BridgePERREpid
29             IEEE802BridgePEEPathIDTC,
30             ieee8021BridgePERRPortMap
31             PortList
32         }
33
34     ieee8021BridgePERREpid OBJECT-TYPE
35         SYNTAX      IEEE802BridgePEEPathIDTC
36         MAX-ACCESS  not-accessible
37         STATUS      current
38         DESCRIPTION
39             "The EPID assignend to this Remote Replication
40             filtering entry."
41         REFERENCE   "12.26.2"
42         ::= { ieee8021BridgePERemoteReplicationEntry 1 }
43
44     ieee8021BridgePERRPortMap OBJECT-TYPE
45         SYNTAX      PortList
46         MAX-ACCESS  read-only
47         STATUS      current
48         DESCRIPTION
49             "The list of ports to which a frame is to be
50             replicated."
51         REFERENCE   "12.26.2"
52         ::= { ieee8021BridgePERemoteReplicationEntry 2 }
53
54     -- =====
55     -- Conformance Information
56     -- =====
```

```
1
2   ieee8021BridgePEGroups
3       OBJECT IDENTIFIER ::= { ieee8021BridgePEConformance 1 }
4
5   ieee8021BridgePECompliances
6       OBJECT IDENTIFIER ::= { ieee8021BridgePEConformance 2 }
7
8
9   -- =====
10  -- Units of conformance
11  -- =====
12
13  ieee8021BridgePEGroup OBJECT-GROUP
14      OBJECTS {
15          ieee8021BridgePEPortUpstreamCSPAddress,
16          ieee8021BridgePEPortEpid,
17          ieee8021BridgePEPortNumber,
18          ieee8021BridgePEPERRPortMap,
19          ieee8021BridgePEPortInFrames,
20          ieee8021BridgePEPortInOctets,
21          ieee8021BridgePEPortOutFrames,
22          ieee8021BridgePEPortInDiscards,
23          ieee8021BridgePELackOfBuffersDiscards,
24          ieee8021BridgePEDelayExceededDiscards,
25          ieee8021BridgePEPortOutOctets
26      }
27
28      STATUS      current
29
30      DESCRIPTION
31          "The collection of objects used to represent
32          Port Extension management objects."
33
34      ::= { ieee8021BridgePEGroups 1 }
35
36  -- =====
37  -- compliance statements
38  -- =====
39
40
41  ieee8021BridgePECompliance MODULE-COMPLIANCE
42      STATUS      current
43
44      DESCRIPTION
45          "The compliance statement for devices supporting PE
46          as defined in IEEE 802.1Qbh."
47
48      MODULE
49          MANDATORY-GROUPS {
50              ieee8021BridgePEGroup
51          }
52      ::= { ieee8021BridgePECompliances 1 }
53
54  END
```

*Insert the following Clause:*

#### 44. Introduction to Bridge Port Extension

Bridge Port Extension provides the ability to carry (or extend) the MAC service of a Bridge Port over a network of Port Extenders to an Extended Port. An Extended Bridge, (Figure 44-1) composed of a Controlling Bridge and Port Extenders, appears to the stations attached at the Extended Ports as though they are attached to a single Bridge.

Each Controlling Bridge is composed of a primary component who's MAC service is being extended and a collection of T-components and B-components which are coupled together to form specialized internal Backbone Edge Bridges (Clauses 25, 26) called CB-BEBs. The CB-BEBs within the Controlling Bridge have a T-component who's Customer Network Port (CNP) is coupled by an 'internal LAN' to a Port of the primary component. The T-components in turn are attached by 'internal LANs' to a B-component. Each CB-BEB may support one or more Replication Groups and each Controlling Bridge may support one or more CB-BEBs. The primary component of the Controlling Bridge is also the primary component of the Extended Bridge.

The Controlling Bridge supports attachment to a heirarchy of specialized Backbone Edge Bridges called Port Extenders. Port Extenders are arranged in a tree with one or more Port Extenders to a Controlling Bridge. Each Port Extender is composed of a single B-component and a collection of back-to-back T-components and 2-port VLAN components. The 2-port VLAN components used to support the Extended Ports match the primary component of the Controlling Bridge. If the Controlling Bridge's primary component forms an EVB Bridge, then the 2-port VLAN components may be a C-VLAN components or Edge Relays. If the Controlling Bridge's primary component is a C-VLAN component, then the 2-port VLAN component is a C-VLAN component. If the Controlling Bridge's primary component is an S-VLAN component, then the 2-port VLAN component is an S-VLAN component.

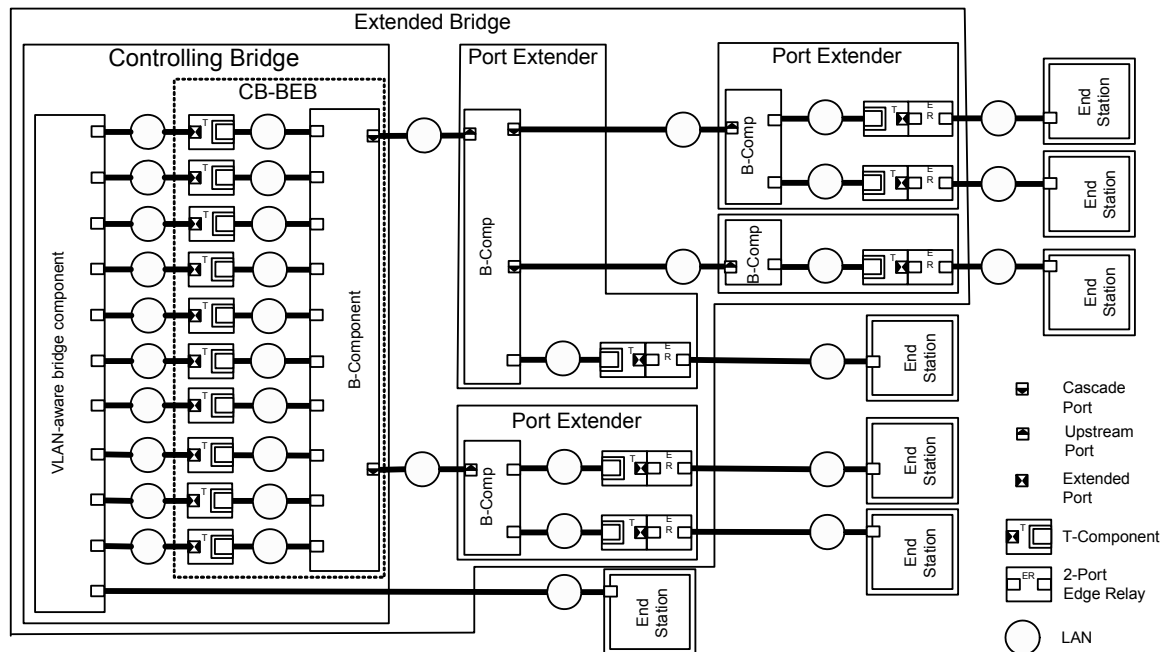


Figure 44-1—Example Extended Bridge

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This clause describes and specifies the configuration of the following aspects of Bridge Port Extension:

- a) Use of tags;
- b) Bridge Port Extension Port types;
- c) Controlling Bridge Cascade Ports;
- d) Port Extender Upstream Ports;
- e) Port Extender Extended Ports;
- f) Port Extender Cascade Ports;
- g) Traffic isolation;
- h) Remote replication.

This clause specifies the configuration actions the Controlling Bridge performs on the Port Extenders under its control. Configuration of the CB-BEB is done directly by the control functions for the Controlling Bridge. Configuration of Port Extenders is done utilizing the Port Extender Control and Status Protocol (PE CSP) specified in clause 45. In addition, this clause specifies actions that the Controlling Bridge takes upon detection of the attachment of a Port Extender. This detection shall be accomplished utilizing the Port Extension TLV (D.2.15) and LLDP. The destination address of all LLDP PDUs carrying the Port Extension TLV shall be set to the Nearest non-TPMR Bridge group address. Finally, this clause specifies actions that the Controlling Bridge takes upon detection of or deletion of Extended and Cascade Ports on the attached Port Extenders.

#### 44.1 Support of the MAC Service by an Extended Bridge

A Controlling Bridge and Port Extenders interconnect the separate MACs of the IEEE 802 LANs that compose a Extended Bridge, relaying frames to provide connectivity between all LANs for each service instance. The position of the components of a Controlling Bridge and associated Port Extenders within the MAC Sublayer is shown in Figure 44-2.

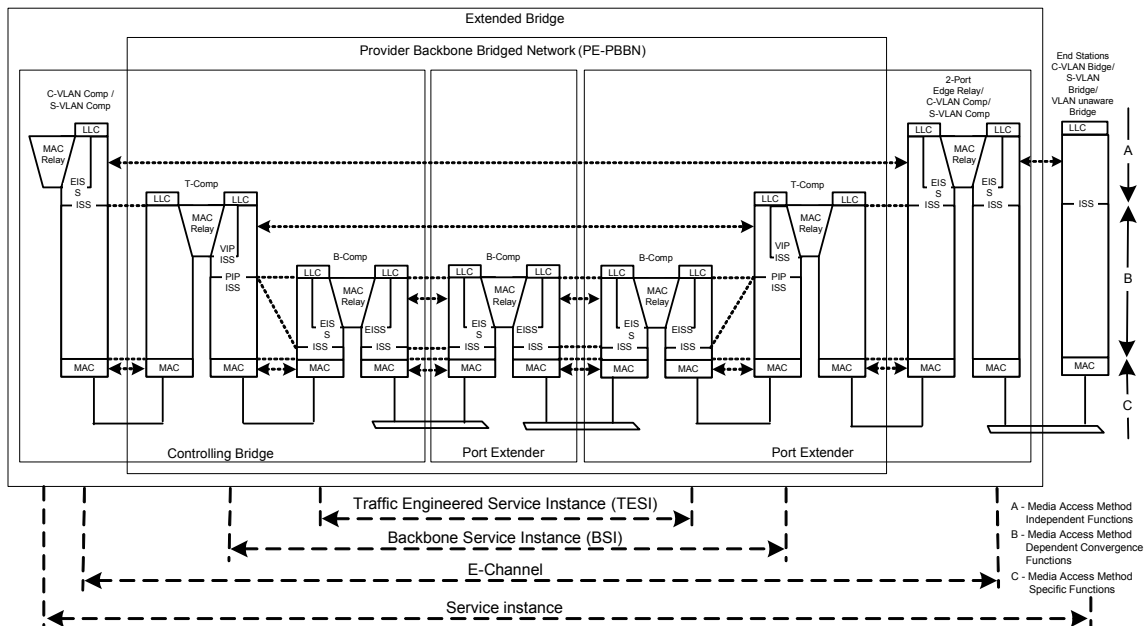


Figure 44-2—Internal organization of the MAC sublayer in an Extended Bridge

A Extended Bridge providing the MAC service to attached stations is typically modeled as a symmetric sequence of relay functions, as illustrated in Figure 44-2. The outermost peer relay functions are identified as VLAN-aware components. The next peer relay functions in the sequence are identified as T-

1 components. The inner peer relay functions are identified as B-components. Between the peer B-  
2 components are one or more S-VLAN relay functions (which are sub-functions of the B-components). A B-  
3 component relay forms the service layer to an T-component relay, while the T-component relay forms the  
4 service layer to a VLAN-aware component relay. A B-component relay forwards frames taking into account  
5 the identity of a B-VLAN (B-VID), while a T-component relay forwards frames without consideration to the  
6 frame content.  
7

8  
9 The primary component of the Controlling Bridge extends its Bridge Port ISS service using the PBBN (PE-  
10 PBBN) formed by the CB-BEB and Port Extenders within the Extended Bridge. Both the CB-BEB and Port  
11 Extenders of the PE-PBBN implement Provider Backbone Bridge Traffic Engineering (PBB-TE, 25.10) to  
12 support interconnect by a set of Traffic Engineered Service Instances (TESI, 25.10) which are configured  
13 using the PE-CSP protocol specified in (Clause 45). The PE-PBBN so formed provides a transparent service  
14 between the T-component Customer Network Ports (CNPs, 25.11) at the edge of the PE-PBBN which  
15 perform encapsulation and de-encapsulation of each frame.  
16

17 A single B-component is responsible for relaying encapsulated frames to and from T-components within  
18 each Port Extender or CB-BEB, checking that ingress/egress is permitted for frames with that I-SID, and  
19 relaying the frame to and from the Cascade Ports and Uplink Ports that provide connectivity to the other Port  
20 Extenders or the Controlling Bridge.  
21

22  
23 Each service instance carried over the Extended Bridge is carried on a group of bi-directional E-channels  
24 which extend between the Extended Ports of the Port Extenders and the Ports of the primary component. For  
25 each Port of the primary component (which is extended) a single Extended Port of a 2-port VLAN  
26 component is associated using a point-to-point E-channel. In addition, each Port of the primary component  
27 may have multiple bi-direction point-to-multipoint E-channels each associating the primary component Port  
28 with a set of Extended Ports.  
29

30 All E-channels within a given PE-PBBN are carried on the same Backbone Service Instance and so all PIPs  
31 of the T-components within a single replication group are part of the same Backbone Service Instance. Each  
32 E-channel has a dedicated TESI extending between a single CBP within the CB-BEB T-component and one  
33 or more CBPs in the T-components of the Port Extenders.  
34  
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36 Each frame of each service instance carried by the Extended Bridge enters at an Extended Port where the T-  
37 component encapsulates it with its B-SA, the B-DA of the T-component assigned to the Port of the primary  
38 component, and the I-SID associated with the replication group. The B-component then uses the B-DA and  
39 B-SA to identify the point-to-point TESI used to deliver the frame to the primary component Port. When the  
40 frame is received by the primary component it determines which of its ports the frame is destined for. If the  
41 frame is destined for a single primary component Port then it is sent to that Port where the T-component  
42 encapsulates the frame with its B-SA, the B-DA of the T-component at the Extended Port, and the I-SID  
43 identifying the replication group. The B-components then forwards the frame along the identified TESI. If the  
44 frame is destined for multiple primary component Ports and these ports are within the same replication group,  
45 then the primary component identifies the destination ports by a port map carried in the  
46 connection\_identifier over the 'internal LAN' to the CB-BEB T-component. The T-component encapsulates  
47 the frame using its B-SA (or using its echo cancellation B-SA), locates a B-DA based on the  
48 connection\_identifier, and the I-SID of the replication group. The B-components then forward the frame  
49 over a TESI identified by the B-SA and B-DA.  
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## 44.2 Controlling Bridge MAC sublayer service

Figure 44-3 shows a Controlling Bridge connected to a tree of Port Extenders within the MAC sublayer and the relationship of the bridging functions. The Controlling Bridge on the left of the figure comprises a single primary VLAN-aware component and a collection of T-components and B-components forming the CB-BEBs. Each CB-BEB has one B-component and a T-component for each port of the primary VLAN component. Each T-component is responsible for encapsulating frames with an I-TAG, B-SA and B-DA. The B-MAC addresses identify the T-components where the frames of an E-channel will enter and exit the PE-PBBN. For all point-to-point transmissions the T-component performs the encapsulation using the default B-MAC address which is configured using the PE-CSP protocol to the T-component's mating T-component address. For pt-mpt E-channels the T-component determines a group B-MAC and source B-MAC based on the connection\_identifier passed from the primary component over the 'internal LAN'. The B-components in turn are responsible for forwarding frames over TESIs based the B-SA and B-DA determined by the T-components.

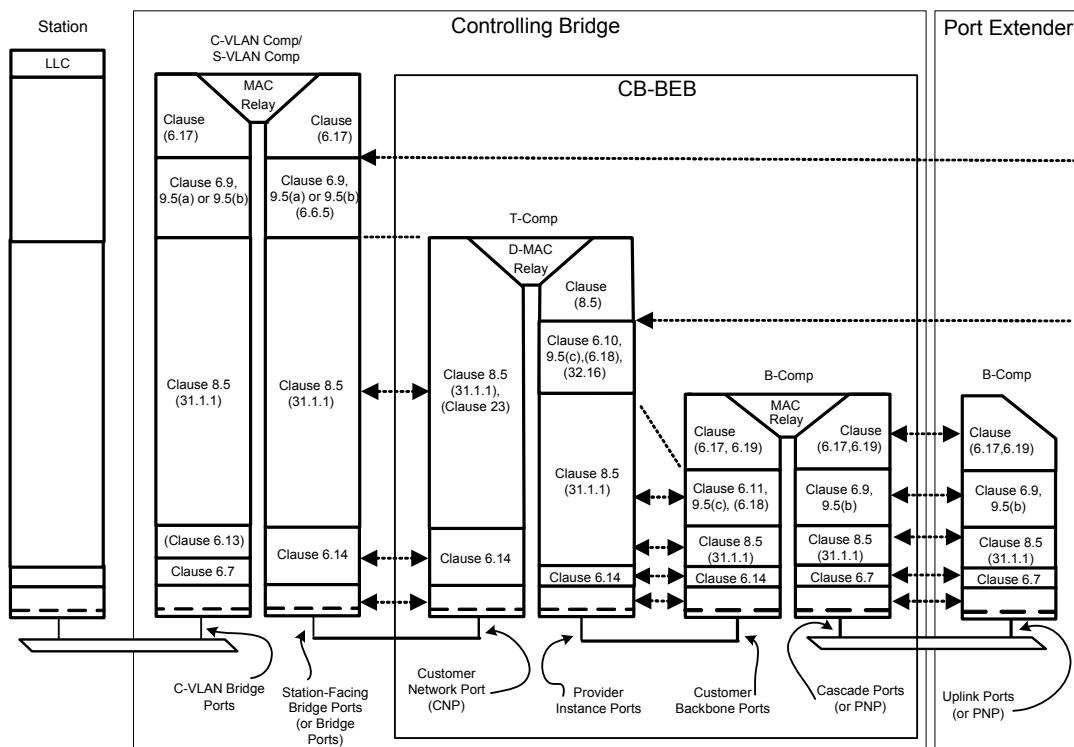


Figure 44-3—Controlling Bridge MAC sublayer

## 44.3 Port Extender MAC sublayer service

Figure 44-4 shows the internal organization of the Port Extenders provides interfaces that encapsulate frames, thus allowing C-MAC addresses and VIDs to be independent of the backbone B-MAC addresses and VIDs used within the Extended Bridge to relay those frames across the Extended Bridge.

The Port Extender is comprised of three types of components, a single B-component and a collection of T-components each coupled back-to-back with a VLAN aware component. The Port Extender just to the right



of the Controlling Bridge has only a B-component.

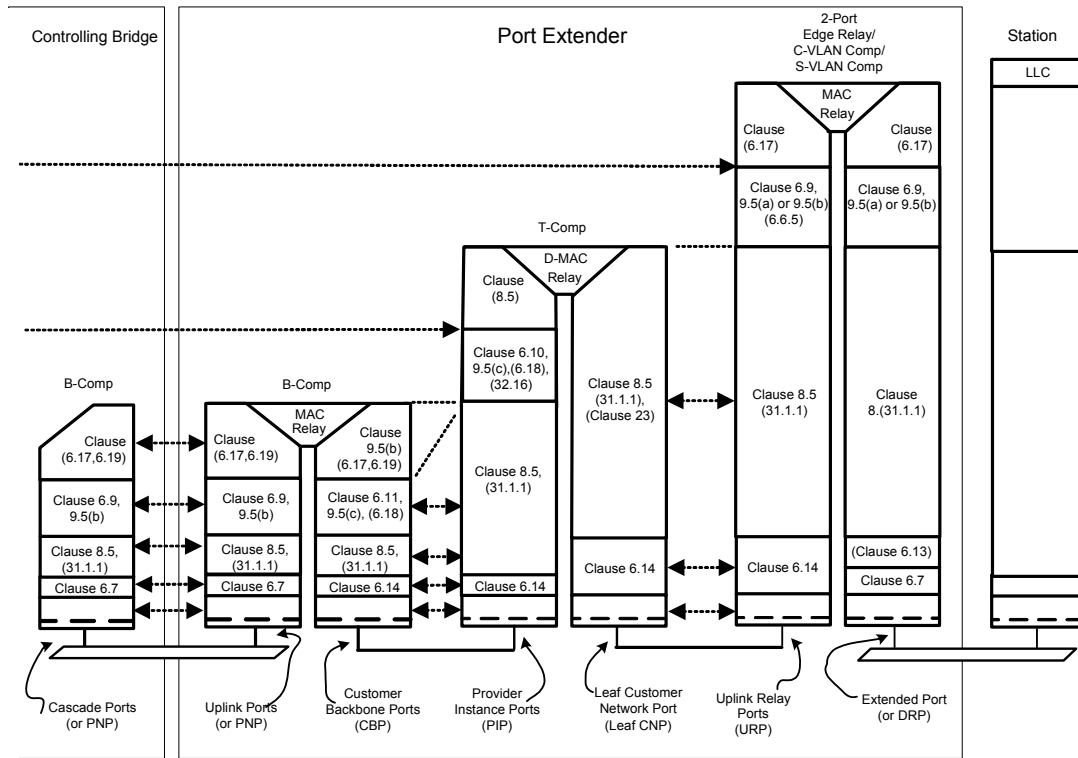


Figure 44-4—Port Extender MAC sublayer

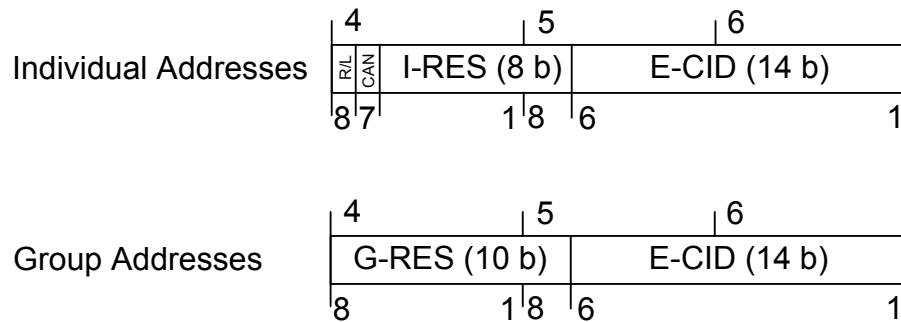
#### 44.4 E-channels and TESI addressing

*Editor's Note: The use of E-CIDs is not essential to the PBB-TE design it is just a convenience allowing the use of the 802.1Qbh MIBs and PE-CSP without modification. If desired it would be possible to replace the E-CID entirely by a TE-SID. Using a TE-SID in place of the E-CID is more general and allows for indefinite scaling, however encoding for pt-mpt E-channels would either require a lot more information exchange or some summarization method, while the E-CID allows the use of compact identifiers. Comments on preferences and alternative encodings are solicited.*

Each E-channel is identified by a E-CID and is carried on a TESI identified by a TE-SID. Each E-channel has a single associated TESI uniquely identified by a TE-SID, therefore the TE-SID also can identify the E-channel.

Within an Extended Bridge B-MACs which identify the PIPs of the T-components are constructed from E-CIDs. The first three octets of a constructed address uses the OUI from table 26-1. For individual addresses the I/G bit is 0 while for group addresses the I/G bit is 1. The final three octets are constructed from the E-CID as shown in Figure 44-5. For individual addresses the eighth bit of the fourth octet of the address indicates if this is a B-MAC address for a CB-BEB T-component (Root) or for a Port Extender T-component (Leaf). The seventh bit of the fourth octet of the address indicates if this B-MAC address is for echo cancellation at the Port Extender T-component (6.10).

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**Figure 44-5—Construction of TE-SIDs from E-CIDs**

TE-SIDs may be formed from the constructed B-MACs and the B-VID of the replication group. A point-to-point E-channel is carried on a pt-pt TESI which has two ESPs identified by the triples (B-SA<sub>PE</sub>, B-DA<sub>CB-BEB</sub>, B-VID<sub>R</sub>) and (B-SA<sub>CB-BEB</sub>, B-DA<sub>PE</sub>, B-VID<sub>R</sub>). A point-to-multipoint E-channels is carried on a point-to-multipoint TESI composed of a set of ESPs, one pt-mpt ESP and N pt-pt ESPs where N is the number of destinations in the pt-mpt TESI. The pt-mpt ESP could be expressed as (B-SA<sub>CB-BEB</sub>, B-DA<sub>PE Group</sub>, B-VID<sub>R</sub>). The echo cancellation TESI is a different TESI from the non-echo cancellation TESI since the source address of the pt-mpt ESP would have the echo cancellation B-SA rather than the standard B-SA and the B-DAs of the pt-pt ESPs would also use the echo cancellation address. The N pt-pt ESPs which compose the TESI could be designated (B-SA<sub>PE Group N</sub>, B-DA<sub>CB-BEBPE Group</sub>, B-VID<sub>R</sub>) where there is a subscript PE Group N for each Extended Port of the group address.

#### 44.5 Bridge Port Extension Port Types

Figure 44-1 illustrates the Ports utilized in an example Extended Bridge.

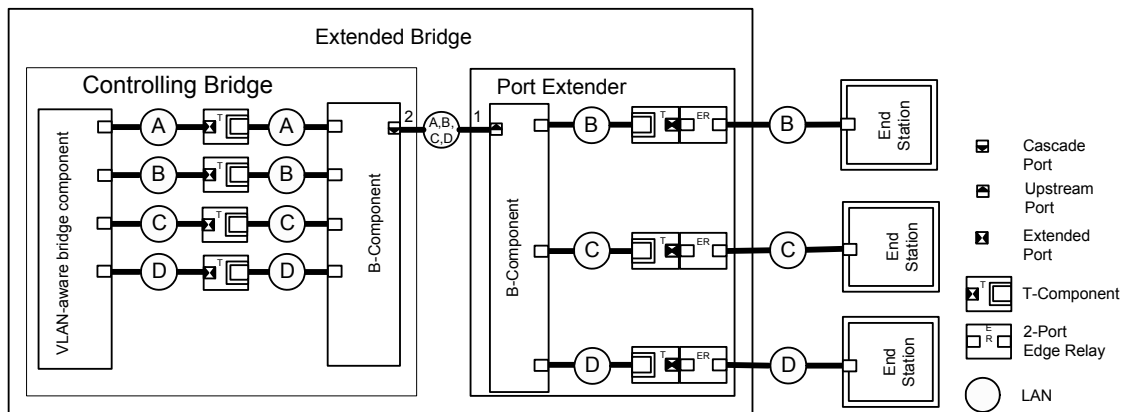
Bridge Port Extension defines a number of Port types, each providing the different capabilities needed to construct an Extended Bridge. Initially, the Controlling Bridge provides interfaces via its internal VLAN-aware bridge component. Upon detection of the connection of an external Port Extender, the Controlling Bridge attaches the CB-BEB between the VLAN-aware bridge component Port and the Upstream Port of the external Port Extender. The CB-BEB provides the capability of receiving and transmitting MAC encapsulated frames. Port Extenders provide three types of Ports:

- a) Upstream Port: The Port Extender Upstream Port provides connectivity to the Controlling Bridge Cascade Port or to the Cascade Port of another Port Extender;
- b) Cascade Port: The Cascade Port is used exclusively to provide connectivity to the Upstream Port of a cascaded Port Extender; and
- c) Customer Network Port. CNPs provide connectivity to the internal Ports of the primary VLAN-aware Bridge component or the Controlling Bridge.
- d) Extended Port. Extended Ports operate as Ports of the Extended Bridge. Each CNP is linked via a point-to-point E-channel to an Extended Port. Additional multi-point E-channels provide linkage between a CNP to multiple Extended Ports. Multi-point E-channels provide support for group addressed frames.

The Cascade Port of the CB-BEB carries the Port Extender Control and Status Protocol between the Controlling Bridge and the external Port Extender.

## 44.6 Controlling Bridge Cascade Ports

Figure 44-6 illustrates an example of the connection of a Port Extender to a Controlling Bridge.



**Figure 44-6—Extended Bridge Interconnection**

For each directly attached Port Extender, the Controlling Bridge shall:

- a) Install a T-component and a B-Component between the Port of the VLAN-aware bridge component and the Port Extender;
- b) Allocate an E-CID within the range of 1 - 4095 to identify a pt-pt E-channel that is to carry frames from the root to leaf Extended Port;

NOTE 1 — The scope of the allocated E-CID is local to the internal T-component and B-components and all Port Extenders connected to it either directly or through a cascade, therefore, it is permissible to use the same E-CID for this purpose across multiple internal B-components.

NOTE 2 — This E-channel carries control frames to and from the Port Extender. Additional E-channels are allocated to carry frames through the Port Extender to its Extended and Cascade Ports.

- c) Maintain the Controlling Bridge T-component and B-component, the Cascade Port of the Controlling Bridge B-component, and the Controlling Bridge parameters as specified in Table 44-1; and
- d) Set the MAC\_Operational status parameter within the ISS (6.8.2) of the primary VLAN-aware Bridge component Port to based on the operational state of the 'internal LAN' connecting to a T-component. The T-component can in turn use clause 23 to provide MAC\_operational support.

NOTE 3— As a result of this process, a separate Controlling Bridge B-component can be instantiated for each directly attached Port Extender. Port Extenders connected to Cascade Ports of other external Port Extenders do not create additional Controlling Bridge B-components.

## 44.7 Port Extender Upstream Ports

A Port Extender provides exactly one Upstream Port. This Port attaches to the Cascade Port of another Port Extender or of the Controlling Bridge. If attached to any other Port, the Port Extender does not establish communication utilizing the Port Extender Control and Status Protocol. In this case and due to the Port Extender initialization requirements, the Port Extender will not relay frames.

The Controlling Bridge shall maintain the parameters of the Upstream Port in accordance with Table 44-1.

**Table 44-1—Port Extender Parameter Settings**

Object	Parameter	Set to	PE CSP Command
CNP, Extended Port, and Cascade Port			
	EMAC	Allocated E-CID	Extended Port Create
	Transmission Selection Algorithm Table	Transmission Selection Algorithm Table of the VLAN-aware Bridge component Port (8.6.8)	Port Parameters Set
	Priority to traffic class table	Priority to traffic class table of the VLAN-aware Bridge component Port (8.6.6)	Port Parameters Set
	Priority-based Flow Control (36.1.3.2)	Priority-based Flow Control setting of the VLAN-aware Bridge component Port (36.1.3.2)	Port Parameters Set
	Enhanced Transmission Selection Bandwidth Table	Set to match the Enhanced Transmission Selection Bandwidth Table of the VLAN-aware Bridge component Port (37.2)	Port Parameters Set
	tag_type	Set to <i>I-type</i> if the Port of the VLAN-aware bridge component operates on S-TAGs; else  Set to <i>S-type</i> if the Port of the VLAN-aware Bridge component operates on S-TAGs; else  <i>C-type</i> ;  (note, in accordance with the above, set to <i>I-type</i> for a Port that operates on both I-TAGs and S-TAGs)	Port Parameters Set
	use_dei	The use_dei parameter of the VLAN-aware Bridge component Port (6.9.3)	Port Parameters Set
	Priority Code Point Selection (6.9.3)	Priority Code Point Selection of the VLAN-aware Bridge component Port (6.9.3)	Port Parameters Set
	Priority Code Point Decoding Table	Set to match the Priority Code Point Decoding Table in the VLAN-aware Bridge component Port (6.9.3)	Port Parameters Set
Upstream Port			
	Transmission Selection Algorithm Table	Same as peer Cascade Port	Port Parameters Set
	Priority to traffic class table	Same as peer Cascade Port	Port Parameters Set
	Priority-based Flow Control (36.1.3.2)	Same as peer Cascade Port	Port Parameters Set
	Enhanced Transmission Selection Bandwidth Table	Same as peer Cascade Port	Port Parameters Set

**Table 44-1—Port Extender Parameter Settings**

Object	Parameter	Set to	PE CSP Command
CNP			
	untagged_vlan_list	empty	NA
	MAC_Enabled (6.6)	Initialize to FALSE, then as specified by PE CSP	Status Parameter Set
Extended Port			
	untagged_vlan_list	Include all the VLANs for which the VLAN-aware Bridge component Port is a member of the untagged set (8.8.2).	Port Parameters Set
Port Extender			
	Member set of the E-channels identified by the allocated E-CID	Include Extended Port, remove all other Ports.	Extended Port Create
	Port Extender transit delay	maximum bridge transit delay	Transit Delay Set
Controlling Bridge			
	Member set of the E-channels identified by the allocated E-CID	Include Extended Port and Cascade Port, remove all other Extended Ports.	NA
	Port Extender transit delay	maximum bridge transit delay	Transit Delay Set
Intervening Port Extenders (i.e., external Port Extenders in a cascade between the Controlling Bridge and other Port Extenders.			
	Member set of the E-channels identified by the allocated E-CID	Include intervening Cascade Ports	E-channel Register

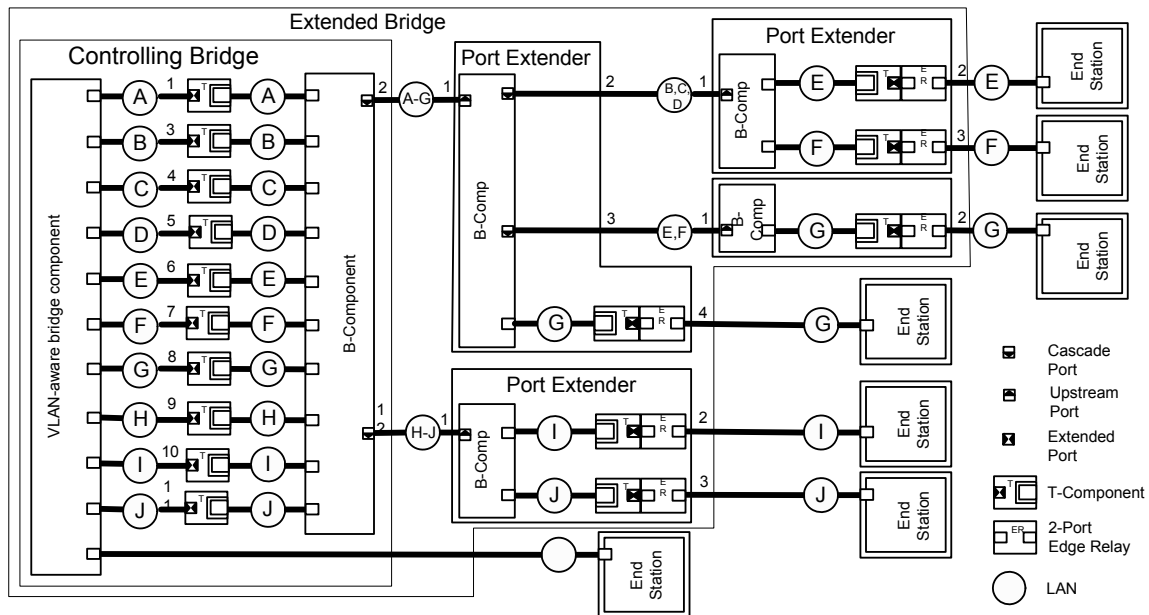
NOTE — This requirement does not preclude the use of link aggregation in the Upstream Port and Cascade Port. If link aggregation is utilized, the Upstream Port and Cascade Port refer to the aggregated Ports.

Since the Upstream Port is implicitly a member of all E-channel member sets, it requires no specific configuration by the Controlling Bridge. The E-channel previously allocated to the Extended Port, which now becomes a Cascade Port, becomes the E-channel used to carry the Port Extender Control and Status Protocol between the Controlling Bridge and the Control and Status Agent in the Port Extender.

## 44.8 Extended Ports

Figure 44-7 illustrates an example Extended Bridge consisting of a Controlling Bridge and four Port Extenders along with the E-channel configuration.

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**Figure 44-7—Cascaded Port Extenders**

Extended Ports are those Ports that are connected to stations or other bridges and establish connectivity to the Extended Bridge. These include all Port Extender Ports except for the single Upstream Port (44.7) and Ports connected to other Port Extenders (i.e., Cascade Ports).

For each Extended Port, the Controlling Bridge shall:

- Instantiate a Port on the VLAN-aware bridge component;
- Instantiate a T-Component connected to the Port instantiated on the VLAN-aware bridge component utilizing an internal LAN (6.14);
- Allocate an E-CID within the range of 1 - 4095 that is unique within the scope of the B-component attached to the T-component to identify the E-channel between the instantiated CNP in the Controlling Bridge and the Extended Port on the Port Extender; and
- Maintain the CNP, the Extended Port, the Controlling Bridge T and B components, and the Port Extender parameters as specified in Table 44-1.

NOTE — This standard does not specify if or when the de-instantiation of these Ports, Port Extenders, and internal links occurs as a result of a link to a Port Extender becoming inactive.

This establishes an E-channel between the VLAN-aware bridge component Port within the Controlling Bridge and the Extended Port.

#### 44.9 Port Extender Cascade Ports

When a Port Extender Upstream Port is connected to an Extended Port on another Port Extender, the Extended Port becomes, by definition, a Cascade Port. No configuration changes are required to effect this transition. However, the Controlling Bridge shall perform ongoing configuration to maintain consistency between Cascade Ports and their corresponding VLAN-aware Bridge Port as specified in Table 44-1.

## 44.10 Determination of the Upstream Port

A Port Extender shall have exactly one Port acting as the Upstream Port at any given time. However, a Port Extender may provide more than one Port that is capable of acting as the Upstream Port.

If more than one Port is capable of acting as the Upstream Port, the Port Extender shall determine the Port to act as the Upstream Port as follows:

- a) Determine the subset of the Ports capable of acting as Upstream Ports that are attached to peer Ports capable of acting as a Cascade Port;
- b) Select the Peer Port with the numerically smallest `cascade_port_priority` (IEEE Std 802.1Q subclause D.2.1.5.1);
- c) If multiple Ports have the numerically smallest `cascade_port_priority`, select the Peer Port with the numerically lowest PE CSP MAC address of those Ports (IEEE Std 802.1Q subclause D.2.15.3).

Additional methods, such as manual configuration, may be provided.

A CB-BEB shall have no Ports operating as an Upstream Port.

Ports that are not selected by this method are available for use as Extended or Cascade Ports.

## 44.11 Upstream Port Addressing

A separate individual MAC Address is associated with each instance of the MAC Service provided to the LLC Entity of the Upstream Port. That MAC Address is used as the source address of frames transmitted by the LLC Entity, including the Port Extender Control and Status Agent. This address is communicated using LLDP and the PE TLV (IEEE Std 802.1Q subclause D.2.1.5).

Media access method specific procedures can require the transmission and reception of frames that use an individual MAC Address associated with the Bridge Port, but neither originate from nor are delivered to a MAC Service user. Where an individual MAC Address is associated with the provision of an instance of the MAC Service by the Port, that address can be used as the source and/or the destination address of such frames, unless the specification of the media access method specific procedures requires otherwise.

### 44.11.1 Unique identification of a Port Extender

A unique 48-bit Universally Administered MAC Address, termed the Port Extender Address, shall be assigned to each Port Extender. The Port Extender Address may be the individual MAC Address of the Upstream Port. This address is communicated using LLDP and the PE TLV (IEEE Std 802.1Q subclause D.2.1.5).

### 44.11.2 Points of attachment and connectivity for Higher Layer Entities

The Higher Layer Entities in a Port Extender, such as the Control and Status Agent (7.1), are modeled as attaching directly to one or more individual LANs connected by the Bridge's Ports, in the same way that any distinct end station is attached to the network.

## 44.12 Traffic isolation

Figure 44-8 illustrates the traffic isolation provided within an Extended Bridge.

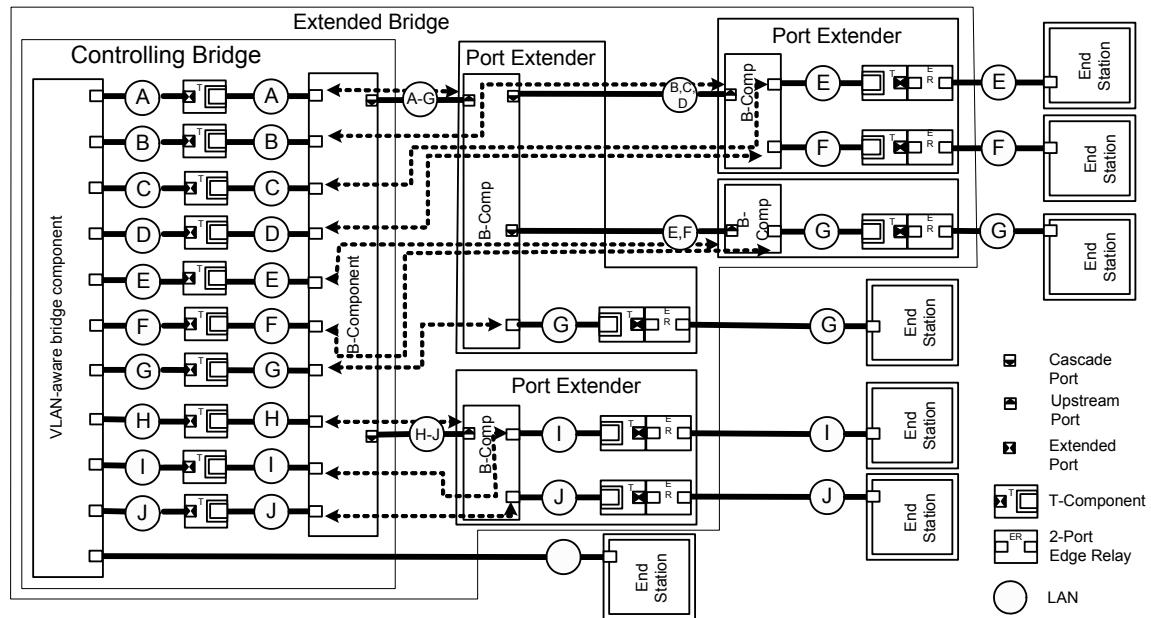


Figure 44-8—Extended Bridge traffic isolation

Isolation of data frames belonging to different VLAN-aware bridge component Ports is achieved by creating a unique E-channel for each Port and:

- Ensuring that frames accepted through Extended Ports are addressed to the Port's E-MAC;
- Ensuring that each Extended Port is configured with a E-MAC that is constructed from the E-CID of the E-channel forming the pt-pt E-channel associated with that Port;
- On ingress, ensuring that all frames transferred through Cascade and Upstream Ports of the Extended Bridge have B-DA and B-SA addresses constructed with the E-CID set to the E-MAC of the Extended Bridge Port; and
- On egress, ensuring that all frames transferred through Cascade and Upstream Ports of the Extended bridge have B-DA and B-SA addresses constructed with the E-CID identifying the E-channel whose member set includes the Extended Bridge egress Port or the set of Extended Bridge egress Ports.

## 44.13 Support of Port Extension by the VLAN-aware Bridge component MAC Relay

**Editor's Note - The normative text for support of Port Extension by VLAN-aware bridge components is consolidated in clause 44. Much of the material in paragraphs 44.8, 44.9, and 44.10 could be incorporated in clause 8 instead of here. The editor solicits input as to whether it is preferred to keep it here or move it to clause 8.**

**Editor's Note - In a future revision this section will be replaced with the updated algorithms that use a port map within the connection\_identifier. This section has not been revised since the revision of 802.1Qbh was not complete when written.**

**Editor's Note - This section also needs to include the algorithm used by T-component PIPs to resolve the B-DA. The method is simple since if no connection\_identifier is present (always the case for an Extended Port) then the B-DA is the Default Backbone Destination. Otherwise, (only at the CB-BEB) if the connection\_identifier is present then the B-DA is the best match to the port map.**



1 This clause specifies the additional requirements related to the MAC Relay for frames that are not being  
2 forwarded using the remote replication capability. See 44.12.2 for the additional requirements related to the  
3 MAC Relay for frames that utilize the remote replication capability.  
4

5 In support of Port Extension within the VLAN-aware Bridge component of a Controlling Bridge, the  
6 connection\_identifier in the EM\_UNITDATA.request and EM\_UNITDATA.indication primitives is used to  
7 carry:  
8

- 9 a) Port map for the destination Extended Ports.

10 The presence or absence of these data has no effect on the operation of the other uses of  
11 connection\_identifier within this standard.  
12

13 *Editor's Note - There is likely to be a parameter specified in P802.1Qbg that explicitly indicates whether  
14 reflective relay is enabled on a particular port; however, the draft of P802.1Qbg was not available at the time  
15 of writing this draft. Item c) will be updated in the next draft to reflect the P802.1Qbg parameter.*  
16

- 17 b) The VLAN-aware Bridge component Port on which the frame is to be transmitted and the Port on  
18 which the frame was received are members of the same Replication Group.  
19  
20

## 21 **44.14 Support for pt-mpt E-Channels**

22 Remote replication is a capability provided to the Controlling Bridge by Port Extenders within an Extended  
23 Bridge. Utilizing this capability, a Controlling Bridge directs the replication of frames within the Port  
24 Extenders to multiple Ports (e.g., frames addressed to group addresses or flooded frames).  
25  
26

27 This capability is provided using pt-mpt E-channels. An pt-mpt E-channel forms a point-to-multipoint  
28 channel originating at a CNP through one or more Port Extenders to a set of Extended Ports. The return  
29 paths on each E-channel provide delivery from each Extended Port to the CNP. Each E-channel is identified  
30 by a B-SA and B-DA double. Point-to-multipoint E-channels are implemented between the CBPs of the B-  
31 components which within the Controlling Bridge and Port Extenders using a TESI. The TESI is identified  
32 by the same B-DA and B-SA plus a B-VID. Since typically Port Extenders do not support alternate path  
33 routes the B-VID used by all TESIs is typically the default B-VID.  
34

35 E-channels used by the remote replication are identified by an E-CID with a value in the range of 4096 - 16  
36 382 (values less than this are reserved for pt-mpt E-channels ).  
37

38 The set of VLAN-aware bridge component Ports used for remote replication is referred to as a Replication  
39 Group. The Controlling Bridge's assignment of E-CIDs for remote replication shall be unique within a  
40 Replication Group.  
41

42 A VLAN-aware component that utilizes the remote replication capability establishes E-channels through the  
43 attached Port Extenders for every combination of paths over which a frame may need to be replicated based  
44 on the current state of the filtering database.  
45

46 To utilize remote replication, the VLAN-aware bridge component determines the proper E-CID to be  
47 utilized within each Replication Group.  
48

## 49 **44.15 Support of Remote Replication by a Controlling Bridge**

### 50 **44.15.1 Remote Replication Registration Table**

51 Remote replication registration table determine the E-CID to be used for remote replication.  
52  
53  
54

July 4, 2011

1 Each entry in the Remote Replication Registration Table comprise

- 2
- 3 a) The E-channel Identifier (E-CID) of the E-channel to which the filtering information applies; and
  - 4 b) A Port Map, with a control element for each outbound Port in the Replication Group. This Port Map
  - 5 operates as the key to identify the Remote Replication Registration Entry.
- 6

7 The addition, modification, or removal of entries in the Remote Replication Registration Table of the

8 VLAN-aware bridge component of the Controlling Bridge can change the combination of Ports from which

9 a frame is to be filtered within the Ports of a Replication Group.

10

11 For each combination that contains at least two Extended Ports to which a frame is to be forwarded, the

12 bridge shall:

- 13
  - 14 c) Maintain a Remote Replication Registration entry;
  - 15 d) Allocate an E-CID for the entry with a value between 4096 and 16 382 that is unique among all of
  - 16 the other Remote Replication Registration Entries that apply to the same Replication Group;
  - 17 e) Set the Port Map control elements that correspond to the Ports from which the frame is to be filtered
  - 18 to ‘filter’; and
  - 19 f) Set the remaining Port Map control elements to ‘forward’.
- 20

#### 21 **44.15.2 Port Extender pt-mpt E-channel configuration**

22

23 Within each Port Extender through which an E-channel is allocated for remote replication passes, the

24 Controlling Bridge shall:

- 25
  - 26 a) Create two point-to-multipoint TESIs with the leaf bound ESPs addressed using the E-CID
  - 27 constructed B-MAC to the Extended Ports
  - 28 b) The two TESIs will use use different leaf to root bound ESPs one for echo cancelled service and
  - 29 another for non-echo cancelled service
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***Insert the following clause:***

*Editor's Note: If a TE-SID were used in place of the E-CID then this section would need to have the E-CID fields replaced by TE-SIDs.*

**45. Port Extender Control and Status Protocol**

The Port Extender Control and Status Protocol (PE CSP) provides the mechanism by which a Controlling Bridge configures the external Port Extenders under its control. It is also the mechanism by which the Controlling Bridge dynamically discovers the presence of Extended Ports and obtains status information from the external Port Extenders. It is implemented as a simple command / response protocol. Information utilized within the protocol are packaged into Type, Length, Value (TLV) triples. A PE CSP Protocol Data Unit (PDU) consists of a Command TLV and zero or more additional TLVs, as specified by the protocol.

PE CSP executes as an upper layer protocol over the ECP (IEEE Std 802.1Q clause 43). The PE CSP executes exclusively between a Controlling Bridge and Port Extenders that comprise an Extended Bridge. As each Port Extender is discovered, a separate E-channel is created between the Controlling Bridge and the Port Extender to carry frames between the Controlling Bridge and the Control and Status Agent within the Port Extender. The Control and Status Agent is the entity within a Port Extender responsible for executing the PE CSP. A separate instance of the Edge Control Protocol and PE CSP is executed over each of these E-channels.

The PE CSP creates protocol data units (PDUs) that are passed to the Edge Control Protocol (ECP) for transmission to the peer. Each PDU contains one or more TLVs specified in this clause. Likewise, ECP passes PE CSP PDUs to the PE CSP that were received from the peer. The Edge Control Protocol provides a basic acknowledgement and retransmit mechanism; therefore, PE CSP assumes that once a PDU is delivered to ECP, the PDU is reliably delivered to the peer PE CSP entity, if it still exists. PE CSP limits the number of outstanding commands to one and therefore the buffer space used to receive commands and responses is never exceeded.

NOTE—This implies that reserving one buffer to receive commands and an additional buffer to receive responses is all that is needed to prevent a buffer overflow between ECP and PE CSP.

The PE CSP PDU consists of one or more data units encoded in type, length, value (TLV) triples. All PE CSP PDUs contain the Command TLV. Additional TLVs are included as required by each command.

**45.1 Port Extender Initialization**

Port Extenders shall be initialized upon power-on and when specified by the Port Extender Control and Status Protocol (Clause 8). Initialization shall be accomplished by setting the Port Extender parameters to the values indicated in Table 45-1 and the parameters associated with each Port Extender Port to the values indicated in Table 45-2 .

**Table 45-1—Port Extender Initialization**

Parameter	Initial Value
Member set for each E-Channel	empty

**Table 45-2—Port Extender Port Initialization**

Parameter	Initial Value
PVID	one
Transmission Selection Algorithm Table	Each entry set to strict priority (Table 8-5)
Priority to traffic class mapping table	Recommended values in Table8-4
Priority-based Flow Control	Disabled for all priorities
tag_type	Set to match the type of the primary VLAN-aware Bridge component.
use_dei	zero
untagged_vlan_list	empty

## 45.2 Addressing

Individual MAC addresses are used to address the Edge Control Protocol frames that carry the PE CSP. The destination address to be used is discovered utilizing Port Extension TLV within LLDP (D.2.1.5).

## 45.3 PE CSP State Machines

Four state machines define the transmission, reception, and processing of PE CSP PDUs:

- a) The PE CSP Receive PDU state machine (Figure 45-1) controls the reception of PE CSP PDUs;
- b) The PE CSP Transmit PDU state machine(Figure 45-2) controls the transmission of PE CSP PDUs;
- c) The PE CSP Local Request state machine (Figure 45-3) controls the transmission of PE CSP request PDUs and the associated response time-out processing;
- d) The PE CSP Remote Request state machine (Figure 45-4) controls the reception of remote PE CSP request PDUs and the transmission of the associated responses.

Each state machine shall implement the functionality defined in their associated figure and attendant definitions in 45.3.1, 45.3.2, and 45.3.3. The notational conventions used in the state machines are as stated in Annex E.

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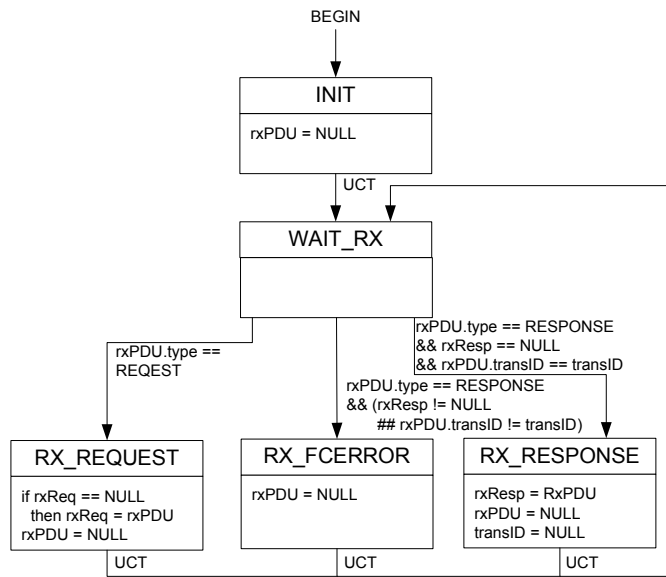


Figure 45-1—PE CSP Receive PDU state machine

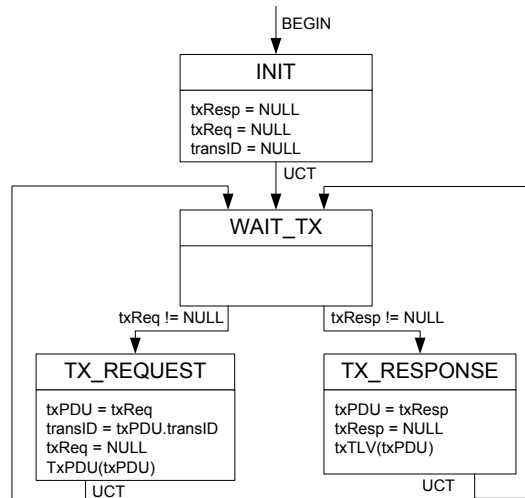


Figure 45-2—PE CSP Transmit PDU state machine

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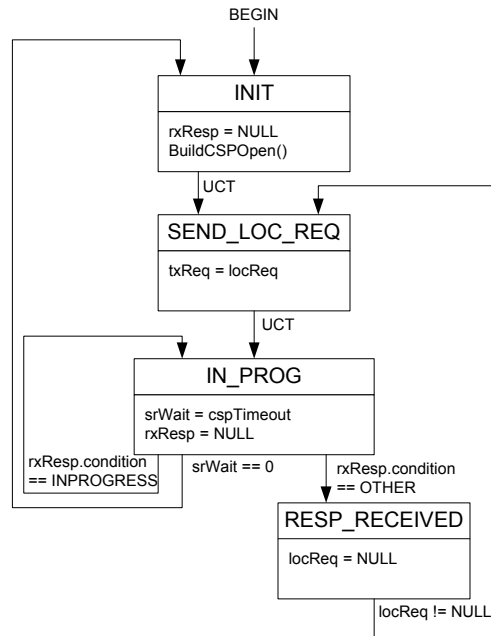


Figure 45-3—PE CSP Local Request state machine

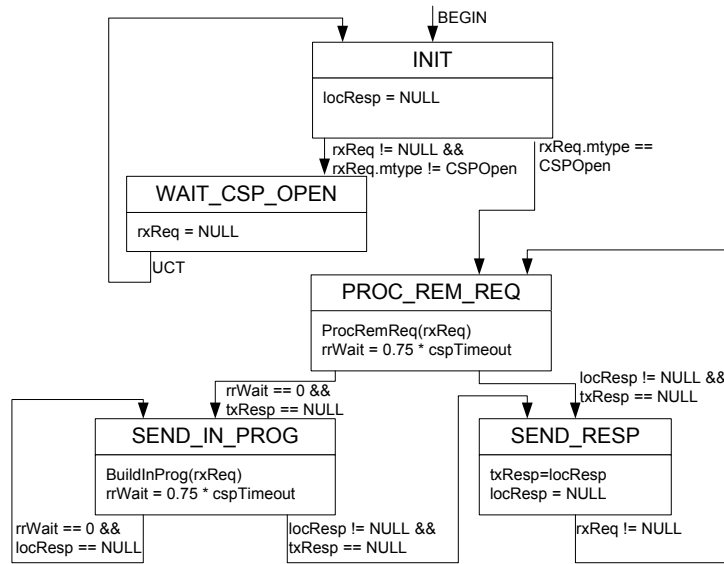


Figure 45-4—PE CSP Remote Request state machine

### 45.3.1 PE CSP state machine timers

A set of timers is used by the PC CSP state machines. These operate as countdown timers (i.e. they expire when their value reaches zero). These timers:

- a) Have a resolution of one second;
- b) Are loaded by an initial integer value;
- c) Are decremented once per second until reaching zero;
- d) Represent the remaining time in the period.

#### 45.3.1.1 srWait

An instance of srWait exists for each instance of the PE CSP Local Request state machine. It is used to detect a time out waiting for a remote response following the transmission of a local request.

#### 45.3.1.2 rrWait

An instance of rrWait exists for each instance of the PE CSP Remote Request state machine. It is used to determine when to send a local response with a completion code of In Progress (45.7.3.2).

### 45.3.2 PE CSP state machine procedures

#### 45.3.2.1 BuildCSPOpen()

The BuildCSPOpen() procedure builds a CSP Open request in locReq.

#### 45.3.2.2 BuildInProg(req)

The BuildInProg(req) procedure builds an In Progress response for the request PDU passed to it in the req parameter. The response is built in the locResp parameter.

#### 45.3.2.3 ProcRemReq(req)

The ProcRemReq(req) passes the remote request PDU from the state machine for processing. Once processing is complete, the locResp parameter is set with the response PDU to be sent to the remote device. This procedure is non-blocking, i.e. it does not wait for processing to complete.

#### 45.3.2.4 TxPDU(pdu)

The TxPDU() procedure causes the TLVs that make up the PDU in the pdu parameter to be transmitted.

### 45.3.3 PE CSP state machines variables and parameters

#### 45.3.3.1 cspTimeout

The message\_timeout value from Table 45-3.

#### 45.3.3.2 locReq

A PDU containing a locally generated request. The value is set by the Controlling Bridge or the Port Extender Control and Status agent outside the state machine. The state machine sets this value to NULL to indicate the PDU has been transmitted and a response received.

#### 45.3.3.3 locResp

See 45.3.2.2.

1       **45.3.3.4 NULL**

2  
3       A value assigned to a variable to indicate that the variable does not contain a valid value.  
4

5       **45.3.3.5 rxPDU**

6  
7       The last PE CSP PDU received.  
8

9       **45.3.3.6 rxPDU.transID**

10  
11       Contains the value of the Transaction ID field in the Command TLV (45.7.2) of the rxPDU.  
12

13       **45.3.3.7 rxPDU.type**

14  
15       Indicates the type of rxPDU. Valid values are REQUEST and RESPONSE corresponding to the D bit of the  
16       Command TLV within the PDU (45.7.4).  
17

18       **45.3.3.8 rxReq**

19  
20       The last request PE CSP PDU received.  
21

22       **45.3.3.9 rxReq.mtype**

23  
24       The message type contained in the last request PE CSP PDU received, as specified in Table 45-5.  
25

26       **45.3.3.10 rxResp**

27  
28       The last response PE CSP PDU received.  
29

30       **45.3.3.11 rxResp.condition**

31  
32       Indicates whether the Completion Code (45.7.3) is In Progress or some other value. Valid values are  
33       INPROGRESS and OTHER, respectively. This value is NULL when rxResp is NULL.  
34

35       **45.3.3.12 transID**

36  
37       Contains the Transaction ID from the Command TLV (45.7.2) from the last request transmitted. Set to  
38       NULL upon receipt of the response.  
39

40       **45.3.3.13 txPDU**

41  
42       The next PE CSP PDU to be transmitted.  
43

44       **45.3.3.14 txPDU.transID**

45  
46       Contains the value of the Transaction ID field of the Command TLV (45.7.2) in the txPDU.  
47

48       **45.3.3.15 txReq**

49  
50       The next local request PE CSP PDU to be transmitted.  
51

52       **45.3.3.16 txResp**

53  
54       The next local response PE CSP PDU to be transmitted.



## 45.4 Protocol Errors

The PE CSP protocol utilizes the parameters as defined in Table 45-3.

**Table 45-3—Port Extender Control and Status Protocol - Time out Values**

Parameter	Value (seconds)
message_timeout	60

A PE CSP implementation waits a minimum message\_timeout period without receiving a response to a request. If no response is received, a protocol error is detected.

A PE CSP implementation may send a response with a completion code of In Progress (Table 45-6) to a request that can potentially take a long time to service. Upon receiving such a response, the PE CSP peer waits again for a message\_timeout period without receiving a response. Each time it receives a response with a completion code of In Progress, the peer must again wait for a message\_timeout period to receive a response. If no response has been received during this period, a protocol error is detected.

If a Controlling Bridge detects a protocol error, recovery is attempted by restarting the PE CSP Local Request state machines and re-establishing communication by sending a CSP Open command. If communication is re-established, this will result in initialization of the Port Extender. The Controlling Bridge proceeds as if a new Port Extender had been attached.

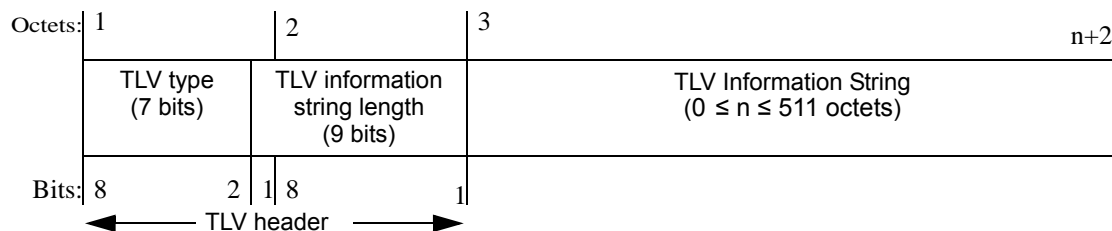
If a Port Extender detects a protocol error, recovery is attempted by re-starting the PE CSP Local Request state machine and sending a CSP Open command

## 45.5 PE CSP PDUs

A PE CSP PDU is made up of a Command TLV and zero or more additional TLVs. The required additional TLVs are specified in Table 45-5. Any additional TLVs, including unknown TLVs, are ignored.

## 45.6 Basic TLV format

Figure 45-5 shows the basic TLV format.



**Figure 45-5—Basic TLV format**

The TLV type field occupies the seven most significant bits of the first octet of the TLV format. The least significant bit in the first octet of the TLV format is the most significant bit of the TLV information string length field.

### 45.6.1 Use of reserved fields

Unless specified otherwise, all reserved fields in the PE CSP TLVs shall be set to zero and ignored on receive.

### 45.6.2 TLV Type

The TLV Type field shall be set to a valid value from Table 45-4.

**Table 45-4—TLV type values**

TLV type	TLV name	TLV reference
0	Reserved for future standardization	—
1	Command	45.7
2	Resource Limit Capability	45.10.1
3	Port Parameters	45.10.2
4	Port Array	45.10.3
5	VID Array	45.10.4
6	Port Status	45.10.5
7	Statistics	45.10.6
8	SNMP PDU	45.10.7
9-126	Reserved for future standardization	—
127	Organizationally Specific TLVs	45.10.8

### 45.6.3 TLV information string length

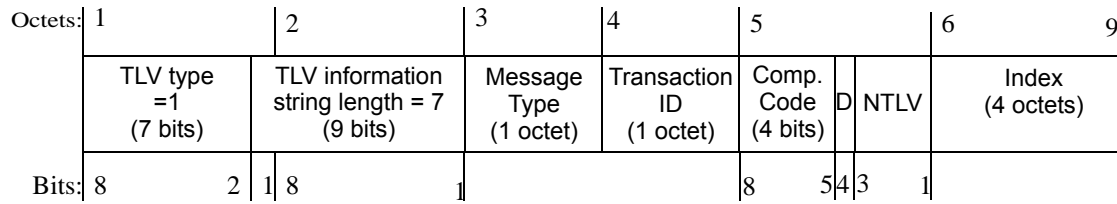
The TLV information string length field shall contain the length of the information string, in octets. If a TLV is received that is longer than expected, the excess content at the end of the TLV is ignored.

### 45.6.4 TLV information string

The TLV information string may be fixed or variable length and contains the information specified for each TLV.

## 45.7 Command TLV

The Command TLV shall be the first TLV in all PE CSP PDUs and shall be constructed and processed as specified in this clause. Figure 45-6 illustrates the format of the Command TLV.



**Figure 45-6—Command TLV**

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### 45.7.1 Message Type

The Message Type field indicates the type of message contained in this PE CSP PDU as indicated in Table 45-5. The Required TLVs corresponding to the Message Type listed in this table shall be provided in the PE

**Table 45-5—Message Types**

Message	Message Type	Request TLVs	Response TLVs
Reserved for future standardization	0		
CSP Open	1	When sourced from a Port Extender: Resource Limit Capability When sourced from a Controlling Bridge: None	None
Extended Port Create	2	None	Port Parameters VID Array (optional)
Extended Port Delete	3	None	None
Port Parameters Set	4	Port Parameters (optional) VID Array (optional) (at least one TLV must be present)	None
Port Parameters Get	5	None	Port Parameters VID Array
Status Parameter Set	6	Port Status	None
E-Channel Register	7	Port Array	None
E-Channel Registration Get	8	None	Port Array
Statistics Clear	9	None	None
Statistics Get	10	None	Statistics
Transit Delay Set	11	None	None
SNMP Transfer	12	SNMP PDU	SNMP PDU (optional)
Reserved for future standardization	13-254		
Organizationally Specific	255	Note 1	Note1

Note 1: At least one organizationally specific TLV is required to identify the organizationally specific command.

CSP PDU. The use of each message type is described in 45.9.

**45.7.2 Transaction ID**

The Transaction ID field is used to ensure that responses to requests are properly matched as specified in the PC CSP State Machines (45.3). In a CSP Open request, Transaction ID shall be set to zero. Transaction ID shall be incremented by 1, and reset to zero upon reaching 256, for each successive request. The Transaction ID in a response shall be set to that of the corresponding request.

**45.7.3 Completion Code**

The Completion Code field is reserved in request messages. In response messages, it is set to one of the values in Table 45-6.

**Table 45-6—Completion Codes**

Completion Code	Condition
0	Success
1	In Progress
2	Failure - lack of resources
3	Failure - unknown message type
4	Other Failure
all others	Reserved for future standardization

**45.7.3.1 Success**

The Success completion code is returned to indicate the successful completion of a request. This completion code is also returned if no action was required to complete the request, e.g., deleting a non-existent E-Channel.

**45.7.3.2 In Progress**

The In Progress completion code is returned to indicate additional time is needed to process the request. See 45.4.

**45.7.3.3 Failure - lack of resources**

The Failure - lack of resources completion code is returned to indicate that a Command TLV was received that would have otherwise been successful except that the sufficient resources were not available to complete the command (e.g. exceeding the E-Channel capacity).

**45.7.3.4 Failure - unknown message type**

The Failure - unknown message type completion code is returned to indicate that the Command TLV contained an unknown message type.

### 1       **45.7.3.5 Other failure**

2  
3       The Other failure completion code is returned to indicate that the Command TLV was not processed for a  
4       reason other than lack of resources (e.g. malformed TLV).

### 5 6       **45.7.4 D**

7  
8       D: Set to 1 if this is a response message, 0 if this is a request message.

### 9 10       **45.7.5 NTLV**

11  
12       This field contains the number of TLVs following the command TLV that form this PE CSP PDU.

### 13 14       **45.7.6 Index**

15  
16       The Index field contains a command specific value. The value to be placed in the Index field is specified for  
17       each individual command in 45.9. If not specified, the value is reserved.

## 18 19       **45.8 Flow Control**

20  
21       After the transmission of the first request PDU, a PE CSP entity does not transmit another request PDU until  
22       it has received the response from the previous request.

## 23 24       **45.9 Messages**

25  
26       The following sections describe each of the messages supported in the Port Extender Control and Status  
27       Protocol.

### 28 29       **45.9.1 CSP Open**

30  
31       The CSP Open message shall be sent by each PE CSP entity (Port Extender and Controlling Bridge) to  
32       initialize PE CSP communication. The parameters in the associated TLVs are exchanged. The operational  
33       parameters are established based on the capabilities for each peer. In addition, a Port Extender shall initialize  
34       its parameters as specified in Table 7-2.

35  
36       Upon completion of processing the request message, each peer shall send a CSP Open response message to  
37       the other peer.

38  
39       Receipt of a CSP Open Message at any time other than the first message received indicates that the peer has  
40       reset. Therefore, to re-establish communication, a new CSP Open Message is sent.

41  
42       This is the first message sent upon PE CSP initialization and no other messages shall be sent until a  
43       successful response is received.

44  
45       The Index field in the Command TLV of the PE CSP Open Message shall contain the value one, indicating  
46       the version of the PE CSP being executed. The value of this field shall be ignored in received CSP Open  
47       Messages.

48  
49       NOTE —It is assumed that future versions of the protocol will remain backwards compatible. Therefore, it is not  
50       necessary for this, the first version of the protocol, to do anything other than set the value of this field. Future versions  
51       may need to check it to ensure that they emit PDUs that are compatible.

### 45.9.2 Extended Port Create

The Port Extender shall send an Extended Port Create request message to the Controlling Bridge to request the creation of a new E-channel for binding with an Extended Bridge Port with the Index field in the Command TLV set to a value that identifies the individual Port. The value 0 is reserved to indicate the Upstream Port and is not used in the Extended Port Create command.

Upon receipt of the request, the Controlling Bridge shall send an Extended Port Create response message with the Index Field of the Command TLV set to the E-CID that identifies the newly created E-channel for the command is successful, otherwise the content of the Index field is reserved.

*Editor's Note: Need to add the list of items for programming the CB-BEB and the stages along the way as an E-channel is constructed.*

Upon receipt of the response message with a Completion Code (45.7.3) of Success, the Port Extender shall:

- a) Enter the CBP coupled to the Extended Port in the member set of the TESI B-VID;
- b) Enter the B-MACs constructed from the E-CID as specified in subclause 44.4 for the CNP and the Extended Ports in the B-component filtering database and identify them on the TESI B-VID
- c) Set the PIP B-SA of the T-component to the B-MAC constructed as specified in subclause 44.4 for a Extended Port.
- d) Set the PIP Default Backbone Destination Address to the B-MAC constructed as specified in subclause 44.4 for a CNP.
- e) Set the VIP I-SID of the T-component to the I-SID for this replication group (typically 1).
- f) Configure the Extended Port parameters as specified in the Port Parameter and VID array TLVs.

NOTE —It is not an error for an Extended Port Create request to request the creation of an already existing Extended Port. If this occurs, the request is processed as specified above and a successful response is returned.

### 45.9.3 Extended Port Delete

The Extended Port Delete request shall be sent by the Port Extender or the Controlling Bridge to remove an Extended Port previously created via the Extended Port Create request from all E-Channel member sets. The Index field of the Command TLV shall contain the E-CID identifying the E-Channel associated with the Port to be deleted.

When a Port Extender receives the Extended Port Delete request, it shall:

- a) Remove the constructed B-MACs from the B-component filtering database and from the T-component for the Extended Port
- b) Upon completion of these operations, send the Extended Port Delete response message to the Controlling Bridge.

When a Controlling Bridge receives the Extended Port Delete request, it shall:

- c) Remove the corresponding E-channel in any intervening Port Extenders using the E-Channel Register message (45.9.7)
- d) Upon completion of these operations, send the Extended Port Delete response message to the Port Extender.

When a Controlling Bridge receives an Extended Port Delete response, it shall:

- e) Remove the corresponding E-channel in any intervening Port Extenders using the E-Channel Register message (45.9.7)

1 When a Port Extender receives the Extended Port Delete response message, it shall:

- 2  
3 f) Remove all B-MACs constructed using the E-CID from the filtering database;

4  
5 NOTE—It is not an error for an Extended Port Delete request to be issued for a non-existent Extended Port. If this  
6 occurs, a successful response is returned.

7  
8 **45.9.4 Port Parameters Set**

9  
10 The Controlling Bridge shall send a Port Parameters Set message to a Port Extender to configure the  
11 parameters specified in the Port Parameters TLV and/or the VID Array TLV for an Extended Port or for the  
12 Upstream Port. The Index field in the Command TLV shall be set to the E-CID identifying the Extended or  
13 Cascade Port, or to zero to indicate the Upstream Port.

14  
15 Upon completion, the Port Extender shall send a Port Parameters Set response message with Index field set  
16 to the E-channel identifying the Extended or Cascade Port, or to zero to indicate the Upstream Port.

17  
18 **45.9.5 Port Parameters Get**

19  
20 A Controlling Bridge or a Port Extender shall send a Port Parameters Get request message to query the  
21 currently configured state for a Port on a Port Extender. Upon receiving this message, the Controlling Bridge  
22 or Port Extender shall send the Port Parameters Get response message to the peer. The Index field in the  
23 Command TLV of both the request and the response shall be set to the E-CID identifying the Extended or  
24 Cascade Port, or to zero to indicate the Upstream Port. The Port Parameters and VID Array TLVs shall be  
25 populated with the parameters applicable to the Port if the E-CID is valid. The contents of the Port  
26 Parameters and VID Array TLVs is unspecified if the E-CID is invalid.

27  
28 **45.9.6 Status Parameter Set**

29  
30 *Editor's Note: This probably should be replaced by MAC status propagation from clause 23.*

31  
32 A Port Extender shall send a Status Parameter Set request each time the value of MAC\_Operational (IEEE  
33 Std 802.1Q subclause 6.6) changes on one of its Cascade or Extended Ports. The Index field in the  
34 Command TLV shall be set to the PVID of the Extended or Cascade Port.

35  
36 The Controlling Bridge, upon reception of a Status Parameter Set, shall set the MAC\_Enabled parameter  
37 (IEEE Std 802.1Q subclause 6.6) of the corresponding Extended Port within the internal Port Extender to  
38 match the indication (TRUE or FALSE) received in the Port Status PDU.

39  
40 NOTE —Setting the MAC\_Enabled parameter on the Extended Port of the internal Port Extender is reflected in the  
41 across the internal LAN to the MAC\_Operational parameter of the Port in the VLAN-aware Bridge component. This  
42 provides MAC\_Operational propagation from the external Extended Port to the VLAN-aware Bridge component.

43  
44 Upon completion, the Controlling Bridge shall send a Status Parameter Set response message to the Port  
45 Extender with Index field set to the E-channel identifying the Extended or Cascade Port.

46  
47 **45.9.7 E-Channel Register**

48  
49 The E-Channel Register request message shall be sent by a Controlling Bridge to a Port Extender to  
50 configure a set of Ports within, or to remove them from, the member set of an E-Channel.

51  
52 The message shall be constructed as follows:

- 53 a) The Index field in the Command TLV is set to the E-CID identifying the E-Channel;
- 54



- 1           b) The Port Array TLV is populated with a list of Port\_Index elements, along with an indication of  
2           which sets the Port is to be added to or removed from.  
3

4 Upon receipt of the message, the Port Extender shall:  
5

- 6           c) Perform the specified action on all Ports in the Port Array TLV;  
7           d) Upon completion, the Port Extender sends an E-Channel Register response message.  
8

#### 9 **45.9.8 E-Channel Registration Get**

10 The E-Channel Registration Get request message shall be sent by the Controlling Bridge to query E-Channel  
11 member set population.  
12

13 The Index field of the Command TLV for both the request and the response shall be set to the E-CID  
14 identifying the E-Channel being queried.  
15

16 Upon receipt of an E-Channel Registration Get request, an E-Channel Registration Get response shall be  
17 generated containing a Port Array TLV enumerating the Ports that are members of the member set of the E-  
18 Channel.  
19

#### 20 **45.9.9 Statistics Clear**

21 The Statistics Clear request shall be sent by a Controlling Bridge to a Port Extender with the Index field of  
22 the Command TLV set to the E-CID of an E-channel associated with the Port for which statistics are to be  
23 cleared; or 0 to indicate the Upstream Port.  
24

25 Upon receipt of a Statistics Clear request message, the Port Extender shall set all of the statistic counters  
26 associated with the indicated Port to zero. Upon completion, it shall send a Statistics Clear response message  
27 with the Index field of the Command TLV set to the E-CID of an E-channel associated with the Port for  
28 which statistics have been cleared; or 0 to indicate the Upstream Port.  
29

#### 30 **45.9.10 Statistics Get**

31 The Statistics Get request shall be sent by a Controlling Bridge to a Port Extender to retrieve the values of  
32 the statistics counters. The Index field of the Command TLV shall contain the E-CID of the E-channel  
33 associated with the Port for which statistics are to be gathered; or 0 to indicate the Upstream Port.  
34

35 Upon receipt of a Statistics Get request message, the Port Extender shall send a Statistics Get response  
36 message with the Index field set to that received and the Statistics TLV populated with the values from the  
37 Port's statistics counters. If the E-CID is invalid, the contents of the Statistics TLV is unspecified.  
38

#### 39 **45.9.11 Transit Delay Set**

40 The Transit Delay Set request shall be sent by the Controlling Bridge to set the Port Extender transit delay  
41 parameter (7.10.5), with the value, in seconds, included in the Index field of the Command TLV.  
42

43 Upon receipt of a Transit Delay Set request, the Port Extender shall set the value of the Port Extender transit  
44 delay parameter to that in the Index field of the request. The Port Extender shall then send a Transit Delay  
45 Set response to the Controlling Bridge with the Index field of the Command TLV set to that of the request.  
46

#### 47 **45.9.12 SNMP Transfer**

48 A Port Extender may provide a variety of MAC layer interfaces and associated control facilities. The SNMP  
49 transfer command provides a generic mechanism for discovering and managing these facilities. The  
50

command provides for the transfer SNMP PDUs between the Controlling Bridge and a Port Extender. See IETF RFC 1157, IETF RFC 2416, et. seq. for the specification of SNMP.

An SNMP Transfer request command shall be sent by either the Controlling Bridge or a Port Extender to access managed objects using the SNMP protocol. The Index field of the Command TLV shall be set to the version of SNMP being utilized. The SNMP PDU TLV includes the SNMP PDU.

Upon receipt of a SNMP Transfer command, the receiving device shall respond with an SNMP transfer response command. The Index field of the Command TLV shall be set to the version of SNMP being utilized. If the SNMP command generated an SNMP response, the response SNMP PDU shall be included in a SNMP Transfer TLV. If no response is generated, then the SNMP Transfer TLV shall not be included.

NOTE 1 — SNMP makes a distinction between an SNMP message and an SNMP PDU. The SNMP message contains a version, community, and the SNMP PDU. In the implementation of PE CSP, the version is carried in the Command TLV. The community is by definition the Controlling Bridge and the Port Extenders under its control; therefore, there is no need for the community field. Consequently, the SNMP PDU TLV carries just the SNMP PDU, not the entire SNMP message.

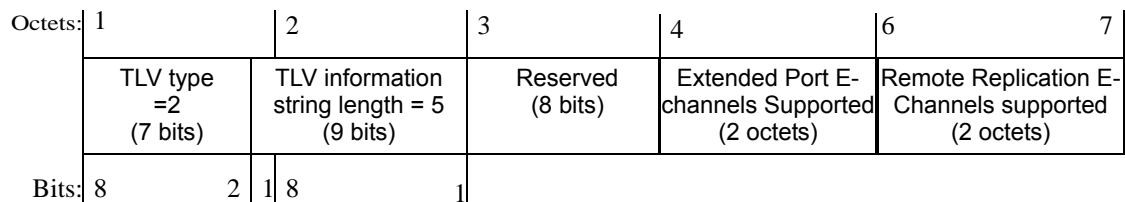
NOTE 2 — The Controlling Bridge is responsible for the indexing of its Ports, including Extended Ports, for presentation to a management system. This indexing is independent of the indexing utilized by a particular Port Extender. The Controlling Bridge is responsible for the translation between the indexing schemes.

## 45.10 Additional TLVs

This section describes the TLVs that are used in addition to the Command TLV to form complete messages as specified in Table 45-5. The TLVs shall be constructed as specified in the following subclauses.

### 45.10.1 Resource Limit Capability TLV

Figure 45-7 illustrates the format of the Resource Limit Capability TLV.



**Figure 45-7—Resource Limit Capability TLV**

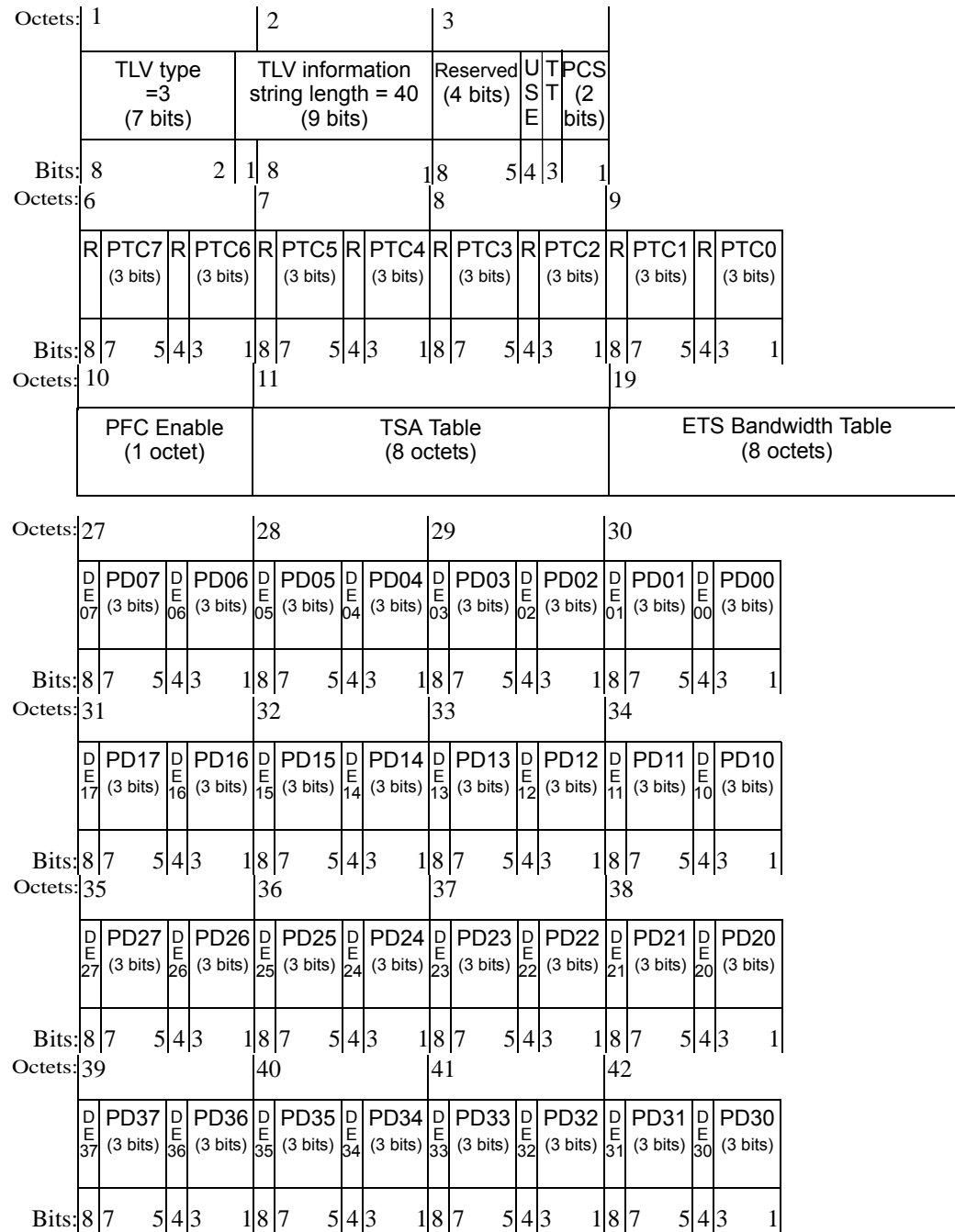
The fields have the following meanings:

Extended Port E-channels Supported: The number of E-channels that may be allocated with E-CIDs in the range of 1-4095. These are E-CIDs that are assigned to E-channels associated with an Extended Port.

Remote Replication E-Channels Supported: Set to the number of E-Channels that may be allocated with E-CIDs in the range of 4096 to 16 382. These E-Channels may have more than two Ports in their member set.

**45.10.2 Port Parameters TLV**

Figure 45-8 illustrates the format of the Port Parameters TLV.



**Figure 45-8—Port Parameters TLV**

This TLV provides parameters for use by the Port Extender Ports.

USE: The use\_dei parameter (7.8).

TT: Tag\_type parameter (7.8). Zero indicates C-type, one indicates S-type.

1 PCS: Priority Code Point Selection (IEEE Std 802.1Q subclause 6.9.3) encoded as specified in Table 45-7  
 2  
 3

4 **Table 45-7—Priority Code Point Selection Encoding**

5  
 6

PCS Value	Meaning
0	8P0D
1	7P1D
2	6P2D
3	5P3D

7  
 8  
 9  
 10  
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 16

17 PTC7 - PTC0: Contains the Priority to Traffic Class mapping for the Port (8.6.7). PTC7 contains the Traffic  
 18 Class to which priority 7 maps continuing to PTC0 corresponding to priority 0.

19  
 20 PFC Enable: Contains one bit per priority (bit 8 corresponding to priority 7 through bit 1 corresponding to  
 21 priority 0). A one indicates that Priority-based Flow Control (IEEE Std 802.1Q clause 36) is enabled for the  
 22 corresponding priority. A zero indicates that Priority-based Flow Control is disabled for the corresponding  
 23 priority.  
 24

25 TSA Table: Contains an eight entry table with one octet per entry. Each entry identifies a transmission  
 26 selection algorithm for the corresponding traffic class. The code points for the Transmission Selection  
 27 Algorithms are listed in Table 8-5. The first entry corresponds to traffic class 7 proceeding down to traffic  
 28 class 0.  
 29

30 ETS Bandwidth Table: Contains an eight entry table with one octet per entry. Each entry contains a  
 31 bandwidth allocated to the corresponding traffic class to be used by the Enhanced Transmission Selection  
 32 (IEEE Std 802.1Q clause 37) algorithm if enabled for the corresponding traffic class. Valid values for each  
 33 entry are 0 through 100. The valid total of all values in the table is 100.  
 34

35 PD07 - PD00: The entries for the 8P0D row of the Priority Code Point decoding table (IEEE Std 802.1Q  
 36 subclause 6.21) corresponding to priorities 7 through 0 respectively.  
 37

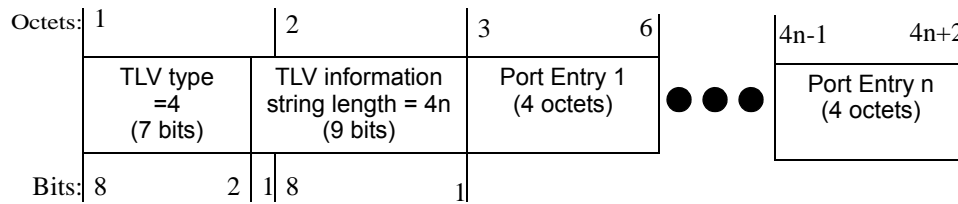
38 PD17 - PD10: The entries for the 7P1D row of the Priority Code Point decoding table (IEEE Std 802.1Q  
 39 subclause 6.21) corresponding to priorities 7 through 0 respectively.  
 40

41 PD27 - PD20: The entries for the 6P2D row of the Priority Code Point decoding table (IEEE Std 802.1Q  
 42 subclause 6.21) corresponding to priorities 7 through 0 respectively.  
 43

44 PD37 - PD30: The entries for the 5P3D row of the Priority Code Point decoding table (IEEE Std 802.1Q  
 45 subclause 6.21) corresponding to priorities 7 through 0 respectively.  
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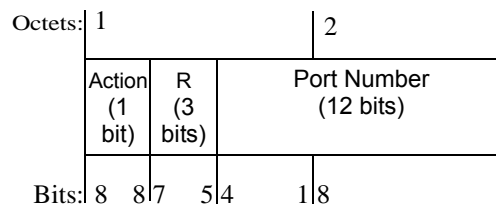
### 45.10.3 Port Array TLV

Figure 45-9 illustrates the format of the Port Array TLV.



**Figure 45-9—Index Array TLV**

The Port Array TLV carries one or more Port Entries. Figure 45-10 illustrates the format of a Port Entry.



**Figure 45-10—Port Entry**

The fields of the Port Entry have the following meanings:

Action: The coding of this field is specified in Table 45.8.

**Table 45.8—Action Values**

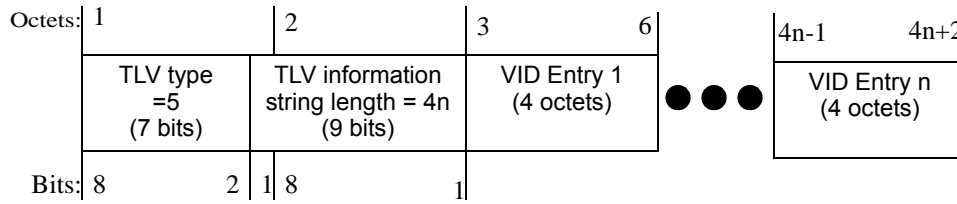
Action Value	Action to be performed (request message):	Meaning (response message)
0	Add the Port indicated by the Port Number to the member set of the E-Channel specified in the Index field of the Command TLV.	Set to zero, ignore on receive.
1	Delete the Port indicated by the Port Number from the member set of the E-Channel specified in the Index field of the Command TLV.	

Port Number: Port to which this entry applies (this is the Port Number that is provided in the Extended Port Create request).

R: Reserved.

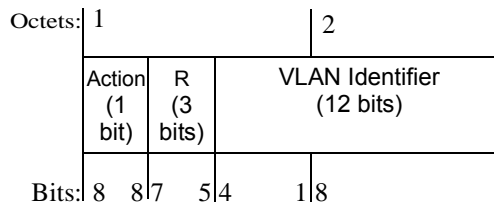
**45.10.4 VID Array TLV**

Figure 45-11 illustrates the format of the VID Array TLV.



**Figure 45-11—VID Array TLV**

The VID Array TLV carries one or more VID Entries. Figure 45-12 illustrates the format of a VID Entry.



**Figure 45-12—VID Entry**

This TLV is used to set or retrieve the C-VLAN or S-VLAN member sets and untagged sets used in the Tag Handler (7.8). The fields have the following meanings:

Action: The coding of this field is specified in Table 45-9.

**Table 45-9—Action Values**

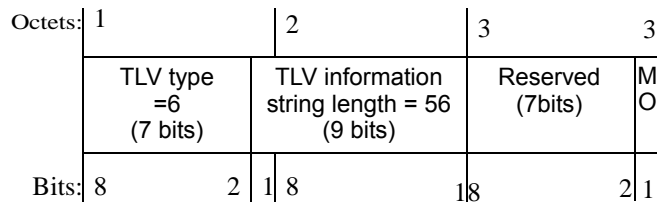
Action Value	Action to be performed (request message):	Meaning (response message)
0	Add the Extended Port that is in the member set of the E-Channel indicated in the Index field of the Command TLV to the untagged set of the C-VLAN or S-VLAN indicated in this VID Entry (see 7.8).	The Extended Port that is in the member set of the E-Channel indicated in the Index field of the Command TLV is in the untagged set of the C-VLAN or S-VLAN indicated in this VID entry (7.8).
1	Delete the Extended Port that is in the member set of the E-Channel indicated in the Index field of the Command TLV from the untagged set of the C-VLAN or S-VLAN indicated in this VID Entry (see 7.8).	Reserved for future standardization.

R: Reserved.

VLAN Identifier: Identifier of the C-VLAN or S-VLAN to which this entry applies.

### 45.10.5 Port Status TLV

Figure 45-13 illustrates the format of the Statistics TLV.

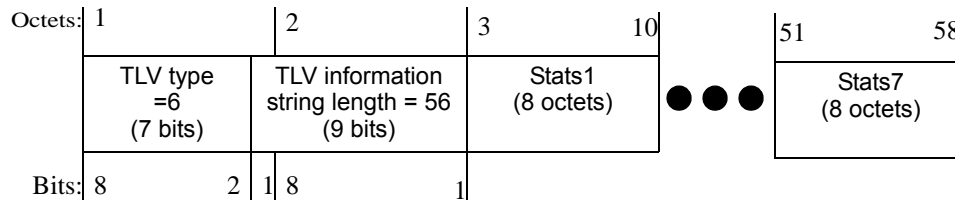


**Figure 45-13—Port Status TLV**

The MO bit is set to one if the value of MAC\_Operational is TRUE and is set to zero if the value of MAC\_Operational is FLASE.

### 45.10.6 Statistics TLV

Figure 45-14 illustrates the format of the Statistics TLV.

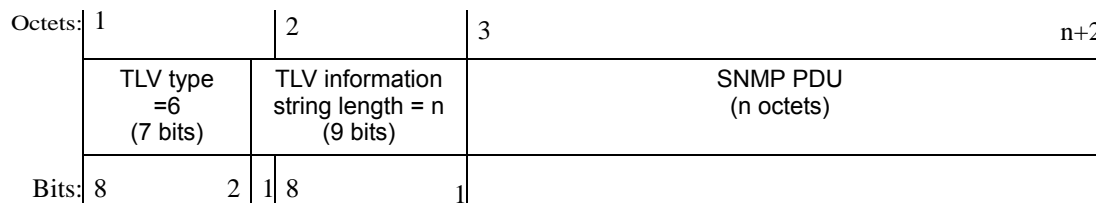


**Figure 45-14—Statistics TLV**

Table 45-10 specifies the content of the fields within the Statistics TLV.

### 45.10.7 SNMP PDU TLV

Figure 45-15 illustrates the format of the SNMP PDU TLV.



**Figure 45-15—SNMP PDU TLV**

The SNMP PDU field contains an SNMP PDU (IETF RFC 1157, IETF RFC 2416, et. seq.).

### 45.10.8 Organizationally Specific TLVs

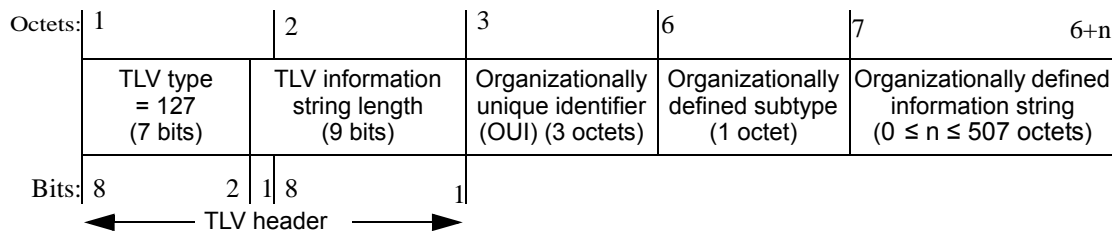
Organizationally Specific TLVs provides a method by which other organizations, such as software and equipment vendors, may define TLVs that extend the capabilities of the PE CSP.

**Table 45-10—Statistics TLV contents**

Field	Contents
Stats1	PortInFrames - count of all valid frames received.
Stats2	PortInOctets - count of the total number of octets in all valid frames received.
Stats3	PortOutFrames- count of frames forwarded to the associated Port.
Stats4	PortInDiscards - count of frames received on the associated port that were discarded for any reason.
Stats5	LackOfBuffersDiscards - count of frames that were otherwise available to transmit via the associated Port, but were discarded due to insufficient buffer space.
Stats6	DelayExceededDiscards - count of frames that were to be transmitted but were discarded due to the maximum bridge transit delay being exceeded.
Stats7	PortOutOctets - count of the total number of octets transmitted.

**45.10.8.1 Basic Organizationally Specific TLV format**

The basic format for Organizationally Specific TLVs is shown in Figure 45-16.



**Figure 45-16—Basic format for Organizationally Specific TLVs**

**45.10.8.2 Organizationally unique identifier (OUI)**

The organizationally unique identifier field contains the defining organization's OUI as defined in Clause 9 of IEEE Std 802.

**45.10.8.3 Organizationally unique subtype**

The organizationally defined subtype field contains a unique subtype value assigned by the defining organization.

Note—Defining organizations are responsible for maintaining listings of organizationally defined subtypes in order to assure uniqueness.



1       **45.10.8.4 Organizationally defined information string**  
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3       The format of the organizationally defined information string is organizationally specific.  
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# Annex A

(normative)

## PICS proforma—Bridge implementations<sup>1</sup>

### A.5 Major capabilities

*Insert the following row at the end of Table A.5:*

PE	Does the implementation support the functionality of a Port Extender?	O	5.21	Yes [ ]	No [ ]
PECB	Does the implementation support the functionality of a Controlling Bridge?	O	5.22	Yes [ ]	No [ ]

*Insert paragraphs and tables A.35 through A.38, renumbering if necessary:*

*Editor's Note: This section is not in sync with the conformance clause. The Port Extender and Controlling Bridge need to be reduced to the major options. For Port Extender the major options are Network Interface Port Extender, Campus Port Extender, Provider Port Extender. For Controlling Bridge the Major options are: Data Center Controlling Bridge, Campus Controlling Bridge and Provider Controlling Bridge.*

### A.35 Port Extender

Item	Feature	Status	References	Support
	If this implementation is not a Port Extender, mark N/A and ignore the rest of this table.			N/A [ ]
PEXT-1	Does the implementation meet the requirements of a conformant implementation listed in 5.21?	M	5.21	Yes [ ]
PEXT-2	Does the implementation support the PE-CSP portocol as specified in clause 45.	CSPPE: M	5.21, Clause 45	Yes [ ]
PEXT-3	Can the Port Extender be configured by a Controlling Bridge using the PE-CSP protocol to provide TESIs?	M	5.21, 8.4, 8.9, 25.10	Yes [ ]
PEXT-4	Are the VIDs associated with ESPs, the ESP-VIDs, allocated to the TE-MSTID?	M	8.9	Yes [ ]
PEXT-5	Is every ESP-VID allocated to a distinct FID?	M	25.10	Yes [ ]

Item	Feature	Status	References	Support
PEXT-6	Does the implementation support 2-Port ERs, C-VLAN components, or S-VLAN components on each Extended Port?	M	5.21	Yes [ ]
PEXT-7	Does the implementation support 2-Port ERs on each Extended Port?	EPR:O	5.21	Yes [ ] No [ ]
PEXT-8	Does the implementation support 2-Port C-VLAN components on each Extended Port?	EPC:O	5.21	Yes [ ] No [ ]
PEXT-9	Does the implementation support 2-Port S-VLAN components on each Extended Port?	EPS:O	5.21	Yes [ ] No [ ]
PEXT-10	Does the implementation support MAC status propagation	M	Clause 23	Yes [ ]

### A.36 Controlling Bridge

Item	Feature	Status	References	Support
	If this implementation does not support Controlling Bridge functionality, mark N/A and ignore the rest of this table.			N/A [ ]
PECB-1	Does the implementation comprise a primary VLAN-aware bridge component that supports the required functionality specified in 5.22?	M	5.22	Yes [ ]
PECB-	Is the primary component a C-VLAN component?	CBC:O	5.22	Yes [ ] No [ ]
PECB-	Is the primary component an S-VLAN component?	CBS:O	5.22	Yes [ ] No [ ]
PECB-2	Does the implementation support the instantiation of one or more CB-BEBs connected as specified in Clause 44?	M	5.22	Yes [ ]
PECB-3	Does the implementation support the Port Extender Control and Status Protocol?	CSPCB: M	5.22, Clause 45	Yes [ ]
PECB-4	Does the implementation implement LLDP (IEEE Std 802.1AB)?	M	5.22	Yes [ ]
PECB-5	Does the implementation implement the LLDP Port Extension TLV (D.2.15)?	M	5.22	Yes [ ]
PECB-7	Does the implementation support the Bridge Port Extension management objects?	O	5.22	Yes [ ] No [ ]
PECB-8	Does the implementation support the IEEE8021-PE MIB module?	O	5.22	Yes [ ] No [ ]
PECB-9	Does the implementation detect the attachment of Port Extenders using LLDP and the LLDP Port Extension TLV?	M	Clause 44	Yes [ ]
PECB-10	Does the implementation perform the required actions for each directly attached Port Extender?	M	44.8	Yes [ ]

**A.36 Controlling Bridge (continued)**

Item	Feature	Status	References	Support
PECB-11	Does the implementation perform the required actions for Upstream Ports	M	44.7	Yes [ ]
PECB-12	Does the implementation perform the required actions for each Extended Port?	M	44.8	Yes [ ]
PECB-13	Does the implementation perform the require actions for each Port Extender Cascade Port?	M	44.9	Yes [ ]
PECB-14	Is the implementation's allocation of E-CIDs for remote replication unique within a replication group?	M	44.14	Yes [ ]
PECB-15	Does the implementation maintain Remote Replication Entries as specified in 44.15.1?	M	44.15.1	Yes [ ]
PECB-16	Does the implementation include the Port Map in the connection_identifier parameter as specified in 44.15?	M	44.15	Yes [ ]
PECB-19	Does the implementation configure Port Extenders for remote replication as required?	M	44.15.2	Yes [ ]

**A.37 PE CSP - Controlling Bridge**

Item	Feature	Status	References	Support
	If this implementation is not a VLAN-aware Bridge component that implements support for Bridge Port Extension, mark N/A and ignore the rest of this table.			N/A [ ]
CSPCB-1	Does the implementation support the state machines as specified in 8.2?	M	45.3	Yes [ ]
CSPCB-2	Does the implementation set all reserved fields to zero and ignore them on receive, unless otherwise specified?	M	45.6	Yes [ ]
CSPCB-3	Does each TLV contain a valid type value?	M	45.6.2	Yes [ ]
CSPCB-4	Does the length field of each TLV contain the length of the information string, in octets?	M	45.6.3	Yes [ ]
CSPCB-5	Is the Command TLV the first TLV in all PE CSP PDUs?	M	45.7	Yes [ ]
CSPCB-6	Is the Command TLV constructed and processed as specified in 8.6?	M	45.7	Yes [ ]
CSPCB-7	Does each PDU contain the required TLVs based on message type?	M	45.7.1	Yes [ ]
CSPCB-8	Is a CSP Open Request Message sent to initialize CSP communication?	M	45.9.1	Yes [ ]

**A.37 PE CSP - Controlling Bridge (continued)**

Item	Feature	Status	References	Support
CSPCB-9	Is a CSP Open Response Message sent after completion of processing a received CSP Open Request Message?	M	45.9.1	Yes [ ]
CSPCB-10	Does the implementation refrain from sending CSP messages other than CSP Open Messages until a CSP Open Response is received?	M	45.9.1	Yes [ ]
CSPCB-11	Does the implementation place the value one in the Index field in CSP Open Messages?	M	45.9.1	Yes [ ]
CSPCB-12	Does the implementation ignore the value in the Index field of received CSP Open Messages?	M	45.9.1	Yes [ ]
CSPCB-13	Does the implementation send an Extended Port Create Response message as specified in response to receiving an Extended Port Create Request message?	M	45.9.2	Yes [ ]
CSPCB-14	Does the implementation send the Extended Port Delete request message to remove an Extended Port from all E-channel member sets?	M	45.9.3	Yes [ ]
CSPCB-15	Does the implementation set the Index field of the Command TLV in Extended Port Delete request messages to the E-CID identifying the E-channel associated with the Port to be deleted?	M	45.9.3	Yes [ ]
CSPCB-16	Does the implementation perform the required processing upon receipt of an Extended Port Delete request?	M	45.9.3	Yes [ ]
CSPCB-17	Does the implementation perform the required processing upon receipt of an Extended Port Delete response?	M	45.9.3	Yes [ ]
CSPCB-18	Does the implementation send a Port Parameters Set request message to a Port Extender to configure the parameters specified in the Port Parameters TLV and/or the VID array TLV for an Extended Port or for the Upstream Port?	M	45.9.4	Yes [ ]
CSPCB-19	Does the implementation set the Index field in the Port Parameters Set request message to the E-channel identifying the Extended or Cascade Port, or to zero to indicate the Upstream Port?	M	45.9.4	Yes [ ]
CSPCB-20	Does the implementation send a Port Parameters Get request message to query the currently configured state for a Port on a Port Extender?	M	45.9.5	Yes [ ]
CSPCB-21	Upon receiving a Port Parameters Get request message, does the implementation send the Port Parameters Get response message to the peer?	M	45.9.5	Yes [ ]
CSPCB-22	Does the implementation set the Index field in the Command TLV of both the request and the response Port Parameters Get messages to the E-CID identifying the Extended or Cascade Port, or to zero to indicate the Upstream Port?	M	45.9.5	Yes [ ]

**A.37 PE CSP - Controlling Bridge (continued)**

Item	Feature	Status	References	Support
CSPCB-23	Does the implementation populate Port Parameters and VID Array TLVs with the parameters applicable to the Port when constructing an Port Parameters Get response message?	M	45.9.5	Yes [ ]
CSPCB-24	Does the implementation, upon reception of a Status Parameter Set, set the MAC_Enabled parameter of the corresponding Extended Port within the internal Port Extender to match the indication (TRUE or FALSE) received in the Port Status PDU?	M	45.9.6	Yes [ ]
CSPCB-25	Does the implementation send a Status Parameter Set response message to the Port Extender with Index field set to the E-channel identifying the Extended or Cascade Port as specified?	M	45.9.6	Yes [ ]
CSPCB-26	Does the implementation send the E-channel Register request message to configure a set of Port Extender Ports within, or to remove them from, the member set of an E-channel?	M	45.9.7	Yes [ ]
CSPCB-27	Does the implementation construct the E-channel Register request message as required?	M	45.9.7	Yes [ ]
CSPCB-28	Does the implementation send the E-channel Registration Get request message to query E-channel member set population?	M	45.9.8	Yes [ ]
CSPCB-29	Does the implementation send the Statistics Clear request message with the Index field of the Command TLV set to the E-CID of an E-channel associated with the Port for which statistics are to be cleared; or 0 to indicate the Upstream Port?	M	45.9.9	Yes [ ]
CSPCB-30	Does the implementation send the Statistics Get request to Port Extenders to retrieve the values of the statistics counters?	M	45.9.10	Yes [ ]
CSPCB-31	Does the implementation set the Index field of the Command TLV of the Statistics Get request message to the E-CID of the E-channel associated with the Port for which statistics are to be gathered; or 0 to indicate the Upstream Port?	M	45.9.10	Yes [ ]
CSPCB-32	Does the implementation send the Transit Delay Set request to Controlling Bridges with the Index field of the Command TLV set to the Transit Delay value in order to set the Port Extender transit delay value?	M	45.9.11	Yes [ ]
CSPCB-33	Does the implementation utilize the SNMP Transfer message to access managed objects using SNMP?	M	45.9.12	Yes [ ]
CSPCB-34	Does the implementation set the Index field of the Command TLV in the SNMP Transfer request message to the version of SNMP being utilized?	M	45.9.12	Yes [ ]

**A.37 PE CSP - Controlling Bridge (continued)**

Item	Feature	Status	References	Support
CSPCB-35	Upon receipt of an SNMP Transfer request message, does the implementation respond with an SNMP Transfer response message?	M	45.9.12	Yes [ ]
CSPCB-36	Does the implementation set the Index field of the Command TLV in the SNMP Transfer response message to the version of SNMP being utilized?	M	45.9.12	Yes [ ]
CSPCB-37	Does the implementation include the SNMP PDU TLV in the SNMP Transfer response message for those SNMP commands that generate a response?	M	45.9.12	Yes [ ]
CSPCB-38	Does the implementation exclude the SNMP PDU TLV in the SNMP Transfer response message for those SNMP commands that do not generate a response?	M	45.9.12	Yes [ ]
CSPCB-39	Does the implementation construct the additional TLVs as specified?	M	45.10	Yes [ ]

**A.38 PE CSP - Port Extender**

Item	Feature	Status	References	Support
	If this implementation is not a Port Extender, mark N/A and ignore the rest of this table.			N/A [ ]
CSPPE-1	Does the implementation support the state machines as specified in 8.2?	M	45.3	Yes [ ]
CSPPE-2	Does the implementation set all reserved fields to zero and ignore them on receive, unless otherwise specified?	M	45.6	Yes [ ]
CSPPE-3	Does each TLV contain a valid type value?	M	45.6.2	Yes [ ]
CSPPE-4	Does the length field of each TLV contain the length of the information string, in octets?	M	45.6.3	Yes [ ]
CSPPE-5	Is the Command TLV the first TLV in all PE CSP PDUs?	M	45.7	Yes [ ]
CSPPE-6	Is the Command TLV constructed and processed as specified in 8.6?	M	45.7	Yes [ ]
CSPPE-7	Does each PDU contain the required TLVs based on message type?	M	45.7.1	Yes [ ]
CSPPE-8	Is a CSP Open Request Message sent to initialize CSP communication?	M	45.9.1	Yes [ ]
CSPPE-9	Is a CSP Open Response Message sent after completion of processing a received CSP Open Request Message?	M	45.9.1	Yes [ ]



**A.38 PE CSP - Port Extender (continued)**

Item	Feature	Status	References	Support
CSPPE-10	Upon receipt of a CSP Open message, does the implementation initialize its parameters as specified in 44-1	M	45.9.1	Yes [ ]
CSPPE-11	Does the implementation refrain from sending CSP messages other than CSP Open Messages until a CSP Open Response is received?	M	45.9.1	Yes [ ]
CSPPE-12	Does the implementation place the value one in the Index field in CSP Open Messages?	M	45.9.1	Yes [ ]
CSPPE-13	Does the implementation ignore the value in the Index field of received CSP Open Messages	M	45.9.1	Yes [ ]
CSPPE-14	Does the implementation send an Extended Port Create message to request a new E-channel binding for an Extended Port with the Index field set to a value identifying the Extended Port?	M	45.9.2	Yes [ ]
CSPPE-15	Does the implementation perform the required processing upon receipt of an Extended Port Create Response message?	M	45.9.2	Yes [ ]
CSPPE-16	Does the implementation send the Extended Port Delete request message to remove an Extended Port from all E-channel member sets?	M	45.9.3	Yes [ ]
CSPPE-17	Does the implementation set the Index field of the Command TLV in Extended Port Delete request messages to the E-CID identifying the E-channel associated with the Port to be deleted?	M	45.9.3	Yes [ ]
CSPPE-18	Does the implementation perform the required processing upon receipt of an Extended Port Delete request?	M	45.9.3	Yes [ ]
CSPPE-19	Does the implementation perform the required processing upon receipt of an Extended Port Delete response?	M	45.9.3	Yes [ ]
CSPPE-20	Upon completion of processing a Port Parameters Set request message, does the implementation send a Port Parameters Set response message with Index field set to the E-channel identifying the Extended or Cascade Port, or to zero to indicate the Upstream Port?	M	45.9.4	Yes [ ]
CSPPE-21	Does the implementation send a Port Parameters Get request message to query the currently configured state for a Port on a Port Extender?	M	45.9.5	Yes [ ]
CSPPE-22	Upon receiving a Port Parameters Get request message, does the implementation send the Port Parameters Get response message to the peer?	M	45.9.5	Yes [ ]
CSPPE-23	Does the implementation set the Index field in the Command TLV of both the request and the response Port Parameters Get messages to the E-CID identifying the Extended or Cascade Port, or to zero to indicate the Upstream Port?	M	45.9.5	Yes [ ]

**A.38 PE CSP - Port Extender (continued)**

Item	Feature	Status	References	Support
CSPPE-24	Does the implementation populate Port Parameters and VID Array TLVs with the parameters applicable to the Port when constructing an Port Parameters Get response message?	M	45.9.5	Yes [ ]
CSPPE-27	Upon receipt of a E-channel Register request message, does the implementation perform the required processing?	M	45.9.7	Yes [ ]
CSPPE-28	Upon receipt of an E-channel Registration Get request, does the implementation send an E-channel Registration Get response containing a Port Array TLV enumerating the Ports that are members of the member set of the E-channel?	M	45.9.8	Yes [ ]
CSPPE-29	Upon receipt of a Statistics Clear request message, does the implementation set all of the statistic counters associated with the indicated Port to zero?	M	45.9.9	Yes [ ]
CSPPE-30	Upon completion of processing a Statistics Clear request message, does the implementation send a Statistics Clear response message with the Index field of the Command TLV set to the E-CID of an E-channel associated with the Port for which statistics have been cleared; or 0 to indicate the Upstream Port.	M	45.9.9	Yes [ ]
CSPPE-31	Upon receipt of a Statistics Get request message, does the implementation send a Statistics Get response message with the Index field set to that received and the Statistics TLV populated with the values from the Port's statistics counters?	M	45.9.10	Yes [ ]
CSPPE-32	Upon receipt of a Transit Delay Set request, does the implementation set the value of the Port Extender transit delay parameter to that in the Index field of the request?	M	45.9.11	Yes [ ]
CSPPE-33	Does the implementation send a Transit Delay Set response to the Controlling Bridge with the Index field of the Command TLV set to that of the request upon completion of setting the transit delay parameter in response to the reception of a Transit Delay Set request?	M	45.9.11	Yes [ ]
CSPPE-34	Does the implementation utilize the SNMP Transfer message to access managed objects using SNMP?	M	45.9.12	Yes [ ]
CSPPE-35	Does the implementation set the Index field of the Command TLV in the SNMP Transfer request message to the version of SNMP being utilized?	M	45.9.12	Yes [ ]
CSPPE-36	Upon receipt of an SNMP Transfer request message, does the implementation respond with an SNMP Transfer response message?	M	45.9.12	Yes [ ]

**A.38 PE CSP - Port Extender (continued)**

Item	Feature	Status	References	Support
CSPPE-37	Does the implementation set the Index field of the Command TLV in the SNMP Transfer response message to the version of SNMP being utilized?	M	45.9.12	Yes [ ]
CSPPE-38	Does the implementation include the SNMP PDU TLV in the SNMP Transfer response message for those SNMP commands that generate a response?	M	45.9.12	Yes [ ]
CSPPE-39	Does the implementation exclude the SNMP PDU TLV in the SNMP Transfer response message for those SNMP commands that do not generate a response?	M	45.9.12	Yes [ ]
CSPPE-40	Does the implementation construct the additional TLVs as specified?	M	45.10	Yes [ ]

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## Annex D

(normative)

### IEEE 802.1 Organizationally Specific TLVs

#### D.1 Requirements of the IEEE 802.1 Organizationally Specific TLV sets

*Insert the Port Extension TLV to table D.1 allocating the next subtype and adjusting the reserved subtypes appropriately:*

Table D.1—IEEE 802.1 Organizationally Specific TLVs

IEEE 802.1 subtype	TLV name	TLV set name	TLV reference	Feature clause reference
TBD	Port Extension	peSet	D.2.15	Clause 44, IEEE Std 802.1BR

#### D.2 Organizationally Specific TLV definitions

*Insert the following at the end of D.2, re-numbering the paragraphs as needed:*

##### D.2.15 Port Extension TLV

The Port Extension TLV is a TLV that allows a Bridge or Port Extender to advertise support for Port Extension on a given Port. Transmission by a Controlling Bridge indicates that the Port is, or is capable of, operating as a Cascade Port. Transmission by a Controlling Bridge through and Extended Port indicates that the Extended Port is, or is capable of, operating as a Cascade Port. Transmission by a Port Extender indicates that the Port is, or is capable of, operating as an Upstream Port. The value of Cascade Port Priority differentiates between Ports that operate as an Upstream Port versus those that operate as a Cascade Port.

Figure D-1 shows the Port Extension TLV format.

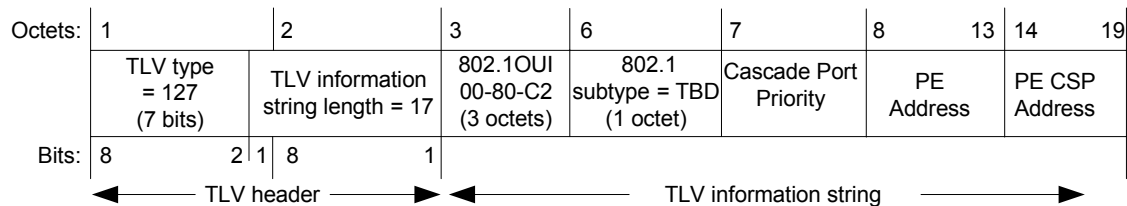


Figure D-1—Port Extension TLV format

##### D.2.15.1 Cascade Port Priority

When transmitted from a Port capable of operating as a cascade Port (e.g. Ports of a Controlling Bridge or Extended Ports of an Extended Bridge), indicates the `cascade_port_priority` used in determining which Port is to be used by a Port Extender as its Upstream Port. Valid values are the range from 0 to 254.

When transmitted from a Port Extender on an Upstream Port or a Port capable of becoming an Upstream Port, this parameter shall be set to 255.

#### D.2.15.2 PE Address

When emitted from a Port Extender, the PE Address contains an unique MAC address that identifies the Port Extender. This may be the same as the PE CSP address.

When emitted from a Controlling Bridge, the PE Address contains an unique MAC address that identifies the internal Port Extender.

#### D.2.15.3 PE CSP Address

Contains the MAC address that is to be used for transmission of the Port Extension Control and Status Protocol to the device emitting this TLV. An unique address is emitted from each Port.

### D.4.2 Structure of the IEEE 802.1/LLDP extension MIB

*Insert the following objects to table D-5 in the groups indicated:*

**Table D-5—IEEE 802.1/LLDP extension MIB object cross reference**

MIB table	MIB object	LLDP reference
<i>Configuration group</i>		
	lldpXdot1PeCofigPortExtensionTable	Augments lldpV2Xdot1LocPortExtensionEntry
	lldpXdot1PeConfigPortExtensionTxEnable	D.2.15
<i>Local system information</i>		
	lldpXdot1PeLocPortExtensionTable	
	lldpV2LocPortIfIndex	(Table index)
	lldpXdot1LocPeCascadePortPriority	D.2.15.1
	lldpXdot1LocPeAddress	D.2.15.2
	lldpXdot1LocPeCSPAddress	D.2.15.3
<i>Remote system information</i>		
	lldpXdot1PeRemPortExtensionTable	
	lldpV2RemTimeMark	(Table index)
	lldpV2RemLocalIfIndex	(Table index)
	lldpV2RemLocalDestMACAddress	(Table index)
	lldpV2RemIndex	(Table index)
	lldpXdot1PeCascadePortPriority	D.2.15.1
	lldpXdot1PeAddress	D.2.15.2
	lldpXdot1PeCSPAddress	D.2.15.3

1  
2  
3  
4 **D.4.4 Security considerations for IEEE 802.1 LLDP extension MIB module**  
5

6 *Insert the following objects to the list in D.4.4 of objects that can result in improper*  
7 *operation of LLDP when in transmit mode, re-lettering the list as appropriate:*  
8

- 9  
10 g) lldpXdot1PeConfigPortExtensionTxEnable  
11 h) lldpXdot1PeLocPECascadePortPriority

12  
13 *Add the following objects to the list in D.4.4 of objects that may be considered sensitive*  
14 *or vulnerable in transmit mode:*  
15

- 16 10) lldpV2Xdot1LocPECascadePortPriority  
17 11) lldpV2Xdot1LocPEAddress  
18 12) lldpV2Xdot1LocPECSPAddress  
19

20 *Add the following objects to the list in D.4.4 of objects that may be considered sensitive*  
21 *or vulnerable in receive mode:*  
22

- 23 10) lldpV2Xdot1RemPECascadePortPriority  
24 11) lldpV2Xdot1RemPEAddress  
25 12) lldpV2Xdot1RemPECSPAddress  
26

27 **D.4.5 IEEE 802.1 LLDP extension MIB module - version 2<sup>51,52</sup>**  
28

29  
30 *Delete the MIB module from D.4.5 and add the following MIB module:*  
31

32 LLDP-EXT-DOT1-V2-MIB DEFINITIONS ::= BEGIN

33  
34 IMPORTS  
35 MODULE-IDENTITY,  
36 OBJECT-TYPE,  
37 Unsigned32  
38 FROM SNMPv2-SMI  
39 TruthValue,  
40 MacAddress,  
41 TEXTUAL-CONVENTION  
42 FROM SNMPv2-TC  
43 SnmpAdminString  
44 FROM SNMP-FRAMEWORK-MIB  
45 MODULE-COMPLIANCE,  
46 OBJECT-GROUP  
47 FROM SNMPv2-CONF  
48 ifGeneralInformationGroup  
49 FROM IF-MIB  
50 lldpV2Extensions,  
51 lldpV2LocPortIfIndex,  
52 lldpV2RemTimeMark,  
53 lldpV2RemLocalIfIndex,  
54 lldpV2RemLocalDestMACAddress,  
lldpV2RemIndex,  
lldpV2PortConfigEntry

```
1          FROM LLDP-V2-MIB
2      VlanId
3          FROM Q-BRIDGE-MIB
4      LldpV2LinkAggStatusMap
5          FROM LLDP-V2-TC-MIB
6      IEEE8021PriorityValue
7          FROM IEEE8021-TC-MIB;
8
9      lldpV2Xdot1MIB MODULE-IDENTITY
10         LAST-UPDATED "201103310000Z" -- March 31, 2011
11         ORGANIZATION "IEEE 802.1 Working Group"
12         CONTACT-INFO
13             "WG-URL: http://grouper.ieee.org/groups/802/1/index.html
14             WG-EMail: STDS-802-1-L@LISTSERV.IEEE.ORG
15
16         Contact: Tony Jeffree
17         Postal: C/O IEEE 802.1 Working Group
18                 IEEE Standards Association
19                 445 Hoes Lane
20                 P.O. Box 1331
21                 Piscataway
22                 NJ 08855-1331
23                 USA
24         E-mail: STDS-802-1-L@LISTSERV.IEEE.ORG"
25     DESCRIPTION
26         "The LLDP Management Information Base extension module for
27         IEEE 802.1 organizationally defined discovery information.
28
29         In order to assure the uniqueness of the LLDP-V2-MIB,
30         lldpV2Xdot1MIB is branched from lldpV2Extensions using an
31         Organizationally Unique Identifier (OUI) value as the node.
32         An OUI is a 24 bit globally unique number assigned by the
33         IEEE Registration Authority - see:
34
35         http://standards.ieee.org/develop/regauth/oui/index.html
36
37         Unless otherwise indicated, the references in this
38         MIB module are to IEEE Std 802.1Q-2011.
39
40         Copyright (C) IEEE (2011). This version of this MIB module
41         is published as Annex D.4.5 of IEEE Std 802.1Qaz-2011;
42         see the standard itself for full legal notices."
43
44     REVISION "201103310000Z" -- March 31, 2011
45     DESCRIPTION
46         "Published as part of P802.1Qbh draft 2.0. Adds the
47         Port Extension objects to the MIB module"
48
49     REVISION "201103250000Z" -- March 25, 2011
50     DESCRIPTION
51         "Published as part of IEEE Std 802.1Qaz-2011. Adds the DCBX
52         objects to the MIB module"
53
54     REVISION "201103230000Z" -- March 23, 2011
```



```
1      DESCRIPTION
2          "Published as part of IEEE Std 802.1Q-2011 revision.
3          This revision contains changes associated with
4          relocating the extension MIB from IEEE Std 802.1AB to
5          IEEE Std 802.1Q, minor tweaks to the text of the
6          DESCRIPTION statement above to fix references to
7          IEEE Std 802.1Q, updating of references to refer to
8          Annex D, and addition of object definitions for
9          Congestion Notification TLVs and corresponding
10         compliance statements."
11
12     REVISION "200906080000Z" -- June 08, 2009
13
14     DESCRIPTION
15         "Published as part of IEEE Std 802.1AB-2009 revision.
16         This revision incorporated changes to the MIB to
17         support the use of LLDP with multiple destination MAC
18         addresses, and to import the Link Aggregation TLV
19         from the 802.3 extension MIB"
20
21     -- OUI for IEEE 802.1 is 32962 (00-80-C2)
22     ::= { lldpV2Extensions 32962 }
23
24     -----
25     --
26     -- Organizationally Defined Information Extension - IEEE 802.1
27     -- Definitions to support the basicSet TLV set (Table D-1)
28     --
29     -----
30     lldpV2Xdot1Objects    OBJECT IDENTIFIER ::= { lldpV2Xdot1MIB 1 }
31
32     -- LLDP IEEE 802.1 extension MIB groups
33     lldpV2Xdot1Config    OBJECT IDENTIFIER ::= { lldpV2Xdot1Objects 1 }
34     lldpV2Xdot1LocalData OBJECT IDENTIFIER ::= { lldpV2Xdot1Objects 2 }
35     lldpV2Xdot1RemoteData OBJECT IDENTIFIER ::= { lldpV2Xdot1Objects 3 }
36
37     -----
38     -- IEEE 802.1 - Configuration for the basicSet TLV set
39     -----
40     --
41     -- lldpV2Xdot1ConfigPortVlanTable : configure the transmission of the
42     --                               Port VLAN-ID TLVs on set of ports.
43     --
44
45     lldpV2Xdot1ConfigPortVlanTable OBJECT-TYPE
46         SYNTAX      SEQUENCE OF LldpV2Xdot1ConfigPortVlanEntry
47         MAX-ACCESS  not-accessible
48         STATUS      current
49         DESCRIPTION
50             "A table that controls selection of LLDP Port VLAN-ID TLVs
51             to be transmitted on individual ports."
52         ::= { lldpV2Xdot1Config 1 }
53
54     lldpV2Xdot1ConfigPortVlanEntry OBJECT-TYPE
55         SYNTAX      LldpV2Xdot1ConfigPortVlanEntry
```

```
1      MAX-ACCESS not-accessible
2      STATUS current
3      DESCRIPTION
4          "LLDP configuration information that controls the
5          transmission of IEEE 802.1 organizationally defined Port
6          VLAN-ID TLV on LLDP transmission capable ports.
7
8          This configuration object augments the
9          lldpV2PortConfigEntry of the LLDP-MIB, therefore it is only
10         present along with the port configuration defined by the
11         associated lldpV2PortConfigEntry entry.
12
13         Each active lldpConfigEntry is restored from non-volatile
14         storage (along with the corresponding
15         lldpV2PortConfigEntry) after a re-initialization of the
16         management system."
17     AUGMENTS { lldpV2PortConfigEntry }
18     ::= { lldpV2Xdot1ConfigPortVlanTable 1 }
19
20 LldpV2Xdot1ConfigPortVlanEntry ::= SEQUENCE {
21     lldpV2Xdot1ConfigPortVlanTxEnable TruthValue
22 }
23
24 lldpV2Xdot1ConfigPortVlanTxEnable OBJECT-TYPE
25     SYNTAX TruthValue
26     MAX-ACCESS read-write
27     STATUS current
28     DESCRIPTION
29         "The lldpV2Xdot1ConfigPortVlanTxEnable, which is defined
30         as a truth value and configured by the network management,
31         determines whether the IEEE 802.1 organizationally defined
32         port VLAN TLV transmission is allowed on a given LLDP
33         transmission capable port.
34
35         The value of this object is restored from non-volatile
36         storage after a re-initialization of the management system."
37     REFERENCE
38         "9.1.2.1 of IEEE Std 802.1AB"
39     DEFVAL { false }
40     ::= { lldpV2Xdot1ConfigPortVlanEntry 1 }
41
42 --
43 -- lldpV2Xdot1ConfigVlanNameTable : configure the transmission of the
44 -- VLAN name instances on set of ports.
45 --
46
47 lldpV2Xdot1ConfigVlanNameTable OBJECT-TYPE
48     SYNTAX SEQUENCE OF LldpV2Xdot1ConfigVlanNameEntry
49     MAX-ACCESS not-accessible
50     STATUS current
51     DESCRIPTION
52         "The table that controls selection of LLDP VLAN name TLV
53         instances to be transmitted on individual ports."
54     ::= { lldpV2Xdot1Config 2 }
55
56 lldpV2Xdot1ConfigVlanNameEntry OBJECT-TYPE
57     SYNTAX LldpV2Xdot1ConfigVlanNameEntry
58     MAX-ACCESS not-accessible
```

```

1      STATUS      current
2      DESCRIPTION
3          "LLDP configuration information that specifies the set of
4          ports (represented as a PortList) on which the Local System
5          VLAN name instance is transmitted.
6
7          This configuration object augments the lldpV2LocVlanEntry,
8          therefore it is only present along with the VLAN Name
9          instance contained in the associated lldpV2LocVlanNameEntry
10         entry.
11
12         Each active lldpV2Xdot1ConfigVlanNameEntry is restored
13         from non-volatile storage (along with the corresponding
14         lldpV2Xdot1LocVlanNameEntry) after a re-initialization of
15         the management system."
16     AUGMENTS { lldpV2Xdot1LocVlanNameEntry }
17     ::= { lldpV2Xdot1ConfigVlanNameTable 1 }
18
19     lldpV2Xdot1ConfigVlanNameEntry ::= SEQUENCE {
20         lldpV2Xdot1ConfigVlanNameTxEnable TruthValue
21     }
22
23     lldpV2Xdot1ConfigVlanNameTxEnable OBJECT-TYPE
24     SYNTAX      TruthValue
25     MAX-ACCESS  read-write
26     STATUS      current
27     DESCRIPTION
28         "The boolean value that indicates whether the corresponding
29         Local System VLAN name instance is transmitted on the
30         port defined by the given lldpV2Xdot1LocVlanNameEntry.
31
32         The value of this object is restored from non-volatile
33         storage after a re-initialization of the management
34         system."
35     REFERENCE
36         "9.1.2.1 of IEEE Std 802.1AB"
37     DEFVAL { false }
38     ::= { lldpV2Xdot1ConfigVlanNameEntry 1 }
39
40     --
41     -- lldpV2Xdot1ConfigProtoVlanTable : configure the transmission of the
42     --                                 protocol VLAN instances on set
43     --                                 of ports.
44     --
45     lldpV2Xdot1ConfigProtoVlanTable OBJECT-TYPE
46     SYNTAX      SEQUENCE OF LldpV2Xdot1ConfigProtoVlanEntry
47     MAX-ACCESS  not-accessible
48     STATUS      current
49     DESCRIPTION
50         "The table that controls selection of LLDP Port and
51         Protocol VLAN ID TLV instances to be transmitted on
52         individual ports."
53     ::= { lldpV2Xdot1Config 3 }
54
55     lldpV2Xdot1ConfigProtoVlanEntry OBJECT-TYPE

```

```
1      SYNTAX      LldpV2Xdot1ConfigProtoVlanEntry
2      MAX-ACCESS  not-accessible
3      STATUS      current
4      DESCRIPTION
5          "LLDP configuration information that specifies the set of
6          ports (represented as a PortList) on which the Local System
7          Protocol VLAN instance is transmitted.
8
9          This configuration object augments the
10         lldpV2Xdot1LocVlanEntry, therefore it is only present along
11         with the Port and Protocol VLAN ID instance contained in
12         the associated lldpV2Xdot1LocVlanEntry entry.
13
14         Each active lldpV2Xdot1ConfigProtoVlanEntry is restored
15         from non-volatile storage (along with the corresponding
16         lldpV2Xdot1LocProtoVlanEntry) after a re-initialization of
17         the management system."
18
19     AUGMENTS { lldpV2Xdot1LocProtoVlanEntry }
20     ::= { lldpV2Xdot1ConfigProtoVlanTable 1 }
21
22 LldpV2Xdot1ConfigProtoVlanEntry ::= SEQUENCE {
23     lldpV2Xdot1ConfigProtoVlanTxEnable  TruthValue
24 }
25
26 lldpV2Xdot1ConfigProtoVlanTxEnable OBJECT-TYPE
27     SYNTAX      TruthValue
28     MAX-ACCESS  read-write
29     STATUS      current
30     DESCRIPTION
31         "The boolean value that indicates whether the corresponding
32         Local System Port and Protocol VLAN instance is
33         transmitted on the port defined by the given
34         lldpV2Xdot1LocProtoVlanEntry.
35
36         The value of this object is restored from non-volatile
37         storage after a re-initialization of the management system."
38     REFERENCE
39         "9.1.2.1 of IEEE Std 802.1AB"
40     DEFVAL { false }
41     ::= { lldpV2Xdot1ConfigProtoVlanEntry 1 }
42
43 --
44 -- lldpV2Xdot1ConfigProtocolTable : configure the transmission of the
45 --                                 protocol instances on set
46 --                                 of ports.
47 --
48
49 lldpV2Xdot1ConfigProtocolTable OBJECT-TYPE
50     SYNTAX      SEQUENCE OF LldpV2Xdot1ConfigProtocolEntry
51     MAX-ACCESS  not-accessible
52     STATUS      current
53     DESCRIPTION
54         "The table that controls selection of LLDP Protocol
55         TLV instances to be transmitted on individual ports."
56     ::= { lldpV2Xdot1Config 4 }
```

```

1  lldpV2Xdot1ConfigProtocolEntry OBJECT-TYPE
2      SYNTAX      LldpV2Xdot1ConfigProtocolEntry
3      MAX-ACCESS  not-accessible
4      STATUS      current
5      DESCRIPTION
6          "LLDP configuration information that specifies the set of
7          ports (represented as a PortList) on which the Local System
8          Protocol instance is transmitted.
9
10         This configuration object augments the
11         lldpV2Xdot1LocProtoEntry, therefore it is only present
12         along with the Protocol instance contained in the
13         associated lldpV2Xdot1LocProtoEntry entry.
14
15         Each active lldpV2Xdot1ConfigProtocolEntry is restored
16         from non-volatile storage (along with the corresponding
17         lldpV2Xdot1LocProtocolEntry) after a re-initialization of
18         the management system."
19      AUGMENTS { lldpV2Xdot1LocProtocolEntry }
20      ::= { lldpV2Xdot1ConfigProtocolTable 1 }
21
22  lldpV2Xdot1ConfigProtocolEntry ::= SEQUENCE {
23      lldpV2Xdot1ConfigProtocolTxEnable  TruthValue
24  }
25
26  lldpV2Xdot1ConfigProtocolTxEnable OBJECT-TYPE
27      SYNTAX      TruthValue
28      MAX-ACCESS  read-write
29      STATUS      current
30      DESCRIPTION
31          "The boolean value that indicates whether the corresponding
32          Local System Protocol Identity instance is transmitted
33          on the port defined by the given
34          lldpV2Xdot1LocProtocolEntry.
35
36          The value of this object is restored from non-volatile
37          storage after a re-initialization of the management
38          system."
39      REFERENCE
40          "9.1.2.1 of IEEE Std 802.1AB"
41      DEFVAL { false }
42      ::= { lldpV2Xdot1ConfigProtocolEntry 1 }
43
44  --
45  -- lldpV2Xdot1ConfigVidUsageDigestTable: configure the transmission
46  -- of the VID Usage Digest TLVs on set of ports.
47  --
48  lldpV2Xdot1ConfigVidUsageDigestTable OBJECT-TYPE
49      SYNTAX SEQUENCE OF LldpV2Xdot1ConfigVidUsageDigestEntry
50      MAX-ACCESS not-accessible
51      STATUS current
52      DESCRIPTION
53          "A table that controls selection of LLDP VID Usage Digest
54          TLVs to be transmitted on individual ports."
55      ::= { lldpV2Xdot1Config 5 }
56
57  lldpV2Xdot1ConfigVidUsageDigestEntry OBJECT-TYPE
58      SYNTAX LldpV2Xdot1ConfigVidUsageDigestEntry

```

```
1      MAX-ACCESS not-accessible
2      STATUS current
3      DESCRIPTION
4          "LLDP configuration information that specifies the set of
5          ports (represented as a PortList) on which the local
6          system VID Usage Digest instance will be transmitted.
7          This configuration object augments the
8          lldpLocVidUsageDigestEntry, therefore it is only present
9          along with the VID Usage Digest instance
10         contained in the associated lldpV2Xdot1LocVidUsageDigestEntry
11         entry. Each active lldpConfigVidUsageDigestEntry must be
12         restored from non-volatile storage and re-created (along with
13         the corresponding lldpV2Xdot1LocVidUsageDigestEntry) after
14         a re-initialization of the management system."
15     AUGMENTS { lldpV2Xdot1LocVidUsageDigestEntry }
16 ::= { lldpV2Xdot1ConfigVidUsageDigestTable 1 }
17
18 LldpV2Xdot1ConfigVidUsageDigestEntry ::= SEQUENCE {
19     lldpV2Xdot1ConfigVidUsageDigestTxEnable TruthValue
20 }
21
22 lldpV2Xdot1ConfigVidUsageDigestTxEnable OBJECT-TYPE
23     SYNTAX TruthValue
24     MAX-ACCESS read-write
25     STATUS current
26     DESCRIPTION
27         "The boolean value that indicates whether the corresponding
28         Local System VID Usage Digest instance will be transmitted
29         on the port defined by the given
30         lldpV2Xdot1LocVidUsageDigestEntry. The value of this object
31         must be restored from non-volatile storage after a
32         reinitialization of the management system."
33     REFERENCE
34         "9.1.2.1 of IEEE Std 802.1AB"
35     DEFVAL { false }
36 ::= { lldpV2Xdot1ConfigVidUsageDigestEntry 1 }
37
38 --
39 -- lldpV2Xdot1ConfigManVidTable : configure the transmission of the
40 -- Management VID TLVs on set of ports.
41 --
42 lldpV2Xdot1ConfigManVidTable OBJECT-TYPE
43     SYNTAX SEQUENCE OF LldpV2Xdot1ConfigManVidEntry
44     MAX-ACCESS not-accessible
45     STATUS current
46     DESCRIPTION
47         "A table that controls selection of LLDP Management VID
48         TLVs to be transmitted on individual ports."
49 ::= { lldpV2Xdot1Config 6 }
50
51 lldpV2Xdot1ConfigManVidEntry OBJECT-TYPE
52     SYNTAX LldpV2Xdot1ConfigManVidEntry
53     MAX-ACCESS not-accessible
54     STATUS current
55     DESCRIPTION
56         "LLDP configuration information that specifies the set of
57         port/destination address pairs on which the Local
58         System Management VID will be transmitted."
```

```

1      This configuration object augments the
2      lldpV2Xdot1LocManVidEntry, therefore it is
3      only present along with the Management VID contained
4      in the associated lldpV2Xdot1LocManVidEntry entry.
5      Each active lldpV2Xdot1ConfigManVidEntry must be
6      restored from non-volatile storage (along with the
7      corresponding lldpV2Xdot1LocManVidEntry) after a
8      re-initialization of the management system."
9      AUGMENTS { lldpV2Xdot1LocManVidEntry }
10     ::= { lldpV2Xdot1ConfigManVidTable 1 }
11
12     lldpV2Xdot1ConfigManVidEntry ::= SEQUENCE {
13         lldpV2Xdot1ConfigManVidTxEnable TruthValue
14     }
15
16     lldpV2Xdot1ConfigManVidTxEnable OBJECT-TYPE
17     SYNTAX TruthValue
18     MAX-ACCESS read-write
19     STATUS current
20     DESCRIPTION
21         "The lldpV2Xdot1ConfigManVidTxEnable, which is defined as a
22         truth value and configured by the network management,
23         determines whether the IEEE 802.1 organizationally
24         defined Management VID TLV transmission is allowed on a given
25         LLDP transmission capable port.
26         The value of this object must be restored from
27         non-volatile storage after a re-initialization of the
28         management system."
29     REFERENCE
30         "9.1.2.1 of IEEE Std 802.1AB"
31     DEFVAL { false }
32     ::= { lldpV2Xdot1ConfigManVidEntry 1 }
33
34     -----
35     -- IEEE 802.1 - Local System Information
36     -----
37
38     --
39     -- lldpV2Xdot1LocTable - indexed by ifIndex.
40     --
41
42     lldpV2Xdot1LocTable OBJECT-TYPE
43     SYNTAX SEQUENCE OF LldpV2Xdot1LocEntry
44     MAX-ACCESS not-accessible
45     STATUS current
46     DESCRIPTION
47         "This table contains one row per port for IEEE 802.1
48         organizationally defined LLDP extension on the local system
49         known to this agent."
50     ::= { lldpV2Xdot1LocalData 1 }
51
52     lldpV2Xdot1LocEntry OBJECT-TYPE
53     SYNTAX LldpV2Xdot1LocEntry
54     MAX-ACCESS not-accessible
55     STATUS current
56     DESCRIPTION
57         "Information about IEEE 802.1 organizationally defined
58         LLDP extension."

```

```
1      INDEX { lldpV2LocPortIfIndex }
2      ::= { lldpV2Xdot1LocTable 1 }
3
4      LldpV2Xdot1LocEntry ::= SEQUENCE {
5          lldpV2Xdot1LocPortVlanId      Unsigned32
6      }
7
8      lldpV2Xdot1LocPortVlanId OBJECT-TYPE
9      SYNTAX      Unsigned32(0|1..4094)
10     MAX-ACCESS  read-only
11     STATUS      current
12     DESCRIPTION
13         "The integer value used to identify the port's VLAN
14         identifier associated with the local system.  A value
15         of zero shall be used if the system either does not know
16         the PVID or does
17         not support port-based VLAN operation."
18     REFERENCE
19         "D.2.1.1"
20     ::= { lldpV2Xdot1LocEntry 1 }
21
22     --
23     -- lldpV2Xdot1LocProtoVlanTable: Port and Protocol VLAN information
24     -- re-indexed by ifIndex.
25     --
26
27     lldpV2Xdot1LocProtoVlanTable OBJECT-TYPE
28     SYNTAX      SEQUENCE OF LldpV2Xdot1LocProtoVlanEntry
29     MAX-ACCESS  not-accessible
30     STATUS      current
31     DESCRIPTION
32         "This table contains one or more rows per Port and Protocol
33         VLAN information about the local system."
34     ::= { lldpV2Xdot1LocalData 2 }
35
36     lldpV2Xdot1LocProtoVlanEntry OBJECT-TYPE
37     SYNTAX      LldpV2Xdot1LocProtoVlanEntry
38     MAX-ACCESS  not-accessible
39     STATUS      current
40     DESCRIPTION
41         "Port and protocol VLAN ID Information about a particular
42         port component.  There may be multiple port and protocol
43         VLANs, identified by a particular
44         lldpV2Xdot1LocProtoVlanId, configured on the given port."
45     INDEX      { lldpV2LocPortIfIndex,
46                 lldpV2Xdot1LocProtoVlanId }
47     ::= { lldpV2Xdot1LocProtoVlanTable 1 }
48
49     LldpV2Xdot1LocProtoVlanEntry ::= SEQUENCE {
50         lldpV2Xdot1LocProtoVlanId      Unsigned32,
51         lldpV2Xdot1LocProtoVlanSupported TruthValue,
52         lldpV2Xdot1LocProtoVlanEnabled TruthValue
53     }
54
55     lldpV2Xdot1LocProtoVlanId OBJECT-TYPE
56     SYNTAX      Unsigned32(0|1..4094)
57     MAX-ACCESS  not-accessible
```



```

1      STATUS      current
2      DESCRIPTION
3          "The integer value used to identify the port and protocol
4          VLANs associated with the given port associated with the
5          local system. A value of zero shall be used if the system
6          either does not know the protocol VLAN ID (PPVID) or does
7          not support port and protocol VLAN operation."
8      REFERENCE
9          "D.2.2.2"
10     ::= { lldpV2Xdot1LocProtoVlanEntry 1 }
11
12 lldpV2Xdot1LocProtoVlanSupported OBJECT-TYPE
13     SYNTAX      TruthValue
14     MAX-ACCESS  read-only
15     STATUS      current
16     DESCRIPTION
17         "The truth value used to indicate whether the given port
18         (associated with the local system) supports port and
19         protocol VLANs."
20     REFERENCE
21         "D.2.2.1"
22     ::= { lldpV2Xdot1LocProtoVlanEntry 2 }
23
24 lldpV2Xdot1LocProtoVlanEnabled OBJECT-TYPE
25     SYNTAX      TruthValue
26     MAX-ACCESS  read-only
27     STATUS      current
28     DESCRIPTION
29         "The truth value used to indicate whether the port and
30         protocol VLANs are enabled on the given port associated
31         with the local system."
32     REFERENCE
33         "D.2.2.1"
34     ::= { lldpV2Xdot1LocProtoVlanEntry 3 }
35
36 --
37 -- lldpV2Xdot1LocVlanNameTable : VLAN name information about the local
38 -- system indexed by ifIndex.
39 --
40 lldpV2Xdot1LocVlanNameTable OBJECT-TYPE
41     SYNTAX      SEQUENCE OF LldpV2Xdot1LocVlanNameEntry
42     MAX-ACCESS  not-accessible
43     STATUS      current
44     DESCRIPTION
45         "This table contains one or more rows per IEEE 802.1Q VLAN
46         name information on the local system known to this agent."
47     ::= { lldpV2Xdot1LocalData 3 }
48
49 lldpV2Xdot1LocVlanNameEntry OBJECT-TYPE
50     SYNTAX      LldpV2Xdot1LocVlanNameEntry
51     MAX-ACCESS  not-accessible
52     STATUS      current
53     DESCRIPTION
54         "VLAN name Information about a particular port component.
55         There may be multiple VLANs, identified by a particular
56         lldpV2Xdot1LocVlanId, configured on the given port."

```

```
1      INDEX    { lldpV2LocPortIfIndex,
2                lldpV2Xdot1LocVlanId }
3      ::= { lldpV2Xdot1LocVlanNameTable 1 }
4
5      lldpV2Xdot1LocVlanNameEntry ::= SEQUENCE {
6          lldpV2Xdot1LocVlanId      VlanId,
7          lldpV2Xdot1LocVlanName    SnmpAdminString
8      }
9
10     lldpV2Xdot1LocVlanId OBJECT-TYPE
11     SYNTAX      VlanId
12     MAX-ACCESS  not-accessible
13     STATUS      current
14     DESCRIPTION
15         "The integer value used to identify the IEEE 802.1Q
16         VLAN IDs with which the given port is compatible."
17     REFERENCE
18         "D.2.3.2"
19     ::= { lldpV2Xdot1LocVlanNameEntry 1 }
20
21     lldpV2Xdot1LocVlanName OBJECT-TYPE
22     SYNTAX      SnmpAdminString (SIZE(1..32))
23     MAX-ACCESS  read-only
24     STATUS      current
25     DESCRIPTION
26         "The string value used to identify VLAN name identified
27         by the Vlan Id associated with the given port on the
28         local system.
29
30         This object should contain the value of the
31         dot1QVLANStaticName object (defined in IETF RFC 4363)
32         identified with the given lldpV2Xdot1LocVlanId."
33     REFERENCE
34         "D.2.3.4"
35     ::= { lldpV2Xdot1LocVlanNameEntry 2 }
36
37     --
38     -- lldpV2Xdot1LocProtocolTable : Protocol Identity information
39     -- re-indexed by ifIndex and destination address
40     --
41     lldpV2Xdot1LocProtocolTable OBJECT-TYPE
42     SYNTAX      SEQUENCE OF LldpV2Xdot1LocProtocolEntry
43     MAX-ACCESS  not-accessible
44     STATUS      current
45     DESCRIPTION
46         "This table contains one or more rows per protocol identity
47         information on the local system known to this agent."
48     REFERENCE
49         "D.2.4"
50     ::= { lldpV2Xdot1LocalData 4 }
51
52     lldpV2Xdot1LocProtocolEntry OBJECT-TYPE
53     SYNTAX      LldpV2Xdot1LocProtocolEntry
54     MAX-ACCESS  not-accessible
55     STATUS      current
56     DESCRIPTION
```

```
1           "Information about particular protocols that are accessible
2           through the given port component.
3
4           There may be multiple protocols, identified by particular
5           lldpV2Xdot1ProtocolIndex, lldpV2LocPortIfIndex"
6 REFERENCE
7           "D.2.4"
8 INDEX    { lldpV2LocPortIfIndex,
9           lldpV2Xdot1LocProtocolIndex }
10 ::= { lldpV2Xdot1LocProtocolTable 1 }
11
12 lldpV2Xdot1LocProtocolEntry ::= SEQUENCE {
13     lldpV2Xdot1LocProtocolIndex Unsigned32,
14     lldpV2Xdot1LocProtocolId    OCTET STRING
15 }
16
17 lldpV2Xdot1LocProtocolIndex OBJECT-TYPE
18     SYNTAX      Unsigned32(1..2147483647)
19     MAX-ACCESS  not-accessible
20     STATUS      current
21     DESCRIPTION
22         "This object represents an arbitrary local integer value
23         used by this agent to identify a particular protocol
24         identity."
25     ::= { lldpV2Xdot1LocProtocolEntry 1 }
26
27 lldpV2Xdot1LocProtocolId OBJECT-TYPE
28     SYNTAX      OCTET STRING (SIZE (1..255))
29     MAX-ACCESS  read-only
30     STATUS      current
31     DESCRIPTION
32         "The octet string value used to identify the protocols
33         associated with the given port of the local system."
34     REFERENCE
35         "D.2.4.3"
36     ::= { lldpV2Xdot1LocProtocolEntry 2 }
37
38 --
39 -- lldpV2Xdot1LocVidUsageDigestTable: Table of hash values of
40 -- system VID Usage Table transmitted
41 -- via VID Usage Digest TLV.
42 --
43
44 lldpV2Xdot1LocVidUsageDigestTable OBJECT-TYPE
45     SYNTAX      SEQUENCE OF LldpV2Xdot1LocVidUsageDigestEntry
46     MAX-ACCESS  not-accessible
47     STATUS      current
48     DESCRIPTION
49         "This table contains one row per ifIndex/
50         destination MAC address pair for usage digest
51         information on the local system known to this agent."
52     REFERENCE
53         "D.2.5"
54     ::= { lldpV2Xdot1LocalData 5 }
55
56 lldpV2Xdot1LocVidUsageDigestEntry OBJECT-TYPE
57     SYNTAX      LldpV2Xdot1LocVidUsageDigestEntry
```

```
1      MAX-ACCESS not-accessible
2      STATUS current
3      DESCRIPTION
4          "Usage digest information to be transmitted
5          through the given port."
6      REFERENCE
7          "D.2.5"
8      INDEX { lldpV2LocPortIfIndex }
9      ::= { lldpV2Xdot1LocVidUsageDigestTable 1 }
10
11 LldpV2Xdot1LocVidUsageDigestEntry ::= SEQUENCE {
12     lldpV2Xdot1LocVidUsageDigest Unsigned32
13 }
14
15 lldpV2Xdot1LocVidUsageDigest OBJECT-TYPE
16     SYNTAX Unsigned32
17     MAX-ACCESS read-only
18     STATUS current
19     DESCRIPTION
20         "The integer value obtained by applying the CRC32 function
21         to the 128-octet VID Usage Table. A bit of the VID Usage
22         Table contains the value PBB-TE-USAGE (binary 1) if the
23         corresponding element of the MST Configuration Table
24         (IEEE Std 802.1Q 8.9.1) contains the value PBB-TE MSTID
25         (hex FFE) and otherwise contains the value NON-PBB-TE-USAGE
26         (binary 0)."
```

```
26     REFERENCE
27         "D.2.5.1"
28     ::= { lldpV2Xdot1LocVidUsageDigestEntry 1 }
29
30 --
31 -- lldpV2Xdot1LocManVidTable: Table of values configured on the Local
32 -- system for the Management VID, or the value 0 if a Management VID
33 -- has not been provisioned.
34 --
35 lldpV2Xdot1LocManVidTable OBJECT-TYPE
36     SYNTAX SEQUENCE OF LldpV2Xdot1LocManVidEntry
37     MAX-ACCESS not-accessible
38     STATUS current
39     DESCRIPTION
40         "This table contains one row per ifIndex/
41         destination MAC address pair for usage digest
42         information on the local system known to this agent."
43     REFERENCE
44         "D.2.6"
45     ::= { lldpV2Xdot1LocalData 6 }
46
47 lldpV2Xdot1LocManVidEntry OBJECT-TYPE
48     SYNTAX LldpV2Xdot1LocManVidEntry
49     MAX-ACCESS not-accessible
50     STATUS current
51     DESCRIPTION
52         "Usage digest information to be transmitted
53         through the given port."
54     REFERENCE
55         "D.2.6"
56     INDEX { lldpV2LocPortIfIndex }
```

```

1      ::= { lldpV2Xdot1LocManVidTable 1 }
2
3      LldpV2Xdot1LocManVidEntry ::= SEQUENCE {
4          lldpV2Xdot1LocManVid Unsigned32
5      }
6
7      lldpV2Xdot1LocManVid OBJECT-TYPE
8          SYNTAX Unsigned32 (0|1..4094)
9          MAX-ACCESS read-only
10         STATUS current
11         DESCRIPTION
12             "The integer value configured on the Local system for
13             the Management VID, or
14             the value 0 if a Management VID has not been provisioned."
15         REFERENCE
16             "D.2.6.1"
17     ::= { lldpV2Xdot1LocManVidEntry 1 }
18
19     -----
20     -- IEEE 802.1 - Local System Information - Link Aggregation
21     -----
22     ---
23     ---
24     --- lldpV2Xdot1LocLinkAggTable: Link Aggregation Information Table
25     ---
26     ---
27     lldpV2Xdot1LocLinkAggTable OBJECT-TYPE
28         SYNTAX      SEQUENCE OF LldpV2Xdot1LocLinkAggEntry
29         MAX-ACCESS  not-accessible
30         STATUS      current
31         DESCRIPTION
32             "This table contains one row per port of link aggregation
33             information (as a part of the LLDP 802.1 organizational
34             extension) on the local system known to this agent."
35     ::= { lldpV2Xdot1LocalData 7 }
36
37     lldpV2Xdot1LocLinkAggEntry OBJECT-TYPE
38         SYNTAX      LldpV2Xdot1LocLinkAggEntry
39         MAX-ACCESS  not-accessible
40         STATUS      current
41         DESCRIPTION
42             "Link Aggregation information about a particular port
43             component."
44         INDEX      { lldpV2LocPortIfIndex }
45     ::= { lldpV2Xdot1LocLinkAggTable 1 }
46
47     LldpV2Xdot1LocLinkAggEntry ::= SEQUENCE {
48         lldpV2Xdot1LocLinkAggStatus      LldpV2LinkAggStatusMap,
49         lldpV2Xdot1LocLinkAggPortId      Unsigned32
50     }
51
52     lldpV2Xdot1LocLinkAggStatus OBJECT-TYPE
53         SYNTAX      LldpV2LinkAggStatusMap
54         MAX-ACCESS  read-only
55         STATUS      current
56         DESCRIPTION
57             "The bitmap value contains the link aggregation

```

```
1             capabilities and the current aggregation status of the
2             link."
3     REFERENCE
4             "D.2.7.1"
5     ::= { lldpV2Xdot1LocLinkAggEntry 1 }
6
7     lldpV2Xdot1LocLinkAggPortId OBJECT-TYPE
8     SYNTAX      Unsigned32(0|1..2147483647)
9     MAX-ACCESS  read-only
10    STATUS      current
11    DESCRIPTION
12            "This object contains the IEEE 802.1 aggregated port
13            identifier, aAggPortID (IEEE Std 802.1AX, 6.3.2.1.1),
14            derived from the ifNumber of the ifIndex for the port
15            component in link aggregation.
16
17            If the port is not in link aggregation state and/or it
18            does not support link aggregation, this value should be set
19            to zero."
20    REFERENCE
21            "D.2.7.1"
22    ::= { lldpV2Xdot1LocLinkAggEntry 2 }
23
24    -----
25    -- IEEE 802.1 - Remote System Information
26    -----
27
28    --
29    -- lldpV2Xdot1RemTable - re-indexed for ifIndex and destination MAC
30    -- address
31
32    lldpV2Xdot1RemTable OBJECT-TYPE
33    SYNTAX      SEQUENCE OF LldpV2Xdot1RemEntry
34    MAX-ACCESS  not-accessible
35    STATUS      current
36    DESCRIPTION
37            "This table contains one or more rows per physical network
38            connection known to this agent. The agent may wish to
39            ensure that only one lldpV2Xdot1RemEntry is present for
40            each local port, or it may choose to maintain multiple
41            lldpV2Xdot1RemEntries for the same local port."
42    ::= { lldpV2Xdot1RemoteData 1 }
43
44    lldpV2Xdot1RemEntry OBJECT-TYPE
45    SYNTAX      LldpV2Xdot1RemEntry
46    MAX-ACCESS  not-accessible
47    STATUS      current
48    DESCRIPTION
49            "Information about a particular port component."
50    INDEX      { lldpV2RemTimeMark,
51                lldpV2RemLocalIfIndex,
52                lldpV2RemLocalDestMACAddress,
53                lldpV2RemIndex }
54    ::= { lldpV2Xdot1RemTable 1 }
55
56    LldpV2Xdot1RemEntry ::= SEQUENCE {
57        lldpV2Xdot1RemPortVlanId          Unsigned32
```

```

1      }
2
3      lldpV2Xdot1RemPortVlanId OBJECT-TYPE
4          SYNTAX      Unsigned32(0|1..4094)
5          MAX-ACCESS  read-only
6          STATUS      current
7          DESCRIPTION
8              "The integer value used to identify the port's VLAN
9              identifier associated with the remote system.  if the
10             remote system either does not know the PVID or does not
11             support port-based VLAN operation, the value of
12             lldpV2Xdot1RemPortVlanId should be zero."
13
14             REFERENCE
15                 "D.2.1.1"
16             ::= { lldpV2Xdot1RemEntry 1 }
17
18     --
19     -- lldpV2Xdot1RemProtoVlanTable - re-indexed by ifIndex and
20     -- destination MAC address
21     --
22     lldpV2Xdot1RemProtoVlanTable OBJECT-TYPE
23         SYNTAX      SEQUENCE OF LldpV2Xdot1RemProtoVlanEntry
24         MAX-ACCESS  not-accessible
25         STATUS      current
26         DESCRIPTION
27             "This table contains one or more rows per Port and Protocol
28             VLAN information about the remote system, received on the
29             given port."
30         ::= { lldpV2Xdot1RemoteData 2 }
31
32     lldpV2Xdot1RemProtoVlanEntry OBJECT-TYPE
33         SYNTAX      LldpV2Xdot1RemProtoVlanEntry
34         MAX-ACCESS  not-accessible
35         STATUS      current
36         DESCRIPTION
37             "Port and protocol VLAN name Information about a particular
38             port component.  There may be multiple protocol VLANs,
39             identified by a particular lldpV2Xdot1RemProtoVlanId,
40             configured on the remote system."
41         INDEX      { lldpV2RemTimeMark,
42                     lldpV2RemLocalIfIndex,
43                     lldpV2RemLocalDestMACAddress,
44                     lldpV2RemIndex,
45                     lldpV2Xdot1RemProtoVlanId }
46         ::= { lldpV2Xdot1RemProtoVlanTable 1 }
47
48     LldpV2Xdot1RemProtoVlanEntry ::= SEQUENCE {
49         lldpV2Xdot1RemProtoVlanId      Unsigned32,
50         lldpV2Xdot1RemProtoVlanSupported TruthValue,
51         lldpV2Xdot1RemProtoVlanEnabled TruthValue
52     }
53
54     lldpV2Xdot1RemProtoVlanId OBJECT-TYPE
55         SYNTAX      Unsigned32(0|1..4094)
56         MAX-ACCESS  not-accessible
57         STATUS      current

```

```
1      DESCRIPTION
2          "The integer value used to identify the port and protocol
3          VLANs associated with the given port associated with the
4          remote system.
5
6          If port and protocol VLANs are not supported on the given
7          port associated with the remote system, or if the port is
8          not enabled with any port and protocol VLAN, the value of
9          lldpV2Xdot1RemProtoVlanId should be zero."
10     REFERENCE
11         "D.2.2.2"
12     ::= { lldpV2Xdot1RemProtoVlanEntry 1 }
13
14 lldpV2Xdot1RemProtoVlanSupported OBJECT-TYPE
15     SYNTAX      TruthValue
16     MAX-ACCESS  read-only
17     STATUS      current
18     DESCRIPTION
19         "The truth value used to indicate whether the given port
20         (associated with the remote system) is capable of
21         supporting port and protocol VLANs."
22     REFERENCE
23         "D.2.2.1"
24     ::= { lldpV2Xdot1RemProtoVlanEntry 2 }
25
26 lldpV2Xdot1RemProtoVlanEnabled OBJECT-TYPE
27     SYNTAX      TruthValue
28     MAX-ACCESS  read-only
29     STATUS      current
30     DESCRIPTION
31         "The truth value used to indicate whether the port and
32         protocol VLANs are enabled on the given port associated
33         with
34         the remote system."
35     REFERENCE
36         "D.2.2.1"
37     ::= { lldpV2Xdot1RemProtoVlanEntry 3 }
38
39 --
40 -- lldpV2Xdot1RemVlanNameTable : VLAN name information of the remote
41 --                               systems
42 -- Re-indexed by ifIndex and destination MAC address
43 --
44 lldpV2Xdot1RemVlanNameTable OBJECT-TYPE
45     SYNTAX      SEQUENCE OF LldpV2Xdot1RemVlanNameEntry
46     MAX-ACCESS  not-accessible
47     STATUS      current
48     DESCRIPTION
49         "This table contains one or more rows per IEEE 802.1Q VLAN
50         name information about the remote system, received on the
51         given port."
52     REFERENCE
53         "D.2.3"
54     ::= { lldpV2Xdot1RemoteData 3 }
55
56 lldpV2Xdot1RemVlanNameEntry OBJECT-TYPE
```



```

1      SYNTAX      LldpV2Xdot1RemVlanNameEntry
2      MAX-ACCESS  not-accessible
3      STATUS      current
4      DESCRIPTION
5          "VLAN name Information about a particular port component.
6          There may be multiple VLANs, identified by a particular
7          lldpV2Xdot1RemVlanId, received on the given port."
8      INDEX      { lldpV2RemTimeMark,
9                  lldpV2RemLocalIfIndex,
10                 lldpV2RemLocalDestMACAddress,
11                 lldpV2RemIndex,
12                 lldpV2Xdot1RemVlanId }
13
14      ::= { lldpV2Xdot1RemVlanNameTable 1 }
15
16      LldpV2Xdot1RemVlanNameEntry ::= SEQUENCE {
17          lldpV2Xdot1RemVlanId      VlanId,
18          lldpV2Xdot1RemVlanName    SnmpAdminString
19      }
20
21      lldpV2Xdot1RemVlanId OBJECT-TYPE
22      SYNTAX      VlanId
23      MAX-ACCESS  not-accessible
24      STATUS      current
25      DESCRIPTION
26          "The integer value used to identify the IEEE 802.1Q
27          VLAN IDs with which the given port of the remote system
28          is compatible."
29      REFERENCE
30          "D.2.3.2"
31      ::= { lldpV2Xdot1RemVlanNameEntry 1 }
32
33      lldpV2Xdot1RemVlanName OBJECT-TYPE
34      SYNTAX      SnmpAdminString (SIZE(1..32))
35      MAX-ACCESS  read-only
36      STATUS      current
37      DESCRIPTION
38          "The string value used to identify VLAN name identified
39          by the VLAN Id associated with the remote system."
40      REFERENCE
41          "D.2.3.4"
42      ::= { lldpV2Xdot1RemVlanNameEntry 2 }
43
44      --
45      -- lldpV2Xdot1RemProtocolTable : Protocol information of the remote
46      -- systems Re-indexed by ifIndex and destination MAC address
47      --
48
49      lldpV2Xdot1RemProtocolTable OBJECT-TYPE
50      SYNTAX      SEQUENCE OF LldpV2Xdot1RemProtocolEntry
51      MAX-ACCESS  not-accessible
52      STATUS      current
53      DESCRIPTION
54          "This table contains one or more rows per protocol
55          information about the remote system, received on
56          the given port."
57      ::= { lldpV2Xdot1RemoteData 4 }

```

```
1
2  lldpV2Xdot1RemProtocolEntry OBJECT-TYPE
3      SYNTAX      LldpV2Xdot1RemProtocolEntry
4      MAX-ACCESS  not-accessible
5      STATUS      current
6      DESCRIPTION
7          "Protocol information about a particular port component.
8          There may be multiple protocols, identified by a particular
9          lldpV2Xdot1ProtocolIndex, received on the given port."
10     INDEX  { lldpV2RemTimeMark,
11              lldpV2RemLocalIfIndex,
12              lldpV2RemLocalDestMACAddress,
13              lldpV2RemIndex,
14              lldpV2Xdot1RemProtocolIndex }
15     ::= { lldpV2Xdot1RemProtocolTable 1 }
16
17 LldpV2Xdot1RemProtocolEntry ::= SEQUENCE {
18     lldpV2Xdot1RemProtocolIndex  Unsigned32,
19     lldpV2Xdot1RemProtocolId     OCTET STRING
20 }
21
22 lldpV2Xdot1RemProtocolIndex OBJECT-TYPE
23     SYNTAX      Unsigned32(1..2147483647)
24     MAX-ACCESS  not-accessible
25     STATUS      current
26     DESCRIPTION
27         "This object represents an arbitrary local integer value
28         used by this agent to identify a particular protocol
29         identity."
30     ::= { lldpV2Xdot1RemProtocolEntry 1 }
31
32 lldpV2Xdot1RemProtocolId OBJECT-TYPE
33     SYNTAX      OCTET STRING (SIZE (1..255))
34     MAX-ACCESS  read-only
35     STATUS      current
36     DESCRIPTION
37         "The octet string value used to identify the protocols
38         associated with the given port of remote system."
39     REFERENCE
40         "D.2.4.3"
41     ::= { lldpV2Xdot1RemProtocolEntry 2 }
42
43 --
44 -- lldpV2Xdot1RemVidUsageDigestTable: Table of hash values of
45 -- system VID Usage Table received
46 -- via VID Usage Digest TLV.
47 --
48
49 lldpV2Xdot1RemVidUsageDigestTable OBJECT-TYPE
50     SYNTAX      SEQUENCE OF LldpV2Xdot1RemVidUsageDigestEntry
51     MAX-ACCESS  not-accessible
52     STATUS      current
53     DESCRIPTION
54         "This table contains one row per ifIndex/
55         destination MAC address pair for usage digest
56         information received by the local system."
```

```

1      REFERENCE
2          "D.2.5"
3      ::= { lldpV2Xdot1RemoteData 5 }
4
5      lldpV2Xdot1RemVidUsageDigestEntry OBJECT-TYPE
6          SYNTAX      LldpV2Xdot1RemVidUsageDigestEntry
7          MAX-ACCESS  not-accessible
8          STATUS      current
9          DESCRIPTION
10             "Usage digest information received on
11             the given port/destination address pair."
12             REFERENCE
13                 "D.2.5"
14             INDEX    { lldpV2RemTimeMark,
15                       lldpV2RemLocalIfIndex,
16                       lldpV2RemLocalDestMACAddress }
17             ::= { lldpV2Xdot1RemVidUsageDigestTable 1 }
18
19      LldpV2Xdot1RemVidUsageDigestEntry ::= SEQUENCE {
20          lldpV2Xdot1RemVidUsageDigest  Unsigned32
21      }
22
23      lldpV2Xdot1RemVidUsageDigest OBJECT-TYPE
24          SYNTAX      Unsigned32
25          MAX-ACCESS  read-only
26          STATUS      current
27          DESCRIPTION
28             "The integer value obtained by applying the CRC32 function
29             to the 128-octet VID Usage Table. A bit of the VID Usage
30             Table contains the value PBB-TE-USAGE (binary 1) if the
31             corresponding element of the MST Configuration Table
32             (IEEE Std 802.1Q 8.9.1) contains the value PBB-TE MSTID
33             (hex FFE)and otherwise contains the value NON-PBB-TE-USAGE
34             (binary 0)."

```

```
1      MAX-ACCESS not-accessible
2      STATUS current
3      DESCRIPTION
4          "Management VID information received
5          through the given port/destination address pair."
6      REFERENCE
7          "D.2.6"
8      INDEX { lldpV2RemTimeMark,
9              lldpV2RemLocalIfIndex,
10             lldpV2RemLocalDestMACAddress }
11
12     ::= { lldpV2Xdot1RemManVidTable 1 }
13
14     LldpV2Xdot1RemManVidEntry ::= SEQUENCE {
15         lldpV2Xdot1RemManVid          Unsigned32
16     }
17
18     lldpV2Xdot1RemManVid OBJECT-TYPE
19         SYNTAX Unsigned32 (0|1..4094)
20         MAX-ACCESS read-only
21         STATUS current
22         DESCRIPTION
23             "The integer value configured on a system for
24             the Management VID, or
25             the value 0 if a Management VID has not been provisioned."
26         REFERENCE
27             "D.2.6.1"
28     ::= { lldpV2Xdot1RemManVidEntry 1 }
29
30     -----
31     -- Remote System Information - Link Aggregation
32     -----
33     ---
34     --- lldpV2Xdot1RemLinkAggTable: Link Aggregation Information Table
35     ---
36     ---
37     lldpV2Xdot1RemLinkAggTable OBJECT-TYPE
38         SYNTAX SEQUENCE OF LldpV2Xdot1RemLinkAggEntry
39         MAX-ACCESS not-accessible
40         STATUS current
41         DESCRIPTION
42             "This table contains port link aggregation information
43             (as a part of the LLDP IEEE 802.1 organizational extension)
44             of the remote system."
45     ::= { lldpV2Xdot1RemoteData 7 }
46
47     lldpV2Xdot1RemLinkAggEntry OBJECT-TYPE
48         SYNTAX LldpV2Xdot1RemLinkAggEntry
49         MAX-ACCESS not-accessible
50         STATUS current
51         DESCRIPTION
52             "Link Aggregation information about remote system's port
53             component."
54     INDEX { lldpV2RemTimeMark,
55             lldpV2RemLocalIfIndex,
56             lldpV2RemLocalDestMACAddress,
```

```

1         lldpV2RemIndex }
2     ::= { lldpV2Xdot1RemLinkAggTable 1 }
3
4     LldpV2Xdot1RemLinkAggEntry ::= SEQUENCE {
5         lldpV2Xdot1RemLinkAggStatus      LldpV2LinkAggStatusMap,
6         lldpV2Xdot1RemLinkAggPortId     Unsigned32
7     }
8
9     lldpV2Xdot1RemLinkAggStatus OBJECT-TYPE
10    SYNTAX      LldpV2LinkAggStatusMap
11    MAX-ACCESS  read-only
12    STATUS      current
13    DESCRIPTION
14        "The bitmap value contains the link aggregation capabilities
15        and the current aggregation status of the link."
16    REFERENCE
17        "D.2.7.1"
18    ::= { lldpV2Xdot1RemLinkAggEntry 1 }
19
20    lldpV2Xdot1RemLinkAggPortId OBJECT-TYPE
21    SYNTAX      Unsigned32(0|1..2147483647)
22    MAX-ACCESS  read-only
23    STATUS      current
24    DESCRIPTION
25        "This object contains the IEEE 802.1 aggregated port
26        identifier, aAggPortID (IEEE Std 802.1AX, 6.3.2.1.1),
27        derived from the ifNumber of the ifIndex for the port
28        component associated with the remote system.
29
30        If the remote port is not in link aggregation state and/or
31        it does not support link aggregation, this value should be
32        zero."
33    REFERENCE
34        "D.2.7.1"
35    ::= { lldpV2Xdot1RemLinkAggEntry 2 }
36
37    -----
38    -- Conformance Information for the basicSet TLV set
39    -----
40
41    lldpV2Xdot1Conformance
42    OBJECT IDENTIFIER ::= { lldpV2Xdot1MIB 2 }
43    lldpV2Xdot1Compliances
44    OBJECT IDENTIFIER ::= { lldpV2Xdot1Conformance 1 }
45    lldpV2Xdot1Groups
46    OBJECT IDENTIFIER ::= { lldpV2Xdot1Conformance 2 }
47
48    -- compliance statements
49
50    lldpV2Xdot1TxRxCompliance MODULE-COMPLIANCE
51    STATUS      current
52    DESCRIPTION
53        "A compliance statement for SNMP entities that implement
54        the IEEE 802.1 organizationally defined LLDP extension MIB.
55
56        This group is mandatory for all agents that implement the
57        LLDP 802.1 organizational extension in TX and/or RX mode

```

```
1           for the basicSet TLV set.
2
3           This version defines compliance requirements for
4           V2 of the LLDP MIB."
5   MODULE -- this module
6       MANDATORY-GROUPS { lldpV2Xdot1ConfigGroup,
7                           ifGeneralInformationGroup
8       }
9       ::= { lldpV2Xdot1Compliances 1 }
10
11  lldpV2Xdot1TxCompliance MODULE-COMPLIANCE
12  STATUS current
13  DESCRIPTION
14      "A compliance statement for SNMP entities that implement
15      the IEEE 802.1 organizationally defined LLDP extension MIB.
16
17      This group is mandatory for agents that implement the
18      LLDP 802.1 organizational extension in the RX mode
19      for the basicSet TLV set.
20
21      This version defines compliance requirements for
22      V2 of the LLDP MIB."
23  MODULE -- this module
24      MANDATORY-GROUPS { lldpV2Xdot1LocSysGroup }
25
26      ::= { lldpV2Xdot1Compliances 2 }
27
28  lldpV2Xdot1RxCompliance MODULE-COMPLIANCE
29  STATUS current
30  DESCRIPTION
31      "A compliance statement for SNMP entities that implement
32      the IEEE 802.1 organizationally defined LLDP extension MIB.
33
34      This group is mandatory for agents that implement the
35      LLDP 802.1 organizational extension in the RX mode
36      for the basicSet TLV set.
37
38      This version defines compliance requirements for
39      V2 of the LLDP MIB."
40  MODULE -- this module
41      MANDATORY-GROUPS { lldpV2Xdot1RemSysGroup }
42
43      ::= { lldpV2Xdot1Compliances 3 }
44
45  -- MIB groupings for the basicSet TLV set
46
47  lldpV2Xdot1ConfigGroup OBJECT-GROUP
48  OBJECTS {
49      lldpV2Xdot1ConfigPortVlanTxEnable,
50      lldpV2Xdot1ConfigVlanNameTxEnable,
51      lldpV2Xdot1ConfigProtoVlanTxEnable,
52      lldpV2Xdot1ConfigProtocolTxEnable,
53      lldpV2Xdot1ConfigVidUsageDigestTxEnable,
54      lldpV2Xdot1ConfigManVidTxEnable
55  }
56  STATUS current
57  DESCRIPTION
58      "The collection of objects which are used to configure the
```

```
1           IEEE 802.1 organizationally defined LLDP extension
2           implementation behavior for the basicSet TLV set."
3 ::= { lldpV2Xdot1Groups 1 }
4
5 lldpV2Xdot1LocSysGroup OBJECT-GROUP
6   OBJECTS {
7     lldpV2Xdot1LocPortVlanId,
8     lldpV2Xdot1LocProtoVlanSupported,
9     lldpV2Xdot1LocProtoVlanEnabled,
10    lldpV2Xdot1LocVlanName,
11    lldpV2Xdot1LocProtocolId,
12    lldpV2Xdot1LocVidUsageDigest,
13    lldpV2Xdot1LocManVid,
14    lldpV2Xdot1LocLinkAggStatus,
15    lldpV2Xdot1LocLinkAggPortId
16  }
17  STATUS current
18  DESCRIPTION
19    "The collection of objects which are used to represent
20    IEEE 802.1 organizationally defined LLDP extension
21    associated with the Local Device Information for the
22    basicSet TLV set."
23 ::= { lldpV2Xdot1Groups 2 }
24
25 lldpV2Xdot1RemSysGroup OBJECT-GROUP
26   OBJECTS {
27     lldpV2Xdot1RemPortVlanId,
28     lldpV2Xdot1RemProtoVlanSupported,
29     lldpV2Xdot1RemProtoVlanEnabled,
30     lldpV2Xdot1RemVlanName,
31     lldpV2Xdot1RemProtocolId,
32     lldpV2Xdot1RemVidUsageDigest,
33     lldpV2Xdot1RemManVid,
34     lldpV2Xdot1RemLinkAggStatus,
35     lldpV2Xdot1RemLinkAggPortId
36  }
37  STATUS current
38  DESCRIPTION
39    "The collection of objects which are used to represent LLDP
40    802.1 organizational extension Remote Device Information
41    for the basicSet TLV set."
42 ::= { lldpV2Xdot1Groups 3 }
43
44 -----
45 -----
46 --
47 -- Organizational Defined Information Extension - IEEE 802.1
48 -- Definitions to support the cnSet TLV set (Table D-1)
49 -- for Congestion Notification
50 --
51 -----
52 -----
53
54 lldpXdot1CnMIB OBJECT IDENTIFIER ::= { lldpV2Xdot1MIB 3 }
55 lldpXdot1CnObjects OBJECT IDENTIFIER ::= { lldpXdot1CnMIB 1 }
56
57 -- CN 802.1 MIB Extension groups
58
59 lldpXdot1CnConfig OBJECT IDENTIFIER ::= { lldpXdot1CnObjects 1 }
```

```
1      lldpXdot1CnLocalData OBJECT IDENTIFIER ::= { lldpXdot1CnObjects 2 }
2      lldpXdot1CnRemoteData OBJECT IDENTIFIER ::= { lldpXdot1CnObjects 3 }
3
4      -----
5      -- Textual conventions for Congestion Notification
6      -----
7
8      LldpV2CnBitVector ::= TEXTUAL-CONVENTION
9          STATUS          current
10         DESCRIPTION
11             "This TC describes a bit vector used in the Congestion
12             Notification objects. Each bit represents a Boolean status
13             associated with a priority code point. A bit value of 0
14             represents FALSE, 1 represents TRUE.
15
16             The bit 'pri0status(0)' indicates the status for priority 0
17             The bit 'pri1status(1)' indicates the status for priority 1
18             The bit 'pri2status(2)' indicates the status for priority 2
19             The bit 'pri3status(3)' indicates the status for priority 3
20             The bit 'pri4status(4)' indicates the status for priority 4
21             The bit 'pri5status(5)' indicates the status for priority 5
22             The bit 'pri6status(6)' indicates the status for priority 6
23             The bit 'pri7status(7)' indicates the status for priority 7"
24
25         SYNTAX          BITS {
26             pri0status(0),
27             pri1status(1),
28             pri2status(2),
29             pri3status(3),
30             pri4status(4),
31             pri5status(5),
32             pri6status(6),
33             pri7status(7)
34         }
35
36     -----
37     -- IEEE 802.1 - Congestion Notification Configuration
38     -----
39
40     --
41     -- lldpXdot1CnConfigCnTable : configure the
42     -- transmission of the Congestion Notification TLV on a set of ports
43     --
44
45     lldpXdot1CnConfigCnTable OBJECT-TYPE
46         SYNTAX          SEQUENCE OF LldpXdot1CnConfigCnEntry
47         MAX-ACCESS      not-accessible
48         STATUS          current
49         DESCRIPTION
50             "A table that controls selection of Congestion Notification
51             TLVs to be transmitted on individual ports."
52             ::= { lldpXdot1CnConfig 1 }
53
54     lldpXdot1CnConfigCnEntry OBJECT-TYPE
55         SYNTAX          LldpXdot1CnConfigCnEntry
56         MAX-ACCESS      not-accessible
57         STATUS          current
58         DESCRIPTION
59             "LLDP configuration information that controls the
```



```

1      transmission of IEEE 802.1 organizationally defined
2      Congestion Notification TLV on LLDP transmission capable ports.
3
4      This configuration object augments the lldpV2PortConfigEntry of
5      the LLDP-MIB, therefore it is only present along with the port
6      configuration defined by the associated lldpV2PortConfigEntry
7      entry.
8
9      Each active lldpConfigEntry is restored from non-volatile
10     storage (along with the corresponding lldpV2PortConfigEntry)
11     after a re-initialization of the management system."
12     AUGMENTS      { lldpV2PortConfigEntry }
13     ::= { lldpXdot1CnConfigCnTable 1 }
14
15     lldpXdot1CnConfigCnEntry ::= SEQUENCE {
16     }
17
18     lldpXdot1CnConfigCnTxEnable OBJECT-TYPE
19     SYNTAX      TruthValue
20     MAX-ACCESS  read-write
21     STATUS      current
22     DESCRIPTION
23         "The lldpXdot1CnConfigCnTxEnable, which is
24         defined as a truth value and configured by the network
25         management, determines whether the IEEE 802.1 organizationally
26         defined Congestion Notification TLV transmission is allowed
27         on a given LLDP transmission capable port.
28
29         The value of this object is restored from non-volatile
30         storage after a re-initialization of the management system."
31     REFERENCE
32         "D.2.8"
33     DEFVAL      { false }
34     ::= { lldpXdot1CnConfigCnEntry 1 }
35
36     -----
37     -- IEEE 802.1 - Congestion Notification Local System Information
38     -----
39
40     ---
41     ---
42     --- lldpV2Xdot1LocCnTable: Port Extension Information Table
43     ---
44     ---
45
46     lldpV2Xdot1LocCnTable OBJECT-TYPE
47     SYNTAX      SEQUENCE OF LldpV2Xdot1LocCnEntry
48     MAX-ACCESS  not-accessible
49     STATUS      current
50     DESCRIPTION
51         "This table contains one row per port of Congestion
52         Notification information (as a part of the LLDP
53         802.1 organizational extension) on the local system
54         known to this agent."
55     ::= { lldpXdot1CnLocalData 1 }
56
57     lldpV2Xdot1LocCnEntry OBJECT-TYPE
58     SYNTAX      LldpV2Xdot1LocCnEntry
59     MAX-ACCESS  not-accessible

```

```
1      STATUS      current
2      DESCRIPTION
3          "Congestion Notification information about a
4          particular port component."
5      INDEX      { lldpV2LocPortIfIndex }
6      ::= { lldpV2Xdot1LocCnTable 1 }
7
8      lldpV2Xdot1LocCnEntry ::= SEQUENCE {
9          lldpV2Xdot1LocCNPVIndicators  LldpV2CnBitVector,
10         lldpV2Xdot1LocReadyIndicators  LldpV2CnBitVector
11     }
12
13     lldpV2Xdot1LocCNPVIndicators OBJECT-TYPE
14     SYNTAX      LldpV2CnBitVector
15     MAX-ACCESS  read-only
16     STATUS      current
17     DESCRIPTION
18         "This object contains the CNPV indicators
19         for the Port."
20     REFERENCE
21         "D.2.8.3"
22     ::= { lldpV2Xdot1LocCnEntry 1 }
23
24     lldpV2Xdot1LocReadyIndicators OBJECT-TYPE
25     SYNTAX      LldpV2CnBitVector
26     MAX-ACCESS  read-only
27     STATUS      current
28     DESCRIPTION
29         "This object contains the Ready indicators
30         for the Port."
31     REFERENCE
32         "D.2.8.4"
33     ::= { lldpV2Xdot1LocCnEntry 2 }
34
35     -----
36     -- IEEE 802.1 - Congestion Notification Remote System Information
37     -----
38
39     ---
40     ---
41     --- lldpV2Xdot1RemCnTable: Port Extension Information Table
42     ---
43     ---
44
45     lldpV2Xdot1RemCnTable OBJECT-TYPE
46     SYNTAX      SEQUENCE OF LldpV2Xdot1RemCnEntry
47     MAX-ACCESS  not-accessible
48     STATUS      current
49     DESCRIPTION
50         "This table contains Congestion Notification information
51         (as a part of the LLDP IEEE 802.1 organizational extension)
52         of the remote system."
53     ::= { lldpXdot1CnRemoteData 1 }
54
55     lldpV2Xdot1RemCnEntry OBJECT-TYPE
56     SYNTAX      LldpV2Xdot1RemCnEntry
57     MAX-ACCESS  not-accessible
58     STATUS      current
59     DESCRIPTION
60         "Port Extension information about remote systems port
```

```

1         component."
2     INDEX    { lldpV2RemTimeMark,
3               lldpV2RemLocalIfIndex,
4               lldpV2RemLocalDestMACAddress,
5               lldpV2RemIndex }
6     ::= { lldpV2Xdot1RemCnTable 1 }
7
8     LldpV2Xdot1RemCnEntry ::= SEQUENCE {
9         lldpV2Xdot1RemCNPVIndicators    LldpV2CnBitVector,
10        lldpV2Xdot1RemReadyIndicators    LldpV2CnBitVector
11    }
12
13    lldpV2Xdot1RemCNPVIndicators OBJECT-TYPE
14    SYNTAX      LldpV2CnBitVector
15    MAX-ACCESS  read-only
16    STATUS      current
17    DESCRIPTION
18        "This object contains the CNPV indicators
19        for the Port."
20    REFERENCE
21        "D.2.8.3"
22    ::= { lldpV2Xdot1RemCnEntry 1 }
23
24    lldpV2Xdot1RemReadyIndicators OBJECT-TYPE
25    SYNTAX      LldpV2CnBitVector
26    MAX-ACCESS  read-only
27    STATUS      current
28    DESCRIPTION
29        "This object contains the Ready indicators
30        for the Port."
31    REFERENCE
32        "D.2.8.4"
33    ::= { lldpV2Xdot1RemCnEntry 2 }
34
35    -----
36    -- IEEE 802.1 - Congestion Notification Conformance Information
37    -----
38
39    lldpXdot1CnConformance OBJECT IDENTIFIER ::= { lldpV2Xdot1MIB 4 }
40
41    lldpXdot1CnCompliances
42    OBJECT IDENTIFIER ::= { lldpXdot1CnConformance 1 }
43    lldpXdot1CnGroups OBJECT IDENTIFIER ::= { lldpXdot1CnConformance 2 }
44
45    --
46    -- Congestion Notification - Compliance Statements
47    --
48
49    lldpXdot1CnCompliance MODULE-COMPLIANCE
50    STATUS      current
51    DESCRIPTION
52        "A compliance statement for SNMP entities that implement
53        the IEEE 802.1 organizationally defined Congestion
54        Notification LLDP extension MIB.
55
56        This group is mandatory for agents that implement the
57        Congestion Notification cnSet TLV set."
58    MODULE      -- this module
59    MANDATORY-GROUPS { lldpXdot1CnGroup,

```

```
1             ifGeneralInformationGroup }
2 ::= { lldpXdot1CnCompliances 1 }
3
4 --
5 -- Congestion Notification - MIB groupings
6 --
7 lldpXdot1CnGroup OBJECT-GROUP
8     OBJECTS {
9         lldpXdot1CnConfigCnTxEnable,
10        lldpV2Xdot1LocCNPVIndicators,
11        lldpV2Xdot1LocReadyIndicators,
12        lldpV2Xdot1RemCNPVIndicators,
13        lldpV2Xdot1RemReadyIndicators
14    }
15    STATUS current
16    DESCRIPTION
17        "The collection of objects that support the
18        Congestion Notification cnSet TLV set."
19    ::= { lldpXdot1CnGroups 1 }
20
21 -----
22 --
23 -- Organizationally Defined Information Extension - IEEE 802.1
24 -- Definitions to support the Data Center eXchange Protocol
25 -- (DCBX) TLV set (Table D-1)
26 --
27 -----
28 lldpXdot1dcbxMIB OBJECT IDENTIFIER ::= { lldpV2Xdot1MIB 5 }
29 lldpXdot1dcbxObjects OBJECT IDENTIFIER ::= { lldpXdot1dcbxMIB 1 }
30
31 -- DCBX 802.1 MIB Extension groups
32
33 lldpXdot1dcbxConfig OBJECT IDENTIFIER ::= { lldpXdot1dcbxObjects 1 }
34 lldpXdot1dcbxLocalData OBJECT IDENTIFIER ::= { lldpXdot1dcbxObjects 2 }
35 lldpXdot1dcbxRemoteData OBJECT IDENTIFIER ::= { lldpXdot1dcbxObjects 3 }
36 lldpXdot1dcbxAdminData OBJECT IDENTIFIER ::= { lldpXdot1dcbxObjects 4 }
37
38 -----
39 -- IEEE 802.1 - DCBX Textual Conventions
40 -----
41 LldpXdot1dcbxTrafficClassValue ::= TEXTUAL-CONVENTION
42     DISPLAY-HINT "d"
43     STATUS current
44     DESCRIPTION
45         "Indicates a traffic class. Values 0-7 correspond to
46         traffic classes."
47     SYNTAX Unsigned32 (0..7)
48
49 LldpXdot1dcbxTrafficClassBandwidthValue ::= TEXTUAL-CONVENTION
50     DISPLAY-HINT "d"
51     STATUS current
52     DESCRIPTION
53         "Indicates the bandwidth in percent assigned to a
54         traffic class."
54     SYNTAX Unsigned32 (0..100)
```

```
1
2 LldpXdot1dcbxAppSelector ::= TEXTUAL-CONVENTION
3     STATUS current
4     DESCRIPTION
5         "Indicates the contents of a protocol object
6         1: Ethertype
7         2: Well Known Port number over TCP, or SCTP
8         3: Well Known Port number over UDP, or DCCP
9         4: Well Known Port number over TCP, SCTP, UDP, and DCCP"
10    SYNTAX INTEGER {
11        asEthertype(1),
12        asTCPPortNumber(2),
13        asUDPPortNumber(3),
14        asTCPUDPPortNumber(4)
15    }
16 LldpXdot1dcbxAppProtocol ::= TEXTUAL-CONVENTION
17     DISPLAY-HINT "d"
18     STATUS current
19     DESCRIPTION
20         "Contains the application protocol indicator the
21         type of which is specified by an object with
22         the syntax of
23         LldpXdot1dcbxAppSelector"
24     SYNTAX Unsigned32 (0..65535)
25 LldpXdot1dcbxSupportedCapacity ::= TEXTUAL-CONVENTION
26     DISPLAY-HINT "d"
27     STATUS current
28     DESCRIPTION
29         "Indicates the supported capacity of a given feature,
30         for example, the number of traffic classes supported.
31         This TC is used for features that have a maximum
32         capacity of eight and a minimum of one."
33     SYNTAX Unsigned32 (1..8)
34 LldpXdot1dcbxTrafficSelectionAlgorithm ::= TEXTUAL-CONVENTION
35     STATUS current
36     DESCRIPTION
37         "Indicates the Traffic Selection Algorithm
38         0: Strict Priority
39         1: Credit-based shaper
40         2: Enhanced transmission selection
41         3-254: Reserved for future standardization
42         255: Vendor specific"
43     SYNTAX INTEGER {
44        tsaStrictPriority(0),
45        tsaCreditBasedShaper(1),
46        tsaEnhancedTransmission(2),
47        tsaVendorSpecific(255)
48    }
49 -----
50 -- IEEE 802.1 - DCBX Configuration
51 -----
52 --
53 -- lldpXdot1dcbxConfigETSConfigurationTable : configure the
54 -- transmission of the ETS Configuration TLV on a set of ports
```

```
1      --
2
3      lldpXdot1dcbxConfigETSConfigurationTable OBJECT-TYPE
4          SYNTAX          SEQUENCE OF LldpXdot1dcbxConfigETSConfigurationEntry
5          MAX-ACCESS      not-accessible
6          STATUS          current
7          DESCRIPTION
8              "A table that controls selection of ETS Configuration
9              TLVs to be transmitted on individual ports."
10             ::= { lldpXdot1dcbxConfig 1 }
11
12     lldpXdot1dcbxConfigETSConfigurationEntry OBJECT-TYPE
13         SYNTAX          LldpXdot1dcbxConfigETSConfigurationEntry
14         MAX-ACCESS      not-accessible
15         STATUS          current
16         DESCRIPTION
17             "LLDP configuration information that controls the
18             transmission of IEEE 802.1 organizationally defined
19             ETS Configuration TLV on LLDP transmission capable ports.
20
21             This configuration object augments the lldpV2PortConfigEntry of
22             the LLDP-MIB, therefore it is only present along with the port
23             configuration defined by the associated lldpV2PortConfigEntry
24             entry.
25
26             Each active lldpConfigEntry is restored from non-volatile
27             storage (along with the corresponding lldpV2PortConfigEntry)
28             after a re-initialization of the management system."
29         AUGMENTS        { lldpV2PortConfigEntry }
30         ::= { lldpXdot1dcbxConfigETSConfigurationTable 1 }
31
32     LldpXdot1dcbxConfigETSConfigurationEntry ::= SEQUENCE {
33         lldpXdot1dcbxConfigETSConfigurationTxEnable TruthValue
34     }
35
36     lldpXdot1dcbxConfigETSConfigurationTxEnable OBJECT-TYPE
37         SYNTAX          TruthValue
38         MAX-ACCESS      read-write
39         STATUS          current
40         DESCRIPTION
41             "The lldpXdot1dcbxConfigETSConfigurationTxEnable, which is
42             defined as a truth value and configured by the network
43             management, determines whether the IEEE 802.1 organizationally
44             defined ETS Configuration TLV transmission is allowed on a
45             given LLDP transmission capable port.
46
47             The value of this object is restored from non-volatile
48             storage after a re-initialization of the management system."
49         REFERENCE
50             "D.2.9"
51         DEFVAL          { false }
52         ::= { lldpXdot1dcbxConfigETSConfigurationEntry 1 }
53
54     --
55     -- lldpXdot1dcbxConfigETSRecommendationTable : configure the
56     -- transmission of the ETS Recommendation TLV on a set of ports
57     --
58     lldpXdot1dcbxConfigETSRecommendationTable OBJECT-TYPE
```

```

1      SYNTAX          SEQUENCE OF LldpXdotldcbxConfigETSRecommendationEntry
2      MAX-ACCESS      not-accessible
3      STATUS          current
4      DESCRIPTION
5          "A table that controls selection of ETS Recommendation
6          TLVs to be transmitted on individual ports."
7      ::= { lldpXdotldcbxConfig 2 }
8
9      lldpXdotldcbxConfigETSRecommendationEntry OBJECT-TYPE
10     SYNTAX          LldpXdotldcbxConfigETSRecommendationEntry
11     MAX-ACCESS      not-accessible
12     STATUS          current
13     DESCRIPTION
14         "LLDP configuration information that controls the
15         transmission of IEEE 802.1 organizationally defined
16         ETS Recommendation TLV on LLDP transmission capable ports.
17
18         This configuration object augments the lldpV2PortConfigEntry of
19         the LLDP-MIB, therefore it is only present along with the port
20         configuration defined by the associated lldpV2PortConfigEntry
21         entry.
22
23         Each active lldpConfigEntry is restored from non-volatile
24         storage (along with the corresponding lldpV2PortConfigEntry)
25         after a re-initialization of the management system."
26     AUGMENTS        { lldpV2PortConfigEntry }
27     ::= { lldpXdotldcbxConfigETSRecommendationTable 1 }
28
29     LldpXdotldcbxConfigETSRecommendationEntry ::= SEQUENCE {
30         lldpXdotldcbxConfigETSRecommendationTxEnable TruthValue
31     }
32
33     lldpXdotldcbxConfigETSRecommendationTxEnable OBJECT-TYPE
34     SYNTAX          TruthValue
35     MAX-ACCESS      read-write
36     STATUS          current
37     DESCRIPTION
38         "The lldpXdotldcbxConfigETSRecommendationTxEnable, which is
39         defined as a truth value and configured by the network
40         management, determines whether the IEEE 802.1 organizationally
41         defined ETS Recommendation TLV transmission is allowed on a
42         given LLDP transmission capable port.
43
44         The value of this object is restored from non-volatile
45         storage after a re-initialization of the management system."
46     REFERENCE
47         "D.2.10"
48     DEFVAL          { false }
49     ::= { lldpXdotldcbxConfigETSRecommendationEntry 1 }
50
51     --
52     -- lldpXdotldcbxConfigPFCTable : configure the transmission of the
53     -- Priority-based Flow Control TLV on a set of ports
54     --
55
56     lldpXdotldcbxConfigPFCTable OBJECT-TYPE
57     SYNTAX          SEQUENCE OF LldpXdotldcbxConfigPFCEnt
58     MAX-ACCESS      not-accessible
59     STATUS          current
60     DESCRIPTION

```

```
1         "A table that controls selection of Priority-based
2         Flow Control TLVs to be transmitted on individual ports."
3         ::= { lldpXdotldcbxConfig 3 }
4
5     lldpXdotldcbxConfigPFCEntEntry OBJECT-TYPE
6         SYNTAX          LldpXdotldcbxConfigPFCEntEntry
7         MAX-ACCESS      not-accessible
8         STATUS          current
9         DESCRIPTION
10            "LLDP configuration information that controls the
11            transmission of IEEE 802.1 organizationally defined
12            Priority-based Flow Control TLV on LLDP transmission
13            capable ports.
14
15            This configuration object augments the lldpV2PortConfigEntry of
16            the LLDP-MIB, therefore it is only present along with the port
17            configuration defined by the associated lldpV2PortConfigEntry
18            entry.
19
20            Each active lldpConfigEntry is restored from non-volatile
21            storage (along with the corresponding lldpV2PortConfigEntry)
22            after a re-initialization of the management system."
23
24         AUGMENTS        { lldpV2PortConfigEntry }
25         ::= { lldpXdotldcbxConfigPFCTable 1 }
26
27     LldpXdotldcbxConfigPFCEntEntry ::= SEQUENCE {
28         lldpXdotldcbxConfigPFCTxEnable TruthValue
29     }
30
31     lldpXdotldcbxConfigPFCTxEnable OBJECT-TYPE
32         SYNTAX          TruthValue
33         MAX-ACCESS      read-write
34         STATUS          current
35         DESCRIPTION
36            "The lldpXdotldcbxConfigPFCTxEnable, which is defined
37            as a truth value and configured by the network management,
38            determines whether the IEEE 802.1 organizationally defined
39            Priority-based Flow Control TLV transmission is allowed on
40            a given LLDP transmission capable port.
41
42            The value of this object is restored from non-volatile
43            storage after a re-initialization of the management system."
44         REFERENCE
45            "D.2.11"
46         DEFVAL          { false }
47         ::= { lldpXdotldcbxConfigPFCEntEntry 1 }
48
49     --
50     -- lldpXdotldcbxConfigApplicationPriorityTable : configure the
51     -- transmission of the Application Priority TLV on a set of ports
52     --
53
54     lldpXdotldcbxConfigApplicationPriorityTable OBJECT-TYPE
55         SYNTAX          SEQUENCE OF
56             LldpXdotldcbxConfigApplicationPriorityEntry
57         MAX-ACCESS      not-accessible
58         STATUS          current
59         DESCRIPTION
60            "A table that controls selection of Priority-based
```



```

1      Flow Control TLVs to be transmitted on individual ports."
2      ::= { lldpXdot1dcbxConfig 4 }
3
4      lldpXdot1dcbxConfigApplicationPriorityEntry OBJECT-TYPE
5          SYNTAX      LldpXdot1dcbxConfigApplicationPriorityEntry
6          MAX-ACCESS  not-accessible
7          STATUS      current
8          DESCRIPTION
9              "LLDP configuration information that controls the
10             transmission of IEEE 802.1 organizationally defined
11             Application Priority TLV on LLDP transmission capable ports.
12
13             This configuration object augments the lldpV2PortConfigEntry of
14             the LLDP-MIB, therefore it is only present along with the port
15             configuration defined by the associated lldpV2PortConfigEntry
16             entry.
17
18             Each active lldpConfigEntry is restored from non-volatile
19             storage (along with the corresponding lldpV2PortConfigEntry)
20             after a re-initialization of the management system."
21          AUGMENTS    { lldpV2PortConfigEntry }
22          ::= { lldpXdot1dcbxConfigApplicationPriorityTable 1 }
23
24      LldpXdot1dcbxConfigApplicationPriorityEntry ::= SEQUENCE {
25          lldpXdot1dcbxConfigApplicationPriorityTxEnable TruthValue
26      }
27
28      lldpXdot1dcbxConfigApplicationPriorityTxEnable OBJECT-TYPE
29          SYNTAX      TruthValue
30          MAX-ACCESS  read-write
31          STATUS      current
32          DESCRIPTION
33              "The lldpXdot1dcbxConfigApplicationPriorityTxEnable, which
34              is defined as a truth value and configured by the network
35              management, determines whether the IEEE 802.1 organizationally
36              defined Application Priority TLV transmission is allowed on
37              a given LLDP transmission capable port.
38
39              The value of this object is restored from non-volatile
40              storage after a re-initialization of the management system."
41          REFERENCE
42              "D.2.12"
43          DEFVAL      { false }
44          ::= { lldpXdot1dcbxConfigApplicationPriorityEntry 1 }
45
46      -----
47      -- IEEE 802.1 - DCBX Local System Information
48      -----
49
50      --
51      -- lldpXdot1dcbxLocETSConfigurationTable - Contains the information
52      -- for the ETS Configuration TLV.
53      --
54      lldpXdot1dcbxLocETSConfiguration OBJECT IDENTIFIER
55          ::= { lldpXdot1dcbxLocalData 1 }
56
57      lldpXdot1dcbxLocETSBasicConfigurationTable OBJECT-TYPE
58          SYNTAX      SEQUENCE OF LldpXdot1dcbxLocETSBasicConfigurationEntry
59          MAX-ACCESS  not-accessible

```

```
1      STATUS          current
2      DESCRIPTION
3          "This table contains one row per port for the IEEE 802.1
4          organizationally defined LLDP ETS Configuration TLV on
5          the local system known to this agent"
6      ::= { lldpXdot1dcbxLocETSConfiguration 1 }
7
8      lldpXdot1dcbxLocETSBasicConfigurationEntry OBJECT-TYPE
9      SYNTAX          LldpXdot1dcbxLocETSBasicConfigurationEntry
10     MAX-ACCESS      not-accessible
11     STATUS          current
12     DESCRIPTION
13         "Information about the IEEE 802.1 organizational defined
14         ETS Configuration TLV LLDP extension."
15     INDEX           { lldpV2LocPortIfIndex }
16     ::= { lldpXdot1dcbxLocETSBasicConfigurationTable 1 }
17
18     LldpXdot1dcbxLocETSBasicConfigurationEntry ::= SEQUENCE {
19         lldpXdot1dcbxLocETSConCreditBasedShaperSupport TruthValue,
20         lldpXdot1dcbxLocETSConTrafficClassesSupported
21         LldpXdot1dcbxSupportedCapacity,
22         lldpXdot1dcbxLocETSConWilling TruthValue
23     }
24
25     lldpXdot1dcbxLocETSConCreditBasedShaperSupport OBJECT-TYPE
26     SYNTAX          TruthValue
27     MAX-ACCESS      read-only
28     STATUS          current
29     DESCRIPTION
30         "Indicates if the credit-based shaper Traffic Selection
31         Algorithm is supported on the local system."
32     REFERENCE
33         "D.2.9.4"
34     ::= { lldpXdot1dcbxLocETSBasicConfigurationEntry 1 }
35
36     lldpXdot1dcbxLocETSConTrafficClassesSupported OBJECT-TYPE
37     SYNTAX          LldpXdot1dcbxSupportedCapacity
38     MAX-ACCESS      read-only
39     STATUS          current
40     DESCRIPTION
41         "Indicates the number of traffic classes supported."
42     REFERENCE
43         "D.2.9.5"
44     ::= { lldpXdot1dcbxLocETSBasicConfigurationEntry 2 }
45
46     lldpXdot1dcbxLocETSConWilling OBJECT-TYPE
47     SYNTAX          TruthValue
48     MAX-ACCESS      read-only
49     STATUS          current
50     DESCRIPTION
51         "Indicates if the local system is willing to accept the
52         ETS configuration recommended by the remote system."
53     REFERENCE
54         "D.2.9.3"
55     ::= { lldpXdot1dcbxLocETSBasicConfigurationEntry 3 }
56
57     lldpXdot1dcbxLocETSConPriorityAssignmentTable OBJECT-TYPE
58     SYNTAX          SEQUENCE OF
59         LldpXdot1dcbxLocETSConPriorityAssignmentEntry
```

```

1      MAX-ACCESS    not-accessible
2      STATUS       current
3      DESCRIPTION
4          "This table contains one row per priority.  The entry in each
5          row indicates the traffic class to which the priority is
6          assigned."
7      ::= { lldpXdot1dcbxLocETSConfiguration 2 }
8
9      lldpXdot1dcbxLocETSConPriorityAssignmentEntry OBJECT-TYPE
10     SYNTAX         LldpXdot1dcbxLocETSConPriorityAssignmentEntry
11     MAX-ACCESS    not-accessible
12     STATUS       current
13     DESCRIPTION
14         "Indicates a priority to traffic class assignment."
15     INDEX         {
16         lldpV2LocPortIfIndex,
17         lldpXdot1dcbxLocETSConPriority
18     }
19     ::= { lldpXdot1dcbxLocETSConPriorityAssignmentTable 1 }
20
21     lldpXdot1dcbxLocETSConPriorityAssignmentEntry ::= SEQUENCE {
22         lldpXdot1dcbxLocETSConPriority      IEEE8021PriorityValue,
23         lldpXdot1dcbxLocETSConPriTrafficClass
24         LldpXdot1dcbxTrafficClassValue
25     }
26
27     lldpXdot1dcbxLocETSConPriority OBJECT-TYPE
28     SYNTAX         IEEE8021PriorityValue
29     MAX-ACCESS    not-accessible
30     STATUS       current
31     DESCRIPTION
32         "Indicates the priority that is assigned to a traffic
33         class."
34     REFERENCE
35         "D.2.9.6"
36     ::= { lldpXdot1dcbxLocETSConPriorityAssignmentEntry 1 }
37
38     lldpXdot1dcbxLocETSConPriTrafficClass OBJECT-TYPE
39     SYNTAX         LldpXdot1dcbxTrafficClassValue
40     MAX-ACCESS    read-only
41     STATUS       current
42     DESCRIPTION
43         "Indicates the traffic class to which this priority is
44         to be assigned."
45     REFERENCE
46         "D.2.9.6"
47     ::= { lldpXdot1dcbxLocETSConPriorityAssignmentEntry 2 }
48
49     lldpXdot1dcbxLocETSConTrafficClassBandwidthTable OBJECT-TYPE
50     SYNTAX         SEQUENCE OF
51         LldpXdot1dcbxLocETSConTrafficClassBandwidthEntry
52     MAX-ACCESS    not-accessible
53     STATUS       current
54     DESCRIPTION
55         "This table contains one row per traffic class.  The
56         entry in each row indicates the traffic class to
57         which the bandwidth is assigned."
58     ::= { lldpXdot1dcbxLocETSConfiguration 3 }

```

```

1  lldpXdot1dcbxLocETSTrafficClassBandwidthEntry OBJECT-TYPE
2  SYNTAX          LldpXdot1dcbxLocETSTrafficClassBandwidthEntry
3  MAX-ACCESS      not-accessible
4  STATUS          current
5  DESCRIPTION
6      "Indicates a traffic class to Bandwidth assignment."
7  INDEX          {
8      lldpV2LocPortIfIndex,
9      lldpXdot1dcbxLocETSTrafficClass
10 }
11 ::= { lldpXdot1dcbxLocETSTrafficClassBandwidthTable 1 }
12
13 LldpXdot1dcbxLocETSTrafficClassBandwidthEntry ::= SEQUENCE {
14     lldpXdot1dcbxLocETSTrafficClass
15     LldpXdot1dcbxTrafficClassValue,
16     lldpXdot1dcbxLocETSTrafficClassBandwidth
17     LldpXdot1dcbxTrafficClassBandwidthValue
18 }
19
20 lldpXdot1dcbxLocETSTrafficClass OBJECT-TYPE
21 SYNTAX          LldpXdot1dcbxTrafficClassValue
22 MAX-ACCESS      not-accessible
23 STATUS          current
24 DESCRIPTION
25     "Indicates the traffic class to
26     which this bandwidth applies"
27 REFERENCE
28     "D.2.9.7"
29 ::= { lldpXdot1dcbxLocETSTrafficClassBandwidthEntry 1 }
30
31 lldpXdot1dcbxLocETSTrafficClassBandwidth OBJECT-TYPE
32 SYNTAX          LldpXdot1dcbxTrafficClassBandwidthValue
33 MAX-ACCESS      read-only
34 STATUS          current
35 DESCRIPTION
36     "Indicates the bandwidth assigned to this traffic class."
37 REFERENCE
38     "D.2.9.7"
39 ::= { lldpXdot1dcbxLocETSTrafficClassBandwidthEntry 2 }
40
41 lldpXdot1dcbxLocETSTrafficSelectionAlgorithmTable OBJECT-TYPE
42 SYNTAX          SEQUENCE OF
43     LldpXdot1dcbxLocETSTrafficSelectionAlgorithmEntry
44 MAX-ACCESS      not-accessible
45 STATUS          current
46 DESCRIPTION
47     "This table contains one row per traffic class. The entry
48     in each row indicates the traffic selction algorithm to be
49     used by the traffic class."
50 ::= { lldpXdot1dcbxLocETSTrafficSelectionAlgorithmTable 4 }
51
52 lldpXdot1dcbxLocETSTrafficSelectionAlgorithmEntry OBJECT-TYPE
53 SYNTAX          LldpXdot1dcbxLocETSTrafficSelectionAlgorithmEntry
54 MAX-ACCESS      not-accessible
55 STATUS          current
56 DESCRIPTION
57     "Indicates a traffic class to traffic selection algorithm
58     assignment."

```

```

1      INDEX      {
2          lldpV2LocPortIfIndex,
3          lldpXdot1dcbxLocETSConTSATrafficClass
4      }
5      ::= { lldpXdot1dcbxLocETSConTrafficSelectionAlgorithmTable 1 }
6
7      LldpXdot1dcbxLocETSConTrafficSelectionAlgorithmEntry ::= SEQUENCE {
8          lldpXdot1dcbxLocETSConTSATrafficClass
9          LldpXdot1dcbxTrafficClassValue,
10         lldpXdot1dcbxLocETSConTrafficSelectionAlgorithm
11         LldpXdot1dcbxTrafficSelectionAlgorithm
12     }
13
14     lldpXdot1dcbxLocETSConTSATrafficClass OBJECT-TYPE
15     SYNTAX      LldpXdot1dcbxTrafficClassValue
16     MAX-ACCESS  not-accessible
17     STATUS      current
18     DESCRIPTION
19         "Indicates the traffic class that is assigned to a traffic
20         selection algorithm."
21     REFERENCE
22         "D.2.9.8"
23     ::= { lldpXdot1dcbxLocETSConTrafficSelectionAlgorithmEntry 1 }
24
25     lldpXdot1dcbxLocETSConTrafficSelectionAlgorithm OBJECT-TYPE
26     SYNTAX      LldpXdot1dcbxTrafficSelectionAlgorithm
27     MAX-ACCESS  read-only
28     STATUS      current
29     DESCRIPTION
30         "Indicates the Traffic Selection Algorithm to which this
31         traffic class is to be assigned."
32     REFERENCE
33         "D.2.9.8"
34     ::= { lldpXdot1dcbxLocETSConTrafficSelectionAlgorithmEntry 2 }
35
36     --
37     -- lldpXdot1dcbxLocETSRecommendationTable - Contains the information for
38     -- the ETS Recommendation TLV.
39     --
40     lldpXdot1dcbxLocETSReco OBJECT IDENTIFIER ::=
41     { lldpXdot1dcbxLocalData 2 }
42
43     lldpXdot1dcbxLocETSRecoTrafficClassBandwidthTable OBJECT-TYPE
44     SYNTAX      SEQUENCE OF
45         LldpXdot1dcbxLocETSRecoTrafficClassBandwidthEntry
46     MAX-ACCESS  not-accessible
47     STATUS      current
48     DESCRIPTION
49         "This table contains one row per traffic class. The
50         entry in each row indicates the traffic class to
51         which the bandwidth is assigned."
52     ::= { lldpXdot1dcbxLocETSReco 1 }
53
54     lldpXdot1dcbxLocETSRecoTrafficClassBandwidthEntry OBJECT-TYPE
55     SYNTAX      LldpXdot1dcbxLocETSRecoTrafficClassBandwidthEntry
56     MAX-ACCESS  not-accessible
57     STATUS      current
58     DESCRIPTION
59         "Indicates a traffic class to Bandwidth assignment."

```

```

1      INDEX      {
2          lldpV2LocPortIfIndex,
3          lldpXdot1dcbxLocETSRecoTrafficClass
4      }
5      ::= { lldpXdot1dcbxLocETSRecoTrafficClassBandwidthTable 1 }
6
7      LldpXdot1dcbxLocETSRecoTrafficClassBandwidthEntry ::= SEQUENCE {
8          lldpXdot1dcbxLocETSRecoTrafficClass
9          LldpXdot1dcbxTrafficClassValue,
10         lldpXdot1dcbxLocETSRecoTrafficClassBandwidth
11         LldpXdot1dcbxTrafficClassBandwidthValue
12     }
13
14     lldpXdot1dcbxLocETSRecoTrafficClass OBJECT-TYPE
15     SYNTAX      LldpXdot1dcbxTrafficClassValue
16     MAX-ACCESS  not-accessible
17     STATUS      current
18     DESCRIPTION
19         "Indicates the traffic class to
20         which this bandwidth applies"
21     REFERENCE
22         "D.2.10.3"
23     ::= { lldpXdot1dcbxLocETSRecoTrafficClassBandwidthEntry 1 }
24
25     lldpXdot1dcbxLocETSRecoTrafficClassBandwidth OBJECT-TYPE
26     SYNTAX      LldpXdot1dcbxTrafficClassBandwidthValue
27     MAX-ACCESS  read-only
28     STATUS      current
29     DESCRIPTION
30         "Indicates the bandwidth assigned to this traffic class."
31     REFERENCE
32         "D.2.10.4"
33     ::= { lldpXdot1dcbxLocETSRecoTrafficClassBandwidthEntry 2 }
34
35     lldpXdot1dcbxLocETSRecoTrafficSelectionAlgorithmTable OBJECT-TYPE
36     SYNTAX      SEQUENCE OF
37         LldpXdot1dcbxLocETSRecoTrafficSelectionAlgorithmEntry
38     MAX-ACCESS  not-accessible
39     STATUS      current
40     DESCRIPTION
41         "This table contains one row per priority. The entry in each
42         row indicates the traffic selction algorithm to be used
43         by the traffic class."
44     ::= { lldpXdot1dcbxLocETSReco 2 }
45
46     lldpXdot1dcbxLocETSRecoTrafficSelectionAlgorithmEntry OBJECT-TYPE
47     SYNTAX      LldpXdot1dcbxLocETSRecoTrafficSelectionAlgorithmEntry
48     MAX-ACCESS  not-accessible
49     STATUS      current
50     DESCRIPTION
51         "Indicates a priority to traffic selection algorithm
52         assignment."
53     INDEX      {
54         lldpV2LocPortIfIndex,
55         lldpXdot1dcbxLocETSRecoTSATrafficClass
56     }
57     ::= { lldpXdot1dcbxLocETSRecoTrafficSelectionAlgorithmTable 1 }
58
59     LldpXdot1dcbxLocETSRecoTrafficSelectionAlgorithmEntry ::= SEQUENCE {

```

```

1      lldpXdot1dcbxLocETSRecoTSAtrafficClass
2          LldpXdot1dcbxTrafficClassValue,
3      lldpXdot1dcbxLocETSRecoTrafficSelectionAlgorithm
4          LldpXdot1dcbxTrafficSelectionAlgorithm
5  }
6
6  lldpXdot1dcbxLocETSRecoTSAtrafficClass OBJECT-TYPE
7      SYNTAX          LldpXdot1dcbxTrafficClassValue
8      MAX-ACCESS      not-accessible
9      STATUS          current
10     DESCRIPTION
11         "Indicates the traffic class that is assigned to a traffic
12         selection algorithm."
13     REFERENCE
14         "D.2.10.5"
15     ::= { lldpXdot1dcbxLocETSRecoTrafficSelectionAlgorithmEntry 1 }
16
16  lldpXdot1dcbxLocETSRecoTrafficSelectionAlgorithm OBJECT-TYPE
17      SYNTAX          LldpXdot1dcbxTrafficSelectionAlgorithm
18      MAX-ACCESS      read-only
19      STATUS          current
20     DESCRIPTION
21         "Indicates the Traffic Selection Algorithm to which this
22         traffic class is to be assigned."
23     REFERENCE
24         "D.2.10.5"
25     ::= { lldpXdot1dcbxLocETSRecoTrafficSelectionAlgorithmEntry 2 }
26
27     --
28     -- lldpXdot1dcbxLocPFCTable - Contains the information for the PFC
29     -- Configuration TLV.
30     --
30  lldpXdot1dcbxLocPFC OBJECT IDENTIFIER ::= { lldpXdot1dcbxLocalData 3 }
31
31  lldpXdot1dcbxLocPFCBasicTable OBJECT-TYPE
32      SYNTAX          SEQUENCE OF LldpXdot1dcbxLocPFCBasicEntry
33      MAX-ACCESS      not-accessible
34      STATUS          current
35     DESCRIPTION
36         "This table contains one row per port for the IEEE 802.1
37         organizationally defined LLDP PFC TLV on the local
38         system known to this agent"
39     ::= { lldpXdot1dcbxLocPFC 1 }
40
40  lldpXdot1dcbxLocPFCBasicEntry OBJECT-TYPE
41      SYNTAX          LldpXdot1dcbxLocPFCBasicEntry
42      MAX-ACCESS      not-accessible
43      STATUS          current
44     DESCRIPTION
45         "Information about the IEEE 802.1 organizational defined
46         PFC TLV LLDP extension."
47     INDEX          { lldpV2LocPortIfIndex }
48     ::= { lldpXdot1dcbxLocPFCBasicTable 1 }
49
49  LldpXdot1dcbxLocPFCBasicEntry ::= SEQUENCE {
50      lldpXdot1dcbxLocPFCWilling      TruthValue,
51      lldpXdot1dcbxLocPFCMBC          TruthValue,
52      lldpXdot1dcbxLocPFCcap         LldpXdot1dcbxSupportedCapacity
53  }
54

```

```

1
2  lldpXdot1dcbxLocPFCWilling OBJECT-TYPE
3      SYNTAX          TruthValue
4      MAX-ACCESS      read-only
5      STATUS          current
6      DESCRIPTION
7          "Indicates if the local system is willing to accept the
8          PFC configuration of the remote system."
9      REFERENCE
10         "D.2.11.3"
11     ::= { lldpXdot1dcbxLocPFCBasicEntry 1}
12
13 lldpXdot1dcbxLocPFCMBC OBJECT-TYPE
14     SYNTAX          TruthValue
15     MAX-ACCESS      read-only
16     STATUS          current
17     DESCRIPTION
18         "Indicates if the local system is capable of bypassing
19         MACsec processing when MACsec is disabled."
20     REFERENCE
21         "D.2.11.4"
22     ::= { lldpXdot1dcbxLocPFCBasicEntry 2}
23
24 lldpXdot1dcbxLocPFCCap OBJECT-TYPE
25     SYNTAX          LldpXdot1dcbxSupportedCapacity
26     MAX-ACCESS      read-only
27     STATUS          current
28     DESCRIPTION
29         "Indicates the number of traffic classes on the local device
30         that may simultaneously have PFC enabled."
31     REFERENCE
32         "D.2.11.5"
33     ::= { lldpXdot1dcbxLocPFCBasicEntry 3}
34
35 lldpXdot1dcbxLocPFCEnableTable OBJECT-TYPE
36     SYNTAX          SEQUENCE OF LldpXdot1dcbxLocPFCEnableEntry
37     MAX-ACCESS      not-accessible
38     STATUS          current
39     DESCRIPTION
40         "This table contains eight entries, one entry per priority,
41         indicating if PFC is enabled on the corresponding priority."
42     ::= { lldpXdot1dcbxLocPFC 2 }
43
44 lldpXdot1dcbxLocPFCEnableEntry OBJECT-TYPE
45     SYNTAX          LldpXdot1dcbxLocPFCEnableEntry
46     MAX-ACCESS      not-accessible
47     STATUS          current
48     DESCRIPTION
49         "Each entry indicates if PFC is enabled on the
50         corresponding priority"
51     INDEX {
52         lldpV2LocPortIfIndex,
53         lldpXdot1dcbxLocPFCEnablePriority
54     }
55     ::= { lldpXdot1dcbxLocPFCEnableTable 1 }
56
57 LldpXdot1dcbxLocPFCEnableEntry ::= SEQUENCE {
58     lldpXdot1dcbxLocPFCEnablePriority  IEEE8021PriorityValue,
59     lldpXdot1dcbxLocPFCEnableEnabled  TruthValue

```



```

1      }
2
3      lldpXdot1dcbxLocPFCEnablePriority OBJECT-TYPE
4          SYNTAX          IEEE8021PriorityValue
5          MAX-ACCESS      not-accessible
6          STATUS          current
7          DESCRIPTION
8              "Prioiity for which PFC is enabled / disabled"
9              ::= { lldpXdot1dcbxLocPFCEnableEntry 1 }
10
11     lldpXdot1dcbxLocPFCEnableEnabled OBJECT-TYPE
12         SYNTAX          TruthValue
13         MAX-ACCESS      read-only
14         STATUS          current
15         DESCRIPTION
16             "Indicates if PFC is enabled on the corresponding priority"
17         REFERENCE
18             "D.2.11.6"
19         ::= { lldpXdot1dcbxLocPFCEnableEntry 2 }
20
21     --
22     -- lldpXdot1dcbxLocApplicationPriorityTable - Contains the information
23     -- for the Application Priority TLV.
24     --
25
26     lldpXdot1dcbxLocApplicationPriorityAppTable OBJECT-TYPE
27         SYNTAX          SEQUENCE OF
28             LldpXdot1dcbxLocApplicationPriorityAppEntry
29         MAX-ACCESS      not-accessible
30         STATUS          current
31         DESCRIPTION
32             "Table containing entries indicating the priority to be used
33             for a given application"
34         ::= { lldpXdot1dcbxLocalData 4 }
35
36     lldpXdot1dcbxLocApplicationPriorityAppEntry OBJECT-TYPE
37         SYNTAX          LldpXdot1dcbxLocApplicationPriorityAppEntry
38         MAX-ACCESS      not-accessible
39         STATUS          current
40         DESCRIPTION
41             "Entry that indicates the priority to be used for a
42             given application."
43         INDEX          {
44             lldpV2LocPortIfIndex,
45             lldpXdot1dcbxLocApplicationPriorityAESelector,
46             lldpXdot1dcbxLocApplicationPriorityAEProtocol
47         }
48         ::= { lldpXdot1dcbxLocApplicationPriorityAppTable 1 }
49
50     LldpXdot1dcbxLocApplicationPriorityAppEntry ::= SEQUENCE {
51         lldpXdot1dcbxLocApplicationPriorityAESelector
52         LldpXdot1dcbxAppSelector,
53         lldpXdot1dcbxLocApplicationPriorityAEProtocol
54         LldpXdot1dcbxAppProtocol,
55         lldpXdot1dcbxLocApplicationPriorityAEPriority
56         IEEE8021PriorityValue
57     }
58
59     lldpXdot1dcbxLocApplicationPriorityAESelector OBJECT-TYPE
60         SYNTAX          LldpXdot1dcbxAppSelector

```

```

1      MAX-ACCESS      not-accessible
2      STATUS          current
3      DESCRIPTION
4          "Indicates the contents of the protocol object
5          (lldpXdotldcbxLocApplicationPriorityAEProtocol)
6          1: Ethertype
7          2: Well Known Port number over TCP, or SCTP
8          3: Well Known Port number over UDP, or DCCP
9          4: Well Known Port number over TCP, SCTP, UDP, and DCCP"
10     REFERENCE
11         "D.2.12.3"
12     ::= { lldpXdotldcbxLocApplicationPriorityAppEntry 1 }
13
14 lldpXdotldcbxLocApplicationPriorityAEProtocol OBJECT-TYPE
15     SYNTAX          LldpXdotldcbxAppProtocol
16     MAX-ACCESS      not-accessible
17     STATUS          current
18     DESCRIPTION
19         "The protocol indicator of the type indicated by
20         lldpXdotldcbxLocApplicationPriorityAESelector."
21     REFERENCE
22         "D.2.12.3"
23     ::= { lldpXdotldcbxLocApplicationPriorityAppEntry 2 }
24
25 lldpXdotldcbxLocApplicationPriorityAEPriority OBJECT-TYPE
26     SYNTAX          IEEE8021PriorityValue
27     MAX-ACCESS      read-only
28     STATUS          current
29     DESCRIPTION
30         "The priority code point that should be used in
31         frames transporting the protocol indicated by
32         lldpXdotldcbxLocApplicationPriorityAESelector and
33         lldpXdotldcbxLocApplicationPriorityAEProtocol"
34     REFERENCE
35         "D.2.12.3"
36     ::= { lldpXdotldcbxLocApplicationPriorityAppEntry 3 }
37
38 -----
39 -- IEEE 802.1 - DCBX Remote System Information
40 -----
41 --
42 -- lldpXdotldcbxRemETSConfigurationTable - Contains the information
43 -- for the remote system ETS Configuration TLV.
44 --
45 lldpXdotldcbxRemETSConfiguration OBJECT IDENTIFIER
46     ::= { lldpXdotldcbxRemoteData 1 }
47
48 lldpXdotldcbxRemETSBasicConfigurationTable OBJECT-TYPE
49     SYNTAX          SEQUENCE OF LldpXdotldcbxRemETSBasicConfigurationEntry
50     MAX-ACCESS      not-accessible
51     STATUS          current
52     DESCRIPTION
53         "This table contains one row per port for the IEEE 802.1
54         organizationally defined LLDP ETS Configuration TLV on
55         the local system known to this agent"
56     ::= { lldpXdotldcbxRemETSConfiguration 1 }

```

```

1  lldpXdotldcbxRemETSTBasicConfigurationEntry OBJECT-TYPE
2      SYNTAX          LldpXdotldcbxRemETSTBasicConfigurationEntry
3      MAX-ACCESS      not-accessible
4      STATUS          current
5      DESCRIPTION
6          "Information about the IEEE 802.1 organizational defined
7          ETS Configuration TLV LLDP extension."
8      INDEX          {
9          lldpV2RemTimeMark,
10         lldpV2RemLocalIfIndex,
11         lldpV2RemLocalDestMACAddress,
12         lldpV2RemIndex
13     }
14     ::= { lldpXdotldcbxRemETSTBasicConfigurationTable 1 }
15
16 LldpXdotldcbxRemETSTBasicConfigurationEntry ::= SEQUENCE {
17     lldpXdotldcbxRemETSTConCreditBasedShaperSupport      TruthValue,
18     lldpXdotldcbxRemETSTConTrafficClassesSupported
19         LldpXdotldcbxSupportedCapacity,
20     lldpXdotldcbxRemETSTConWilling      TruthValue
21 }
22
23 lldpXdotldcbxRemETSTConCreditBasedShaperSupport OBJECT-TYPE
24     SYNTAX          TruthValue
25     MAX-ACCESS      read-only
26     STATUS          current
27     DESCRIPTION
28         "Indicates if the credit-based shaper Traffic Selection
29         algorithm is supported on the remote system."
30     REFERENCE
31         "D.2.9.4"
32     ::= { lldpXdotldcbxRemETSTBasicConfigurationEntry 1 }
33
34 lldpXdotldcbxRemETSTConTrafficClassesSupported OBJECT-TYPE
35     SYNTAX          LldpXdotldcbxSupportedCapacity
36     MAX-ACCESS      read-only
37     STATUS          current
38     DESCRIPTION
39         "Indicates the number of traffic classes supported."
40     REFERENCE
41         "D.2.9.5"
42     ::= { lldpXdotldcbxRemETSTBasicConfigurationEntry 2 }
43
44 lldpXdotldcbxRemETSTConWilling OBJECT-TYPE
45     SYNTAX          TruthValue
46     MAX-ACCESS      read-only
47     STATUS          current
48     DESCRIPTION
49         "Indicates if the remote system is willing to accept the
50         ETS configuration recommended by the remote system."
51     REFERENCE
52         "D.2.9.3"
53     ::= { lldpXdotldcbxRemETSTBasicConfigurationEntry 3 }
54
55 lldpXdotldcbxRemETSTConPriorityAssignmentTable OBJECT-TYPE
56     SYNTAX          SEQUENCE OF
57         LldpXdotldcbxRemETSTConPriorityAssignmentEntry
58     MAX-ACCESS      not-accessible
59     STATUS          current

```

```

1      DESCRIPTION
2          "This table contains one row per priority.  The entry in
3          each row indicates the traffic class to which the
4          priority is assigned."
5      ::= { lldpXdot1dcbxRemETSConfiguration 2 }
6
7      lldpXdot1dcbxRemETSConPriorityAssignmentEntry OBJECT-TYPE
8      SYNTAX          LldpXdot1dcbxRemETSConPriorityAssignmentEntry
9      MAX-ACCESS      not-accessible
10     STATUS          current
11     DESCRIPTION
12         "Indicates a priority to traffic class assignment."
13     INDEX          {
14         lldpV2RemTimeMark,
15         lldpV2RemLocalIfIndex,
16         lldpV2RemLocalDestMACAddress,
17         lldpV2RemIndex,
18         lldpXdot1dcbxRemETSConPriority
19     }
20     ::= { lldpXdot1dcbxRemETSConPriorityAssignmentTable 1 }
21
22     LldpXdot1dcbxRemETSConPriorityAssignmentEntry ::= SEQUENCE {
23         lldpXdot1dcbxRemETSConPriority          IEEE8021PriorityValue,
24         lldpXdot1dcbxRemETSConPriTrafficClass
25         LldpXdot1dcbxTrafficClassValue
26     }
27
28     lldpXdot1dcbxRemETSConPriority OBJECT-TYPE
29     SYNTAX          IEEE8021PriorityValue
30     MAX-ACCESS      not-accessible
31     STATUS          current
32     DESCRIPTION
33         "Indicates the priority that is assigned to a traffic
34         class."
35     REFERENCE
36         "D.2.9.6"
37     ::= { lldpXdot1dcbxRemETSConPriorityAssignmentEntry 1 }
38
39     lldpXdot1dcbxRemETSConPriTrafficClass OBJECT-TYPE
40     SYNTAX          LldpXdot1dcbxTrafficClassValue
41     MAX-ACCESS      read-only
42     STATUS          current
43     DESCRIPTION
44         "Indicates the traffic class to which this priority is
45         to be assigned."
46     REFERENCE
47         "D.2.9.6"
48     ::= { lldpXdot1dcbxRemETSConPriorityAssignmentEntry 2 }
49
50     lldpXdot1dcbxRemETSConTrafficClassBandwidthTable OBJECT-TYPE
51     SYNTAX          SEQUENCE OF
52         LldpXdot1dcbxRemETSConTrafficClassBandwidthEntry
53     MAX-ACCESS      not-accessible
54     STATUS          current
55     DESCRIPTION
56         "This table contains one row per traffic class.  The
57         entry in each row indicates the traffic class to
58         which the bandwidth is assigned."
59     ::= { lldpXdot1dcbxRemETSConfiguration 3 }

```

```

1
2   lldpXdot1dcbxRemETSTrafficClassBandwidthEntry OBJECT-TYPE
3     SYNTAX          LldpXdot1dcbxRemETSTrafficClassBandwidthEntry
4     MAX-ACCESS      not-accessible
5     STATUS          current
6     DESCRIPTION
7       "Indicates a traffic class to Bandwidth assignment."
8     INDEX           {
9       lldpV2RemTimeMark,
10      lldpV2RemLocalIfIndex,
11      lldpV2RemLocalDestMACAddress,
12      lldpV2RemIndex,
13      lldpXdot1dcbxRemETSTrafficClass
14    }
15    ::= { lldpXdot1dcbxRemETSTrafficClassBandwidthTable 1 }
16
17  LldpXdot1dcbxRemETSTrafficClassBandwidthEntry ::= SEQUENCE {
18    lldpXdot1dcbxRemETSTrafficClass
19      LldpXdot1dcbxTrafficClassValue,
20    lldpXdot1dcbxRemETSTrafficClassBandwidth
21      LldpXdot1dcbxTrafficClassBandwidthValue
22  }
23
24  lldpXdot1dcbxRemETSTrafficClass OBJECT-TYPE
25    SYNTAX          LldpXdot1dcbxTrafficClassValue
26    MAX-ACCESS      not-accessible
27    STATUS          current
28    DESCRIPTION
29      "Indicates the traffic class to
30      which this bandwidth applies"
31    REFERENCE
32      "D.2.9.7"
33    ::= { lldpXdot1dcbxRemETSTrafficClassBandwidthEntry 1 }
34
35  lldpXdot1dcbxRemETSTrafficClassBandwidth OBJECT-TYPE
36    SYNTAX          LldpXdot1dcbxTrafficClassBandwidthValue
37    MAX-ACCESS      read-only
38    STATUS          current
39    DESCRIPTION
40      "Indicates the bandwidth assigned to this traffic class."
41    REFERENCE
42      "D.2.9.7"
43    ::= { lldpXdot1dcbxRemETSTrafficClassBandwidthEntry 2 }
44
45  lldpXdot1dcbxRemETSTrafficSelectionAlgorithmTable OBJECT-TYPE
46    SYNTAX          SEQUENCE OF
47      LldpXdot1dcbxRemETSTrafficSelectionAlgorithmEntry
48    MAX-ACCESS      not-accessible
49    STATUS          current
50    DESCRIPTION
51      "This table contains one row per traffic class. The
52      entry in each row indicates the traffic selection
53      algorithm to be used by the traffic class."
54    ::= { lldpXdot1dcbxRemETSTrafficSelectionAlgorithmTable 4 }
55
56  lldpXdot1dcbxRemETSTrafficSelectionAlgorithmEntry OBJECT-TYPE
57    SYNTAX          LldpXdot1dcbxRemETSTrafficSelectionAlgorithmEntry
58    MAX-ACCESS      not-accessible

```

```

1      STATUS      current
2      DESCRIPTION
3          "Indicates a traffic class to traffic selection
4          algorithm assignment."
5      INDEX      {
6          lldpV2RemTimeMark,
7          lldpV2RemLocalIfIndex,
8          lldpV2RemLocalDestMACAddress,
9          lldpV2RemIndex,
10         lldpXdot1dcbxRemETSConTSATrafficClass
11     }
12     ::= { lldpXdot1dcbxRemETSConTrafficSelectionAlgorithmTable 1 }
13
14 LldpXdot1dcbxRemETSConTrafficSelectionAlgorithmEntry ::= SEQUENCE {
15     lldpXdot1dcbxRemETSConTSATrafficClass
16     LldpXdot1dcbxTrafficClassValue,
17     lldpXdot1dcbxRemETSConTrafficSelectionAlgorithm
18     LldpXdot1dcbxTrafficSelectionAlgorithm
19 }
20
21 lldpXdot1dcbxRemETSConTSATrafficClass OBJECT-TYPE
22     SYNTAX      LldpXdot1dcbxTrafficClassValue
23     MAX-ACCESS  not-accessible
24     STATUS      current
25     DESCRIPTION
26         "Indicates the traffic class that is assigned to a traffic
27         selection algorithm."
28     REFERENCE
29         "D.2.9.8"
30     ::= { lldpXdot1dcbxRemETSConTrafficSelectionAlgorithmEntry 1 }
31
32 lldpXdot1dcbxRemETSConTrafficSelectionAlgorithm OBJECT-TYPE
33     SYNTAX      LldpXdot1dcbxTrafficSelectionAlgorithm
34     MAX-ACCESS  read-only
35     STATUS      current
36     DESCRIPTION
37         "Indicates the Traffic Selection Algorithm to which this
38         traffic class is to be assigned."
39     REFERENCE
40         "D.2.9.8"
41     ::= { lldpXdot1dcbxRemETSConTrafficSelectionAlgorithmEntry 2 }
42
43 --
44 -- lldpXdot1dcbxRemETSRecommendationTable - Contains the information for
45 -- the remote system ETS Recommendation TLV.
46 --
47 lldpXdot1dcbxRemETSReco OBJECT IDENTIFIER ::=
48     { lldpXdot1dcbxRemoteData 2 }
49
50 lldpXdot1dcbxRemETSRecoTrafficClassBandwidthTable OBJECT-TYPE
51     SYNTAX      SEQUENCE OF
52     LldpXdot1dcbxRemETSRecoTrafficClassBandwidthEntry
53     MAX-ACCESS  not-accessible
54     STATUS      current
55     DESCRIPTION
56         "This table contains one row per traffic class. The
57         entry in each row indicates the traffic class to
58         which the bandwidth is assigned."
59     ::= { lldpXdot1dcbxRemETSReco 1 }

```

```

1
2  lldpXdot1dcbxRemETSRecoTrafficClassBandwidthEntry OBJECT-TYPE
3      SYNTAX          LldpXdot1dcbxRemETSRecoTrafficClassBandwidthEntry
4      MAX-ACCESS      not-accessible
5      STATUS          current
6      DESCRIPTION
7          "Indicates a traffic class to Bandwidth assignment."
8      INDEX           {
9          lldpV2RemTimeMark,
10         lldpV2RemLocalIfIndex,
11         lldpV2RemLocalDestMACAddress,
12         lldpV2RemIndex,
13         lldpXdot1dcbxRemETSRecoTrafficClass
14     }
15     ::= { lldpXdot1dcbxRemETSRecoTrafficClassBandwidthTable 1 }
16
17 LldpXdot1dcbxRemETSRecoTrafficClassBandwidthEntry ::= SEQUENCE {
18     lldpXdot1dcbxRemETSRecoTrafficClass
19     LldpXdot1dcbxTrafficClassValue,
20     lldpXdot1dcbxRemETSRecoTrafficClassBandwidth
21     LldpXdot1dcbxTrafficClassBandwidthValue
22 }
23
24 lldpXdot1dcbxRemETSRecoTrafficClass OBJECT-TYPE
25     SYNTAX          LldpXdot1dcbxTrafficClassValue
26     MAX-ACCESS      not-accessible
27     STATUS          current
28     DESCRIPTION
29         "Indicates the traffic class to
30         which this bandwidth applies"
31     REFERENCE
32         "D.2.10.4"
33     ::= { lldpXdot1dcbxRemETSRecoTrafficClassBandwidthEntry 1 }
34
35 lldpXdot1dcbxRemETSRecoTrafficClassBandwidth OBJECT-TYPE
36     SYNTAX          LldpXdot1dcbxTrafficClassBandwidthValue
37     MAX-ACCESS      read-only
38     STATUS          current
39     DESCRIPTION
40         "Indicates the bandwidth assigned to this traffic class."
41     REFERENCE
42         "D.2.10.4"
43     ::= { lldpXdot1dcbxRemETSRecoTrafficClassBandwidthEntry 2 }
44
45 lldpXdot1dcbxRemETSRecoTrafficSelectionAlgorithmTable OBJECT-TYPE
46     SYNTAX          SEQUENCE OF
47         LldpXdot1dcbxRemETSRecoTrafficSelectionAlgorithmEntry
48     MAX-ACCESS      not-accessible
49     STATUS          current
50     DESCRIPTION
51         "This table contains one row per traffic class. The
52         entry in each row indicates the traffic selection
53         algorithm to be used by the priority."
54     ::= { lldpXdot1dcbxRemETSReco 2 }
55
56 lldpXdot1dcbxRemETSRecoTrafficSelectionAlgorithmEntry OBJECT-TYPE
57     SYNTAX          LldpXdot1dcbxRemETSRecoTrafficSelectionAlgorithmEntry
58     MAX-ACCESS      not-accessible
59     STATUS          current

```

```

1      DESCRIPTION
2          "Indicates a priority to traffic selection algorithm
3          assignment."
4      INDEX          {
5                  lldpV2RemTimeMark,
6                  lldpV2RemLocalIfIndex,
7                  lldpV2RemLocalDestMACAddress,
8                  lldpV2RemIndex,
9                  lldpXdot1dcbxRemETSRecoTSATrafficClass
10     }
11     ::= { lldpXdot1dcbxRemETSRecoTrafficSelectionAlgorithmTable 1 }
12
13 LldpXdot1dcbxRemETSRecoTrafficSelectionAlgorithmEntry ::= SEQUENCE {
14     lldpXdot1dcbxRemETSRecoTSATrafficClass
15     LldpXdot1dcbxTrafficClassValue,
16     lldpXdot1dcbxRemETSRecoTrafficSelectionAlgorithm
17     }
18
19 lldpXdot1dcbxRemETSRecoTSATrafficClass OBJECT-TYPE
20     SYNTAX          LldpXdot1dcbxTrafficClassValue
21     MAX-ACCESS      not-accessible
22     STATUS          current
23     DESCRIPTION
24         "Indicates the traffic class that is assigned to a traffic
25         selection algorithm."
26     REFERENCE
27         "D.2.10.5"
28     ::= { lldpXdot1dcbxRemETSRecoTrafficSelectionAlgorithmEntry 1 }
29
30 lldpXdot1dcbxRemETSRecoTrafficSelectionAlgorithm OBJECT-TYPE
31     SYNTAX          LldpXdot1dcbxTrafficSelectionAlgorithm
32     MAX-ACCESS      read-only
33     STATUS          current
34     DESCRIPTION
35         "Indicates the Traffic Selection Algorithm to which this
36         traffic class is to be assigned."
37     REFERENCE
38         "D.2.10.5"
39     ::= { lldpXdot1dcbxRemETSRecoTrafficSelectionAlgorithmEntry 2 }
40
41 --
42 -- lldpXdot1dcbxRemPFCTable - Contains the information for the remote
43 -- system PFC TLV.
44 --
45 lldpXdot1dcbxRemPFC OBJECT IDENTIFIER ::= { lldpXdot1dcbxRemoteData 3 }
46
47 lldpXdot1dcbxRemPFCBasicTable OBJECT-TYPE
48     SYNTAX          SEQUENCE OF LldpXdot1dcbxRemPFCBasicEntry
49     MAX-ACCESS      not-accessible
50     STATUS          current
51     DESCRIPTION
52         "This table contains one row per port for the IEEE 802.1
53         organizationally defined LLDP PFC TLV on the local
54         system known to this agent"
55     ::= { lldpXdot1dcbxRemPFC 1 }
56
57 lldpXdot1dcbxRemPFCBasicEntry OBJECT-TYPE
58     SYNTAX          LldpXdot1dcbxRemPFCBasicEntry

```



```

1      MAX-ACCESS      not-accessible
2      STATUS          current
3      DESCRIPTION
4          "Information about the IEEE 802.1 organizational defined
5          PFC TLV LLDP extension."
6      INDEX           {
7                      lldpV2RemTimeMark,
8                      lldpV2RemLocalIfIndex,
9                      lldpV2RemLocalDestMACAddress,
10                     }
11     ::= { lldpXdot1dcbxRemPFCBasicTable 1 }
12
13     LldpXdot1dcbxRemPFCBasicEntry ::= SEQUENCE {
14         lldpXdot1dcbxRemPFCWilling      TruthValue,
15         lldpXdot1dcbxRemPFCMBC         TruthValue,
16         lldpXdot1dcbxRemPFCCap        LldpXdot1dcbxSupportedCapacity
17     }
18
19     lldpXdot1dcbxRemPFCWilling OBJECT-TYPE
20     SYNTAX          TruthValue
21     MAX-ACCESS      read-only
22     STATUS          current
23     DESCRIPTION
24         "Indicates if the remote system is willing to accept the
25         PFC configuration of the local system."
26     REFERENCE
27         "D.2.11.3"
28     ::= { lldpXdot1dcbxRemPFCBasicEntry 1}
29
30     lldpXdot1dcbxRemPFCMBC OBJECT-TYPE
31     SYNTAX          TruthValue
32     MAX-ACCESS      read-only
33     STATUS          current
34     DESCRIPTION
35         "Indicates if the remote system is capable of bypassing
36         MACsec processing when MACsec is disabled."
37     REFERENCE
38         "D.2.11.4"
39     ::= { lldpXdot1dcbxRemPFCBasicEntry 2}
40
41     lldpXdot1dcbxRemPFCCap OBJECT-TYPE
42     SYNTAX          LldpXdot1dcbxSupportedCapacity
43     MAX-ACCESS      read-only
44     STATUS          current
45     DESCRIPTION
46         "Indicates the number of traffic classes on the remote device
47         that may simultaneously have PFC enabled."
48     REFERENCE
49         "D.2.11.5"
50     ::= { lldpXdot1dcbxRemPFCBasicEntry 3}
51
52     lldpXdot1dcbxRemPFCEnableTable OBJECT-TYPE
53     SYNTAX          SEQUENCE OF LldpXdot1dcbxRemPFCEnableEntry
54     MAX-ACCESS      not-accessible
55     STATUS          current
56     DESCRIPTION
57         "This table contains eight entries, one entry per priority,
58         indicating if PFC is enabled on the corresponding priority."

```

```

1      ::= { lldpXdot1dcbxRemPFC 2 }
2
3      lldpXdot1dcbxRemPFCEnableEntry OBJECT-TYPE
4          SYNTAX          LldpXdot1dcbxRemPFCEnableEntry
5          MAX-ACCESS      not-accessible
6          STATUS          current
7          DESCRIPTION
8              "Each entry indicates if PFC is enabled on the
9              correponding priority"
10         INDEX           {
11             lldpV2RemTimeMark,
12             lldpV2RemLocalIfIndex,
13             lldpV2RemLocalDestMACAddress,
14             lldpV2RemIndex,
15             lldpXdot1dcbxRemPFCEnablePriority
16         }
17         ::= { lldpXdot1dcbxRemPFCEnableTable 1 }
18
19     lldpXdot1dcbxRemPFCEnableEntry ::= SEQUENCE {
20         lldpXdot1dcbxRemPFCEnablePriority  IEEE8021PriorityValue,
21         lldpXdot1dcbxRemPFCEnableEnabled   TruthValue
22     }
23
24     lldpXdot1dcbxRemPFCEnablePriority OBJECT-TYPE
25         SYNTAX          IEEE8021PriorityValue
26         MAX-ACCESS      not-accessible
27         STATUS          current
28         DESCRIPTION
29             "Prioity for which PFC is enabled / disabled"
30         ::= { lldpXdot1dcbxRemPFCEnableEntry 1 }
31
32     lldpXdot1dcbxRemPFCEnableEnabled OBJECT-TYPE
33         SYNTAX          TruthValue
34         MAX-ACCESS      read-only
35         STATUS          current
36         DESCRIPTION
37             "Indicates if PFC is enabled on the corresponding priority"
38         REFERENCE
39             "D.2.11.6"
40         ::= { lldpXdot1dcbxRemPFCEnableEntry 2 }
41
42     --
43     -- lldpXdot1dcbxRemApplicationPriorityTable - Contains the information
44     -- for the remote system Application Priority TLV.
45     --
46
47     lldpXdot1dcbxRemApplicationPriorityAppTable OBJECT-TYPE
48         SYNTAX          SEQUENCE OF
49             LldpXdot1dcbxRemApplicationPriorityAppEntry
50         MAX-ACCESS      not-accessible
51         STATUS          current
52         DESCRIPTION
53             "Table containing entries indicating the priority to be used
54             for a given application"
55         ::= { lldpXdot1dcbxRemoteData 4 }
56
57     lldpXdot1dcbxRemApplicationPriorityAppEntry OBJECT-TYPE
58         SYNTAX          LldpXdot1dcbxRemApplicationPriorityAppEntry
59         MAX-ACCESS      not-accessible

```

```

1      STATUS      current
2      DESCRIPTION
3          "Entry that indicates the priority to be used for a
4          given application."
5      INDEX      {
6                  lldpV2RemTimeMark,
7                  lldpV2RemLocalIfIndex,
8                  lldpV2RemLocalDestMACAddress,
9                  lldpV2RemIndex,
10                 lldpXdot1dcbxRemApplicationPriorityAESelector,
11                 lldpXdot1dcbxRemApplicationPriorityAEProtocol
12             }
13     ::= { lldpXdot1dcbxRemApplicationPriorityAppTable 1 }
14
15 LldpXdot1dcbxRemApplicationPriorityAppEntry ::= SEQUENCE {
16     lldpXdot1dcbxRemApplicationPriorityAESelector
17     LldpXdot1dcbxAppSelector,
18     lldpXdot1dcbxRemApplicationPriorityAEProtocol
19     LldpXdot1dcbxAppProtocol,
20     lldpXdot1dcbxRemApplicationPriorityAEPriority
21     IEEE8021PriorityValue
22 }
23
24 lldpXdot1dcbxRemApplicationPriorityAESelector OBJECT-TYPE
25     SYNTAX      LldpXdot1dcbxAppSelector
26     MAX-ACCESS  not-accessible
27     STATUS      current
28     DESCRIPTION
29         "Indicates the contents of the protocol object
30         (lldpXdot1dcbxRemApplicationPriorityAEProtocol)
31         1: Ethertype
32         2: Well Known Port number over TCP, or SCTP
33         3: Well Known Port number over UDP, or DCCP
34         4: Well Known Port number over TCP, SCTP, UDP, and DCCP"
35     REFERENCE
36         "D.2.12.3"
37     ::= { lldpXdot1dcbxRemApplicationPriorityAppEntry 1 }
38
39 lldpXdot1dcbxRemApplicationPriorityAEProtocol OBJECT-TYPE
40     SYNTAX      LldpXdot1dcbxAppProtocol
41     MAX-ACCESS  not-accessible
42     STATUS      current
43     DESCRIPTION
44         "The protocol indicator of the type indicated by
45         lldpXdot1dcbxRemApplicationPriorityAESelector."
46     REFERENCE
47         "D.2.12.3"
48     ::= { lldpXdot1dcbxRemApplicationPriorityAppEntry 2 }
49
50 lldpXdot1dcbxRemApplicationPriorityAEPriority OBJECT-TYPE
51     SYNTAX      IEEE8021PriorityValue
52     MAX-ACCESS  read-only
53     STATUS      current
54     DESCRIPTION
55         "The priority code point that should be used in
56         frames transporting the protocol indicated by
57         lldpXdot1dcbxRemApplicationPriorityAESelector and
58         lldpXdot1dcbxRemApplicationPriorityAEProtocol"
59     REFERENCE

```

```

1      "D.2.12.3"
2      ::= { lldpXdot1dcbxRemApplicationPriorityAppEntry 3 }
3
4      -----
5      -- IEEE 802.1 - DCBX Administrative Information
6      -----
7      --
8      -- lldpXdot1dcbxAdminETSConfigurationTable - Contains the information
9      -- for the ETS Configuration TLV.
10     --
11     lldpXdot1dcbxAdminETSConfiguration OBJECT IDENTIFIER
12     ::= { lldpXdot1dcbxAdminData 1 }
13
14     lldpXdot1dcbxAdminETSBasicConfigurationTable OBJECT-TYPE
15     SYNTAX      SEQUENCE OF
16     LldpXdot1dcbxAdminETSBasicConfigurationEntry
17     MAX-ACCESS  not-accessible
18     STATUS      current
19     DESCRIPTION
20     "This table contains one row per port for the IEEE 802.1
21     organizationally defined LLDP ETS Configuration TLV
22     on the local system known to this agent"
23     ::= { lldpXdot1dcbxAdminETSConfiguration 1 }
24
25     lldpXdot1dcbxAdminETSBasicConfigurationEntry OBJECT-TYPE
26     SYNTAX      LldpXdot1dcbxAdminETSBasicConfigurationEntry
27     MAX-ACCESS  not-accessible
28     STATUS      current
29     DESCRIPTION
30     "Information about the IEEE 802.1 organizational defined
31     ETS Configuration TLV LLDP extension."
32     INDEX       { lldpV2LocPortIfIndex }
33     ::= { lldpXdot1dcbxAdminETSBasicConfigurationTable 1 }
34
35     LldpXdot1dcbxAdminETSBasicConfigurationEntry ::= SEQUENCE {
36     lldpXdot1dcbxAdminETSConCreditBasedShaperSupport      TruthValue,
37     lldpXdot1dcbxAdminETSConTrafficClassesSupported
38     LldpXdot1dcbxSupportedCapacity,
39     lldpXdot1dcbxAdminETSConWilling      TruthValue
40     }
41
42     lldpXdot1dcbxAdminETSConCreditBasedShaperSupport OBJECT-TYPE
43     SYNTAX      TruthValue
44     MAX-ACCESS  read-only
45     STATUS      current
46     DESCRIPTION
47     "Indicates support for the credit-based shaper Traffic
48     Selection Algorithm."
49     REFERENCE
50     "D.2.9.4"
51     ::= { lldpXdot1dcbxAdminETSBasicConfigurationEntry 1 }
52
53     lldpXdot1dcbxAdminETSConTrafficClassesSupported OBJECT-TYPE
54     SYNTAX      LldpXdot1dcbxSupportedCapacity
55     MAX-ACCESS  read-only
56     STATUS      current
57     DESCRIPTION
58     "Indicates the number of traffic classes supported."

```

```

1      REFERENCE
2          "D.2.9.5"
3      ::= { lldpXdotldcbxAdminETSBasicConfigurationEntry 2 }
4
5      lldpXdotldcbxAdminETSConWilling OBJECT-TYPE
6          SYNTAX      TruthValue
7          MAX-ACCESS  read-write
8          STATUS      current
9          DESCRIPTION
10             "Indicates if the local system is willing to accept the
11             ETS configuration recommended by the remote system."
12          REFERENCE
13             "D.2.9.3"
14          DEFVAL      { false }
15          ::= { lldpXdotldcbxAdminETSBasicConfigurationEntry 3 }
16
17      lldpXdotldcbxAdminETSConPriorityAssignmentTable OBJECT-TYPE
18          SYNTAX      SEQUENCE OF
19             LldpXdotldcbxAdminETSConPriorityAssignmentEntry
20          MAX-ACCESS  not-accessible
21          STATUS      current
22          DESCRIPTION
23             "This table contains one row per priority. The entry in each
24             row indicates the traffic class to which the priority is
25             assigned."
26          ::= { lldpXdotldcbxAdminETSConfiguration 2 }
27
28      lldpXdotldcbxAdminETSConPriorityAssignmentEntry OBJECT-TYPE
29          SYNTAX      LldpXdotldcbxAdminETSConPriorityAssignmentEntry
30          MAX-ACCESS  not-accessible
31          STATUS      current
32          DESCRIPTION
33             "Indicates a priority to traffic class assignment."
34          INDEX      {
35             lldpV2LocPortIfIndex,
36             lldpXdotldcbxAdminETSConPriority
37         }
38          ::= { lldpXdotldcbxAdminETSConPriorityAssignmentTable 1 }
39
40      LldpXdotldcbxAdminETSConPriorityAssignmentEntry ::= SEQUENCE {
41          lldpXdotldcbxAdminETSConPriority      IEEE8021PriorityValue,
42          lldpXdotldcbxAdminETSConPriTrafficClass
43              LldpXdotldcbxTrafficClassValue
44      }
45
46      lldpXdotldcbxAdminETSConPriority OBJECT-TYPE
47          SYNTAX      IEEE8021PriorityValue
48          MAX-ACCESS  not-accessible
49          STATUS      current
50          DESCRIPTION
51             "Indicates the priority that is assigned to a traffic
52             class."
53          REFERENCE
54             "D.2.9.6"
55          ::= { lldpXdotldcbxAdminETSConPriorityAssignmentEntry 1 }
56
57      lldpXdotldcbxAdminETSConPriTrafficClass OBJECT-TYPE
58          SYNTAX      LldpXdotldcbxTrafficClassValue
59          MAX-ACCESS  read-write

```

```

1      STATUS      current
2      DESCRIPTION
3          "Indicates the traffic class to which this priority is
4          to be assigned."
5      REFERENCE
6          "D.2.9.6"
7      DEFVAL      { 0 }
8      ::= { lldpXdot1dcbxAdminETSConPriorityAssignmentEntry 2 }
9
10     lldpXdot1dcbxAdminETSConTrafficClassBandwidthTable OBJECT-TYPE
11     SYNTAX      SEQUENCE OF
12         LldpXdot1dcbxAdminETSConTrafficClassBandwidthEntry
13     MAX-ACCESS  not-accessible
14     STATUS      current
15     DESCRIPTION
16         "This table contains one row per traffic class. The
17         entry in each row indicates the traffic class to
18         which the bandwidth is assigned."
19     ::= { lldpXdot1dcbxAdminETSConfiguration 3 }
20
21     lldpXdot1dcbxAdminETSConTrafficClassBandwidthEntry OBJECT-TYPE
22     SYNTAX      LldpXdot1dcbxAdminETSConTrafficClassBandwidthEntry
23     MAX-ACCESS  not-accessible
24     STATUS      current
25     DESCRIPTION
26         "Indicates a traffic class to Bandwidth assignment."
27     INDEX      {
28         lldpV2LocPortIfIndex,
29         lldpXdot1dcbxAdminETSConTrafficClass
30     }
31     ::= { lldpXdot1dcbxAdminETSConTrafficClassBandwidthTable 1 }
32
33     LldpXdot1dcbxAdminETSConTrafficClassBandwidthEntry ::= SEQUENCE {
34         lldpXdot1dcbxAdminETSConTrafficClass
35         LldpXdot1dcbxTrafficClassValue,
36         lldpXdot1dcbxAdminETSConTrafficClassBandwidth
37         LldpXdot1dcbxTrafficClassBandwidthValue
38     }
39
40     lldpXdot1dcbxAdminETSConTrafficClass OBJECT-TYPE
41     SYNTAX      LldpXdot1dcbxTrafficClassValue
42     MAX-ACCESS  not-accessible
43     STATUS      current
44     DESCRIPTION
45         "Indicates the traffic class to
46         which this bandwidth applies"
47     REFERENCE
48         "D.2.9.7"
49     ::= { lldpXdot1dcbxAdminETSConTrafficClassBandwidthEntry 1 }
50
51     lldpXdot1dcbxAdminETSConTrafficClassBandwidth OBJECT-TYPE
52     SYNTAX      LldpXdot1dcbxTrafficClassBandwidthValue
53     MAX-ACCESS  read-write
54     STATUS      current
55     DESCRIPTION
56         "Indicates the bandwidth assigned to this traffic class.
57         The sum of the bandwidths assigned to a given port is
58         required at all times to equal 100. An operation that
59         attempts to change this table such that the bandwidth

```

```

1      entires do not total 100 shall be rejected. An implication
2      of this is that modification of this table requires that
3      multiple set operations be included in a single SNMP PDU,
4      commonly referred to as an MSET operation, to perform
5      simultaneous set operations to keep the sum at 100. Any
6      attempt to change a single entry in this table will result
7      in the operation being rejected since entries in the
8      table referring to the given port will no longer
9      sum to 100."
10     REFERENCE
11     "D.2.9.7"
12     ::= { lldpXdot1dcbxAdminETSTrafficClassBandwidthEntry 2 }
13
14     lldpXdot1dcbxAdminETSTrafficSelectionAlgorithmTable OBJECT-TYPE
15     SYNTAX          SEQUENCE OF
16                   LldpXdot1dcbxAdminETSTrafficSelectionAlgorithmEntry
17     MAX-ACCESS      not-accessible
18     STATUS          current
19     DESCRIPTION
20     "This table contains one row per traffic class. The entry
21     in each row indicates the traffic selction algorithm to
22     be used by the priority."
23     ::= { lldpXdot1dcbxAdminETSConfiguration 4 }
24
25     lldpXdot1dcbxAdminETSTrafficSelectionAlgorithmEntry OBJECT-TYPE
26     SYNTAX          LldpXdot1dcbxAdminETSTrafficSelectionAlgorithmEntry
27     MAX-ACCESS      not-accessible
28     STATUS          current
29     DESCRIPTION
30     "Indicates a traffic class to traffic selection
31     algorithm assignment."
32     INDEX           {
33                   lldpV2LocPortIfIndex,
34                   lldpXdot1dcbxAdminETSConTSATrafficClass
35                   }
36     ::= { lldpXdot1dcbxAdminETSTrafficSelectionAlgorithmTable 1 }
37
38     LldpXdot1dcbxAdminETSTrafficSelectionAlgorithmEntry ::= SEQUENCE {
39     lldpXdot1dcbxAdminETSConTSATrafficClass
40     LldpXdot1dcbxTrafficClassValue,
41     lldpXdot1dcbxAdminETSTrafficSelectionAlgorithm
42     LldpXdot1dcbxTrafficSelectionAlgorithm
43     }
44
45     lldpXdot1dcbxAdminETSConTSATrafficClass OBJECT-TYPE
46     SYNTAX          LldpXdot1dcbxTrafficClassValue
47     MAX-ACCESS      not-accessible
48     STATUS          current
49     DESCRIPTION
50     "Indicates the traffic class that is assigned
51     to a traffic selection algorithm."
52     REFERENCE
53     "D.2.9.8"
54     ::= { lldpXdot1dcbxAdminETSTrafficSelectionAlgorithmEntry 1 }
55
56     lldpXdot1dcbxAdminETSTrafficSelectionAlgorithm OBJECT-TYPE
57     SYNTAX          LldpXdot1dcbxTrafficSelectionAlgorithm
58     MAX-ACCESS      read-write
59     STATUS          current

```

```

1      DESCRIPTION
2          "Indicates the Traffic Selection Algorithm to which this
3          traffic class is to be assigned."
4      REFERENCE
5          "D.2.9.8"
6      ::= { lldpXdot1dcbxAdminETSConTrafficSelectionAlgorithmEntry 2 }
7
8      --
9      -- lldpXdot1dcbxAdminETSRecommendationTable - Contains the information
10     -- for the ETS Recommendation TLV.
11     --
12     lldpXdot1dcbxAdminETSReco OBJECT IDENTIFIER ::=
13     { lldpXdot1dcbxAdminData 2 }
14
15     lldpXdot1dcbxAdminETSRecoTrafficClassBandwidthTable OBJECT-TYPE
16     SYNTAX      SEQUENCE OF
17     LldpXdot1dcbxAdminETSRecoTrafficClassBandwidthEntry
18     MAX-ACCESS  not-accessible
19     STATUS      current
20     DESCRIPTION
21     "This table contains one row per traffic class. The
22     entry in each row indicates the traffic class to
23     which the bandwidth is assigned."
24     ::= { lldpXdot1dcbxAdminETSReco 1 }
25
26     lldpXdot1dcbxAdminETSRecoTrafficClassBandwidthEntry OBJECT-TYPE
27     SYNTAX      LldpXdot1dcbxAdminETSRecoTrafficClassBandwidthEntry
28     MAX-ACCESS  not-accessible
29     STATUS      current
30     DESCRIPTION
31     "Indicates a traffic class to Bandwidth assignment."
32     INDEX      {
33     lldpV2LocPortIfIndex,
34     lldpXdot1dcbxAdminETSRecoTrafficClass
35     }
36     ::= { lldpXdot1dcbxAdminETSRecoTrafficClassBandwidthTable 1 }
37
38     LldpXdot1dcbxAdminETSRecoTrafficClassBandwidthEntry ::= SEQUENCE {
39     lldpXdot1dcbxAdminETSRecoTrafficClass
40     LldpXdot1dcbxTrafficClassValue,
41     lldpXdot1dcbxAdminETSRecoTrafficClassBandwidth
42     LldpXdot1dcbxTrafficClassBandwidthValue
43     }
44
45     lldpXdot1dcbxAdminETSRecoTrafficClass OBJECT-TYPE
46     SYNTAX      LldpXdot1dcbxTrafficClassValue
47     MAX-ACCESS  not-accessible
48     STATUS      current
49     DESCRIPTION
50     "Indicates the traffic class to
51     which this bandwidth applies"
52     REFERENCE
53     "D.2.10.4"
54     ::= { lldpXdot1dcbxAdminETSRecoTrafficClassBandwidthEntry 1 }
55
56     lldpXdot1dcbxAdminETSRecoTrafficClassBandwidth OBJECT-TYPE
57     SYNTAX      LldpXdot1dcbxTrafficClassBandwidthValue
58     MAX-ACCESS  read-write

```



```

1      STATUS      current
2      DESCRIPTION
3          "Indicates the bandwidth assigned to this traffic class.
4          The sum of the bandwidths assigned to a given port is
5          required at all times to equal 100. An operation that
6          attempts to change this table such that the bandwidth
7          entries do not total 100 shall be rejected. An implication
8          of this is that modification of this table requires that
9          multiple set operations be included in a single SNMP PDU,
10         commonly referred to as an MSET operation, to perform
11         simultaneous set operations to keep the sum at 100. Any
12         attempt to change a single entry in this table will result
13         in the operation being rejected since entries in the
14         table referring to the given port will no longer
15         sum to 100."
16
17     REFERENCE
18         "D.2.10.4"
19         ::= { lldpXdot1dcbxAdminETSRecoTrafficClassBandwidthEntry 2 }
20
21 lldpXdot1dcbxAdminETSRecoTrafficSelectionAlgorithmTable OBJECT-TYPE
22     SYNTAX      SEQUENCE OF
23         LldpXdot1dcbxAdminETSRecoTrafficSelectionAlgorithmEntry
24     MAX-ACCESS  not-accessible
25     STATUS      current
26     DESCRIPTION
27         "This table contains one row per traffic class. The entry
28         in each row indicates the traffic selection algorithm to
29         be used by the traffic class."
30         ::= { lldpXdot1dcbxAdminETSReco 2 }
31
32 lldpXdot1dcbxAdminETSRecoTrafficSelectionAlgorithmEntry OBJECT-TYPE
33     SYNTAX      LldpXdot1dcbxAdminETSRecoTrafficSelectionAlgorithmEntry
34     MAX-ACCESS  not-accessible
35     STATUS      current
36     DESCRIPTION
37         "Indicates a traffic class to traffic selection
38         algorithm assignment."
39     INDEX      {
40         lldpV2LocPortIfIndex,
41         lldpXdot1dcbxAdminETSRecoTSATrafficClass
42     }
43     ::= { lldpXdot1dcbxAdminETSRecoTrafficSelectionAlgorithmTable 1 }
44
45 lldpXdot1dcbxAdminETSRecoTrafficSelectionAlgorithmEntry ::= SEQUENCE {
46     lldpXdot1dcbxAdminETSRecoTSATrafficClass
47     LldpXdot1dcbxTrafficClassValue,
48     lldpXdot1dcbxAdminETSRecoTrafficSelectionAlgorithm
49     LldpXdot1dcbxTrafficSelectionAlgorithm
50 }
51
52 lldpXdot1dcbxAdminETSRecoTSATrafficClass OBJECT-TYPE
53     SYNTAX      LldpXdot1dcbxTrafficClassValue
54     MAX-ACCESS  not-accessible
55     STATUS      current
56     DESCRIPTION
57         "Indicates the traffic class that is assigned to a traffic
58         selection algorithm."
59     REFERENCE

```

```

1      "D.2.10.5"
2      ::= { lldpXdot1dcbxAdminETSRecoTrafficSelectionAlgorithmEntry 1 }
3
4      lldpXdot1dcbxAdminETSRecoTrafficSelectionAlgorithm OBJECT-TYPE
5          SYNTAX      LldpXdot1dcbxTrafficSelectionAlgorithm
6          MAX-ACCESS  read-write
7          STATUS      current
8          DESCRIPTION
9              "Indicates the Traffic Selection Algorithm to which this
10             traffic class is to be assigned."
11          REFERENCE
12             "D.2.10.5"
13      ::= { lldpXdot1dcbxAdminETSRecoTrafficSelectionAlgorithmEntry 2 }
14
15      --
16      -- lldpXdot1dcbxAdminPFCTable - Contains the information for the PFC
17      -- Configuration TLV.
18      --
19      lldpXdot1dcbxAdminPFC OBJECT IDENTIFIER ::= { lldpXdot1dcbxAdminData 3 }
20
21      lldpXdot1dcbxAdminPFCBasicTable OBJECT-TYPE
22          SYNTAX      SEQUENCE OF LldpXdot1dcbxAdminPFCBasicEntry
23          MAX-ACCESS  not-accessible
24          STATUS      current
25          DESCRIPTION
26              "This table contains one row per port for the IEEE 802.1
27             organizationally defined LLDP PFC TLV on the local
28             system known to this agent"
29      ::= { lldpXdot1dcbxAdminPFC 1 }
30
31      lldpXdot1dcbxAdminPFCBasicEntry OBJECT-TYPE
32          SYNTAX      LldpXdot1dcbxAdminPFCBasicEntry
33          MAX-ACCESS  not-accessible
34          STATUS      current
35          DESCRIPTION
36              "Information about the IEEE 802.1 organizational defined
37             PFC TLV LLDP extension."
38          INDEX      { lldpV2LocPortIfIndex }
39      ::= { lldpXdot1dcbxAdminPFCBasicTable 1 }
40
41      LldpXdot1dcbxAdminPFCBasicEntry ::= SEQUENCE {
42          lldpXdot1dcbxAdminPFCWilling      TruthValue,
43          lldpXdot1dcbxAdminPFCMBC         TruthValue,
44          lldpXdot1dcbxAdminPFCCap        LldpXdot1dcbxSupportedCapacity
45      }
46
47      lldpXdot1dcbxAdminPFCWilling OBJECT-TYPE
48          SYNTAX      TruthValue
49          MAX-ACCESS  read-write
50          STATUS      current
51          DESCRIPTION
52              "Indicates if the local system is willing to accept the
53             PFC configuration of the remote system."
54          REFERENCE
55             "D.2.11.3"
56          DEFVAL     { false }
57      ::= { lldpXdot1dcbxAdminPFCBasicEntry 1 }
58
59      lldpXdot1dcbxAdminPFCMBC OBJECT-TYPE

```

```

1      SYNTAX      TruthValue
2      MAX-ACCESS  read-only
3      STATUS      current
4      DESCRIPTION
5          "Indicates if the local system is capable of bypassing
6          MACsec processing when MACsec is disabled."
7      REFERENCE
8          "D.2.11.4"
9      ::= { lldpXdot1dcbxAdminPFCBasicEntry 2}

10     lldpXdot1dcbxAdminPFCCap OBJECT-TYPE
11     SYNTAX      LldpXdot1dcbxSupportedCapacity
12     MAX-ACCESS  read-only
13     STATUS      current
14     DESCRIPTION
15         "Indicates the number of traffic classes on the local device
16         that may simultaneously have PFC enabled.
17
18         Note that this typically indicates a physical limitation of the
19         device. However, some devices may allow this parameter to be
20         administratively configured, in which case the MAX-ACCESS
21         should be changed to read-write with and an appropriate
22         DEFVAL added."
23     REFERENCE
24         "D.2.11.5"
25     ::= { lldpXdot1dcbxAdminPFCBasicEntry 3}

26     lldpXdot1dcbxAdminPFCEnableTable OBJECT-TYPE
27     SYNTAX      SEQUENCE OF LldpXdot1dcbxAdminPFCEnableEntry
28     MAX-ACCESS  not-accessible
29     STATUS      current
30     DESCRIPTION
31         "This table contains eight entries, one entry per priority,
32         indicating if PFC is enabled on the corresponding priority."
33     ::= { lldpXdot1dcbxAdminPFC 2 }

34     lldpXdot1dcbxAdminPFCEnableEntry OBJECT-TYPE
35     SYNTAX      LldpXdot1dcbxAdminPFCEnableEntry
36     MAX-ACCESS  not-accessible
37     STATUS      current
38     DESCRIPTION
39         "Each entry indicates if PFC is enabled on the
40         correponding priority"
41     INDEX {
42         lldpV2LocPortIfIndex,
43         lldpXdot1dcbxAdminPFCEnablePriority
44     }
45     ::= { lldpXdot1dcbxAdminPFCEnableTable 1 }

46     LldpXdot1dcbxAdminPFCEnableEntry ::= SEQUENCE {
47         lldpXdot1dcbxAdminPFCEnablePriority  IEEE8021PriorityValue,
48         lldpXdot1dcbxAdminPFCEnableEnabled  TruthValue
49     }

50     lldpXdot1dcbxAdminPFCEnablePriority OBJECT-TYPE
51     SYNTAX      IEEE8021PriorityValue
52     MAX-ACCESS  not-accessible
53     STATUS      current
54     DESCRIPTION

```

```

1      "Priority for which PFC is enabled / disabled"
2      ::= { lldpXdot1dcbxAdminPFCEnableEntry 1 }
3
4      lldpXdot1dcbxAdminPFCEnableEnabled OBJECT-TYPE
5          SYNTAX      TruthValue
6          MAX-ACCESS  read-write
7          STATUS      current
8          DESCRIPTION
9              "Indicates if PFC is enabled on the corresponding priority"
10         REFERENCE
11             "D.2.11.6"
12         DEFVAL      { false }
13         ::= { lldpXdot1dcbxAdminPFCEnableEntry 2 }
14
15         --
16         -- lldpXdot1dcbxAdminApplicationPriorityTable - Contains the
17         -- information for the Application Priority TLV.
18         --
19         lldpXdot1dcbxAdminApplicationPriorityAppTable OBJECT-TYPE
20             SYNTAX      SEQUENCE OF
21                 LldpXdot1dcbxAdminApplicationPriorityAppEntry
22             MAX-ACCESS  not-accessible
23             STATUS      current
24             DESCRIPTION
25                 "Table containing entries indicating the priority to be used
26                 for a given application"
27             ::= { lldpXdot1dcbxAdminData 4 }
28
29         lldpXdot1dcbxAdminApplicationPriorityAppEntry OBJECT-TYPE
30             SYNTAX      LldpXdot1dcbxAdminApplicationPriorityAppEntry
31             MAX-ACCESS  not-accessible
32             STATUS      current
33             DESCRIPTION
34                 "Entry that indicates the priority to be used for a
35                 given application."
36             INDEX      {
37                 lldpV2LocPortIfIndex,
38                 lldpXdot1dcbxAdminApplicationPriorityAESelector,
39                 lldpXdot1dcbxAdminApplicationPriorityAEProtocol
40             }
41             ::= { lldpXdot1dcbxAdminApplicationPriorityAppTable 1 }
42
43         LldpXdot1dcbxAdminApplicationPriorityAppEntry ::= SEQUENCE {
44             lldpXdot1dcbxAdminApplicationPriorityAESelector
45             LldpXdot1dcbxAppSelector,
46             lldpXdot1dcbxAdminApplicationPriorityAEProtocol
47             LldpXdot1dcbxAppProtocol,
48             lldpXdot1dcbxAdminApplicationPriorityAEPriority
49             IEEE8021PriorityValue
50         }
51
52         lldpXdot1dcbxAdminApplicationPriorityAESelector OBJECT-TYPE
53             SYNTAX      LldpXdot1dcbxAppSelector
54             MAX-ACCESS  not-accessible
55             STATUS      current
56             DESCRIPTION
57                 "Indicates the contents of the protocol object
58                 (lldpXdot1dcbxAdminApplicationPriorityAEProtocol)"

```

```

1         1: Ethertype
2         2: Well Known Port number over TCP, or SCTP
3         3: Well Known Port number over UDP, or DCCP
4         4: Well Known Port number over TCP, SCTP, UDP, and DCCP"
5     REFERENCE
6         "D.2.11.6"
7     ::= { lldpXdot1dcbxAdminApplicationPriorityAppEntry 1 }
8
9     lldpXdot1dcbxAdminApplicationPriorityAEProtocol OBJECT-TYPE
10    SYNTAX      LldpXdot1dcbxAppProtocol
11    MAX-ACCESS  not-accessible
12    STATUS      current
13    DESCRIPTION
14        "The protocol indicator of the type indicated by
15        lldpXdot1dcbxAdminApplicationPriorityAESelector."
16    REFERENCE
17        "D.2.11.6"
18    ::= { lldpXdot1dcbxAdminApplicationPriorityAppEntry 2 }
19
20    lldpXdot1dcbxAdminApplicationPriorityAEPriority OBJECT-TYPE
21    SYNTAX      IEEE8021PriorityValue
22    MAX-ACCESS  read-create
23    STATUS      current
24    DESCRIPTION
25        "The priority code point that should be used in
26        frames transporting the protocol indicated by
27        lldpXdot1dcbxAdminApplicationPriorityAESelector and
28        lldpXdot1dcbxAdminApplicationPriorityAEProtocol"
29    REFERENCE
30        "D.2.11.6"
31    ::= { lldpXdot1dcbxAdminApplicationPriorityAppEntry 3 }
32
33    -----
34    -- IEEE 802.1 - DCBX Conformance Information
35    -----
36    lldpXdot1dcbxConformance OBJECT IDENTIFIER ::= { lldpV2Xdot1MIB 6 }
37    lldpXdot1dcbxCompliances
38        OBJECT IDENTIFIER ::= { lldpXdot1dcbxConformance 1 }
39    lldpXdot1dcbxGroups
40        OBJECT IDENTIFIER ::= { lldpXdot1dcbxConformance 2 }
41
42    --
43    -- Compliance Statements
44    --
45
46    lldpXdot1dcbxCompliance MODULE-COMPLIANCE
47    STATUS      current
48    DESCRIPTION
49        "A compliance statement for SNMP entities that implement
50        the IEEE 802.1 organizationally defined DCBX LLDP
51        extension MIB.
52
53        This group is mandatory for agents which implement Enhanced
54        Transmission Selection."
55    MODULE      -- this module
56    MANDATORY-GROUPS { lldpXdot1dcbxETSGroup,
57                        lldpXdot1dcbxPFCGroup,
58                        lldpXdot1dcbxApplicationPriorityGroup,
59                        ifGeneralInformationGroup

```

```

1      }
2      ::= { lldpXdot1dcbxCompliances 1 }
3
4      --
5      -- MIB Groupings
6      --
7      lldpXdot1dcbxETSGroup OBJECT-GROUP
8          OBJECTS {
9              lldpXdot1dcbxConfigETSConfigurationTxEnable,
10             lldpXdot1dcbxConfigETSRecommendationTxEnable,
11             lldpXdot1dcbxLocETSConCreditBasedShaperSupport,
12             lldpXdot1dcbxLocETSConTrafficClassesSupported,
13             lldpXdot1dcbxLocETSConWilling,
14             lldpXdot1dcbxLocETSConPriTrafficClass,
15             lldpXdot1dcbxLocETSConTrafficClassBandwidth,
16             lldpXdot1dcbxLocETSConTrafficSelectionAlgorithm,
17             lldpXdot1dcbxLocETSRecoTrafficClassBandwidth,
18             lldpXdot1dcbxLocETSRecoTrafficSelectionAlgorithm,
19             lldpXdot1dcbxRemETSConCreditBasedShaperSupport,
20             lldpXdot1dcbxRemETSConTrafficClassesSupported,
21             lldpXdot1dcbxRemETSConWilling,
22             lldpXdot1dcbxRemETSConPriTrafficClass,
23             lldpXdot1dcbxRemETSConTrafficClassBandwidth,
24             lldpXdot1dcbxRemETSConTrafficSelectionAlgorithm,
25             lldpXdot1dcbxRemETSRecoTrafficClassBandwidth,
26             lldpXdot1dcbxRemETSRecoTrafficSelectionAlgorithm,
27             lldpXdot1dcbxAdminETSConCreditBasedShaperSupport,
28             lldpXdot1dcbxAdminETSConTrafficClassesSupported,
29             lldpXdot1dcbxAdminETSConWilling,
30             lldpXdot1dcbxAdminETSConPriTrafficClass,
31             lldpXdot1dcbxAdminETSConTrafficClassBandwidth,
32             lldpXdot1dcbxAdminETSRecoTrafficClassBandwidth,
33             lldpXdot1dcbxAdminETSRecoTrafficSelectionAlgorithm
34         }
35         STATUS current
36         DESCRIPTION
37             "The collection of objects used for Enhanced
38             Transmission Selection."
39         ::= { lldpXdot1dcbxGroups 1 }
40
41     lldpXdot1dcbxPFCGroup OBJECT-GROUP
42         OBJECTS {
43             lldpXdot1dcbxConfigPFCTxEnable,
44             lldpXdot1dcbxLocPFCWilling,
45             lldpXdot1dcbxLocPFCMBC,
46             lldpXdot1dcbxLocPFCCap,
47             lldpXdot1dcbxLocPFCEnableEnabled,
48             lldpXdot1dcbxRemPFCWilling,
49             lldpXdot1dcbxRemPFCMBC,
50             lldpXdot1dcbxRemPFCCap,
51             lldpXdot1dcbxRemPFCEnableEnabled,
52             lldpXdot1dcbxAdminPFCWilling,
53             lldpXdot1dcbxAdminPFCMBC,
54             lldpXdot1dcbxAdminPFCCap,
55             lldpXdot1dcbxAdminPFCEnableEnabled
56         }
57         STATUS current

```

```

1      DESCRIPTION
2          "The collection of objects used for Priority-
3          base Flow Control."
4      ::= { lldpXdot1dcbxGroups 2 }
5
6      lldpXdot1dcbxApplicationPriorityGroup OBJECT-GROUP
7          OBJECTS {
8              lldpXdot1dcbxConfigApplicationPriorityTxEnable,
9              lldpXdot1dcbxLocApplicationPriorityAEPriority,
10             lldpXdot1dcbxRemApplicationPriorityAEPriority,
11             lldpXdot1dcbxAdminApplicationPriorityAEPriority
12         }
13     STATUS current
14     DESCRIPTION
15         "The collection of objects used for Application
16         priority."
17     ::= { lldpXdot1dcbxGroups 3 }
18
19 -----
20 --
21 -- Organizationally Defined Information Extension - IEEE 802.1
22 -- Definitions to support Port Extension
23 -- peSet TLV set (Table D-1)
24 --
25 -----
26 lldpXdot1PeMIB          OBJECT IDENTIFIER ::= { lldpV2Xdot1MIB 7 }
27 lldpXdot1PeObjects     OBJECT IDENTIFIER ::= { lldpXdot1PeMIB 1 }
28
29 -- Port Extension 802.1 MIB Extension groups
30
31 lldpXdot1PeConfig      OBJECT IDENTIFIER ::= { lldpXdot1PeObjects 1 }
32 lldpXdot1PeLocalData   OBJECT IDENTIFIER ::= { lldpXdot1PeObjects 2 }
33 lldpXdot1PeRemoteData  OBJECT IDENTIFIER ::= { lldpXdot1PeObjects 3 }
34
35 -----
36 -- IEEE 802.1 - Configuration for the peSet TLV set
37 --
38 -- lldpV2Xdot1PeConfigPortExtensionTable : configure the transmission
39 -- of the Port Extension TLVs on a set of ports.
40 --
41 lldpXdot1PeConfigPortExtensionTable OBJECT-TYPE
42     SYNTAX SEQUENCE OF LldpXdot1PeConfigPortExtensionEntry
43     MAX-ACCESS not-accessible
44     STATUS current
45     DESCRIPTION
46         "A table that controls selection of LLDP Port Extension
47         TLVs to be transmitted on individual ports."
48     ::= { lldpXdot1PeConfig 1 }
49
50 lldpXdot1PeConfigPortExtensionEntry OBJECT-TYPE
51     SYNTAX LldpXdot1PeConfigPortExtensionEntry
52     MAX-ACCESS not-accessible
53     STATUS current
54     DESCRIPTION
55         "LLDP configuration information that specifies Port
56         Extension configuration."

```

```

1         This configuration object augments the
2         lldpV2Xdot1LocPortExtensionEntry, therefore it is
3         only present along with the associated
4         lldpV2Xdot1LocPortExtensionEntry entry.
5         Each active lldpV2Xdot1ConfigPortExtensionEntry must be
6         restored from non-volatile storage (along with the
7         corresponding lldpV2Xdot1LocPortExtensionEntry) after a
8         re-initialization of the management system."
9     AUGMENTS      { lldpV2PortConfigEntry }
10    ::= { lldpXdot1PeConfigPortExtensionTable 1 }
11
12    LldpXdot1PeConfigPortExtensionEntry ::= SEQUENCE {
13        lldpXdot1PeConfigPortExtensionTxEnable TruthValue
14    }
15
16    lldpXdot1PeConfigPortExtensionTxEnable OBJECT-TYPE
17        SYNTAX      TruthValue
18        MAX-ACCESS  read-write
19        STATUS      current
20        DESCRIPTION
21            "The lldpXdot1PeConfigPortExtensionTxEnable, which is
22            defined as a truth value and configured by the network
23            management, determines whether the IEEE 802.1
24            organizationally defined Port Extension TLV transmission
25            is allowed on a given LLDP transmission capable port.
26            The value of this object must be restored from
27            non-volatile storage after a re-initialization of the
28            management system."
29        REFERENCE
30            "D.8 of 802.1Q"
31        DEFVAL { false }
32    ::= { lldpXdot1PeConfigPortExtensionEntry 1 }
33
34    -----
35    -- IEEE 802.1 - Port Extension Local System Information
36    -----
37    ---
38    ---
39    --- lldpXdot1PeLocPortExtensionTable: Port Extension Information Table
40    ---
41    ---
42
43    lldpXdot1PeLocPortExtensionTable OBJECT-TYPE
44        SYNTAX      SEQUENCE OF LldpXdot1PeLocPortExtensionEntry
45        MAX-ACCESS  not-accessible
46        STATUS      current
47        DESCRIPTION
48            "This table contains one row per port of Port Extension
49            information (as a part of the LLDP 802.1 organizational
50            extension) on the local system known to this agent."
51    ::= { lldpXdot1PeLocalData 1 }
52
53    lldpXdot1PeLocPortExtensionEntry OBJECT-TYPE
54        SYNTAX      LldpXdot1PeLocPortExtensionEntry
55        MAX-ACCESS  not-accessible
56        STATUS      current
57        DESCRIPTION
58            "Port Extension information about a particular
59            Port Extender Port."
60        INDEX      { lldpV2LocPortIfIndex }

```



```

1      ::= { lldpXdot1PeLocPortExtensionTable 1 }
2
3      LldpXdot1PeLocPortExtensionEntry ::= SEQUENCE {
4          lldpXdot1PeLocPECascadePortPriority Unsigned32,
5          lldpXdot1PeLocPEAddress             MacAddress,
6          lldpXdot1PeLocPECSPAddress         MacAddress
7      }
8
9      lldpXdot1PeLocPECascadePortPriority OBJECT-TYPE
10     SYNTAX      Unsigned32 (0..255)
11     MAX-ACCESS  read-write
12     STATUS      current
13     DESCRIPTION
14         "Contains the cascade port priority."
15     REFERENCE
16         "D.8"
17     ::= { lldpXdot1PeLocPortExtensionEntry 1 }
18
19     lldpXdot1PeLocPEAddress OBJECT-TYPE
20     SYNTAX      MacAddress
21     MAX-ACCESS  read-only
22     STATUS      current
23     DESCRIPTION
24         "This object contains the MAC address that
25         uniquely identifies the Port Extender."
26     REFERENCE
27         "D.8"
28     ::= { lldpXdot1PeLocPortExtensionEntry 2 }
29
30     lldpXdot1PeLocPECSPAddress OBJECT-TYPE
31     SYNTAX      MacAddress
32     MAX-ACCESS  read-only
33     STATUS      current
34     DESCRIPTION
35         "This object contains the MAC address to be used
36         for the Port Extension control and status protocol."
37     REFERENCE
38         "D.8"
39     ::= { lldpXdot1PeLocPortExtensionEntry 3 }
40
41     -----
42     -- IEEE 802.1 - Port Extension Remote System Information
43     -----
44     ---
45     ---
46     --- lldpXdot1PeRemPortExtensionTable: Port Extension Information Table
47     ---
48     ---
49     lldpXdot1PeRemPortExtensionTable OBJECT-TYPE
50     SYNTAX      SEQUENCE OF LldpXdot1PeRemPortExtensionEntry
51     MAX-ACCESS  not-accessible
52     STATUS      current
53     DESCRIPTION
54         "This table contains Port Extension information
55         (as a part of the LLDP IEEE 802.1 organizational extension)
56         of the remote system."
57     ::= { lldpXdot1PeRemoteData 1 }
58
59     lldpXdot1PeRemPortExtensionEntry OBJECT-TYPE

```

```

1      SYNTAX      LldpXdot1PeRemPortExtensionEntry
2      MAX-ACCESS  not-accessible
3      STATUS      current
4      DESCRIPTION
5          "Port Extension information about remote systems port
6          component."
7      INDEX      { lldpV2RemTimeMark,
8                  lldpV2RemLocalIfIndex,
9                  lldpV2RemLocalDestMACAddress,
10                 lldpV2RemIndex }
11
12      ::= { lldpXdot1PeRemPortExtensionTable 1 }
13
14      LldpXdot1PeRemPortExtensionEntry ::= SEQUENCE {
15          lldpXdot1PeRemPECascadePortPriority Unsigned32,
16          lldpXdot1PeRemPEAddress             MacAddress,
17          lldpXdot1PeRemPECSPAddress          MacAddress
18      }
19
20      lldpXdot1PeRemPECascadePortPriority OBJECT-TYPE
21      SYNTAX      Unsigned32 (0..255)
22      MAX-ACCESS  read-only
23      STATUS      current
24      DESCRIPTION
25          "The cascade port priority."
26      REFERENCE
27          "D.8"
28      ::= { lldpXdot1PeRemPortExtensionEntry 1 }
29
30      lldpXdot1PeRemPEAddress OBJECT-TYPE
31      SYNTAX      MacAddress
32      MAX-ACCESS  read-only
33      STATUS      current
34      DESCRIPTION
35          "This object contains the MAC address that
36          uniquely identifies the Port Extender."
37      REFERENCE
38          "D.8"
39      ::= { lldpXdot1PeRemPortExtensionEntry 2 }
40
41      lldpXdot1PeRemPECSPAddress OBJECT-TYPE
42      SYNTAX      MacAddress
43      MAX-ACCESS  read-only
44      STATUS      current
45      DESCRIPTION
46          "This object contains the MAC address to be used
47          for the Port Extension Control and Status Protocol."
48      REFERENCE
49          "D.8"
50      ::= { lldpXdot1PeRemPortExtensionEntry 3 }
51
52      -----
53      -- IEEE 802.1 - Port Extension Conformance Information
54      -----
55
56      lldpXdot1PeConformance OBJECT IDENTIFIER ::= { lldpV2Xdot1MIB 8 }
57
58      lldpXdot1PeCompliances
59      OBJECT IDENTIFIER ::= { lldpXdot1PeConformance 1 }
60
61      lldpXdot1PeGroups OBJECT IDENTIFIER ::= { lldpXdot1PeConformance 2 }

```

```

1
2  --
3  -- Port Extension - Compliance Statements
4  --
5
6  lldpXdot1PeCompliance MODULE-COMPLIANCE
7      STATUS          current
8      DESCRIPTION
9          "A compliance statement for SNMP entities that implement
10         the IEEE 802.1 organizationally defined Port Extension
11         LLDP extension MIB.
12
13         This group is mandatory for agents that implement the
14         Port Extension peSet TLV set."
15  MODULE              -- this module
16      MANDATORY-GROUPS { lldpXdot1PeGroup,
17                          ifGeneralInformationGroup }
18  ::= { lldpXdot1PeCompliances 1 }
19
20  --
21  -- Port Extension - MIB groupings
22  --
23
24  lldpXdot1PeGroup OBJECT-GROUP
25      OBJECTS {
26          lldpXdot1PeConfigPortExtensionTxEnable,
27          lldpXdot1PeLocPECascadePortPriority,
28          lldpXdot1PeLocPEAddress,
29          lldpXdot1PeLocPECSPAddress,
30          lldpXdot1PeRemPECascadePortPriority,
31          lldpXdot1PeRemPEAddress,
32          lldpXdot1PeRemPECSPAddress
33      }
34      STATUS current
35      DESCRIPTION
36          "The collection of objects that support the
37          Port Extension peSet TLV set."
38  ::= { lldpXdot1PeGroups 1 }
39
40  END
  
```

### D.5.3 Major capabilities and options

*Insert the following TLV at the end of the table in D.5.3:*

Item	Feature	Status	References	Support
dot1peSet	Is the IEEE 802.1 Organizationally Specific TLV peSet implemented?	O.3	D.1, Table D.1	Yes <input type="checkbox"/>
dot1petlv	Is each TLV in the IEEE 802.1 Organizationally specific TLV peSet implemented?			
	Port Extension TLV	peSet: M	D.2.15	Yes <input type="checkbox"/> No <input type="checkbox"/>

1  
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## Annex Z (informative)

### Comments from 802.1Qbh and 802.1BR

The IEEE 802 committee agreed to carry the following 5 comments in annex Z of 802.1Qbh and 802.1BR supporting the PBB-TE port extender as unresolved outstanding issues.

CI 00 SC 0 P L # 997

Anoop Ghanwani

Comment Type TR

Adopt the proposal for reusing PBB-TE to solve this problem. This will get rid of the need

to define new tags and will also allow us to leverage other protocols such as CFM and CN

in a Port Extender environment.

SuggestedRemedy

Modify the document per the PBB-TE proposal.

See comment 934

Comment Status X

Response Status W

CI 01 SC 1 P1 L 1 # 943

Paul Bottorff

Comment Type TR

Port Extenders should be built on the existing 802.1 standard for PBB-TE rather than

inventing and standardizing a new relay which is incompatible with 802.1Q Bridge

forwarding practices. Each E-channel is effectively a PBB-TE TESI, however implemented

with a new identifier.

SuggestedRemedy

Replace the PE network comprised of the internal Port Extender in the Controlling Bridge

and external Port Extenders with a PBB-TE network constructed as proposed in

1 contribution bh-PE-PBB-TE. Since PBB-TE is an existing 802.1 standard the Controlling  
2 Bridge and the Port Extender network can be standardized without standardizing a new  
3 relay for Port Extenders.  
4

5  
6  
7 We don't need a standard for a new relay as described in 802.1BR. Instead, delete all of  
8  
9 802.1BR except clauses 7.12-7.14 and 8 which describe the control protocol PE CSP.

10  
11 Combine these clauses into a single 802.1Qbh clause 45 combining 7.12-7.14 and 8 as the  
12  
13 new clause 45.

14  
15 Update 802.1Qbh to describe a PBB-TE based Controlling Bridge and a PBB-TE based  
16  
17 Port Extender. To do this:

18  
19 Replace clauses 3 and 5 with the clauses in contribution bh-bottorff-cl3 and bh-bottorff-cl5.

20  
21 Retain existing clause 6 changes and add changes for subclause 6.10 from bh-bottorff-cl6-  
22  
23 10.

24  
25 Use the comment database for 802.1Qbh to update changes to clause 8.

26  
27 Retain clause 12 and 17 as specified in 802.1Qbh.

28  
29 Re-write clause 44 replacing the current Port Extender model with the PBB-TE based Port  
30  
31 Extender described in contribution bh-PE-PBB-TE. Specifically replace figure 44-1 with a  
32  
33 combined figure from slides 9-11 of bh-PE-PBB-TE and change text to describe this figure.

34  
35 Add a subclause to describe constructed B-MAC address format and the relationship  
36  
37 between TESIIDs and E-CIDs. Replace figure 44-2 with the figure of slide 3 of bh-PE-PBBTE  
38  
39 and change text to describe the operation of this example network. Build a figure to  
40  
41 replace 44-3 based on the figure of slide 3. Retain table 44-1. Build a figure to replace 44-4  
42  
43 based on the figure of slide 3. Update subclause 44.7 to describe the placement and use of  
44  
45 TESI in a PE BEB network. Retain subclause 44.8 as modified by comment resolution for  
46  
47 802.1Qbh. Subclause 44.7 describing the use of TESI should cover all the material of  
48  
49 44.9. Update 44.10 based on Qbh comment resolution, changing 44.10.3 to "TESI  
50  
51 configuration".

52  
53 Add clause 45 describing PE CSP which is clauses 7.12-7.14 and 8 from 802.1BR.  
54

1 Update PICS based on new clause 5.

2

3 Comment Status X

4

5 CI 05 SC 5.9.1 P9 L # 1041

6

7 Mike Krause

8

9 Comment Type TR

10

11 If the PBB-TE proposal is accepted, then 802.1BR can be largely eliminated and all

12

13 relevant remaining material - primarily the PE CSP associated material - should be

14

15 incorporated into this specification. .

16

17 SuggestedRemedy

18

19 Move PE CSP into this specification.

20

21 See comment 934

22

23 Comment Status X

24

25 Response Status W

26

27

28

29 CI 44 SC 44.1 P30 L 5 # 991

30

31 Ben Mack-Crane

32

33 Comment Type TR

34

35 Adding a new tag and creating a new addressing and filtering scheme for port extension

36

37 replicates functionality already specified for MAC relay. This should only be done if

38

39 using/extending the existing MAC relay functions cannot provide an acceptable solution.

40

41 SuggestedRemedy

42

43 Either specify port extension using existing MAC relay functions, for example based on

44

45 PBB-TE, or provide the rationale that leads to the conclusion that a new mechanism is

46

47 required.

48

49 See comment 934.

50

51 Comment Status X

52

53 Response Status W

54

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CI 01 SC 1 P1 L # 949

Panagiotis Saltsids

Comment Type TR

Already standardized functions can support Port Extension requirements without the need to introduce new tagging schemes and forwarding.

SuggestedRemedy

Consider refraining from introducing a new Tag technology and use as a base of the description already standardized technologies (like PBB(-TE)). See uploaded presentation

See comment 934

Comment Status X

Response Status W