P802.1Qdt/D0.2
September 15, 2022
(Amendment to IEEE Std 802.1Q™–2022 as amended by IEEE Std 802.1Qcz™–2022)
P802.1Qdt—Bridges and Bridged Networks—Amendment: Priority-based Flow Control Enhancements—Cover pages

Draft Standard for Local and metropolitan area networks—

Bridges and Bridged Networks

Amendment: Priority-based Flow Control Enhancements

Developed by the

LAN/MAN Standards Committee
of the
IEEE Computer Society

Unapproved draft

Prepared by the Security Task Group of IEEE 802.1

This and the following cover pages are not part of the draft. They provide revision and other information for IEEE 802.1 Working Group members and partipants in the IEEE Standards Association ballot process, and will be updated as convenient. New participants: Please read these cover pages, they contain information that should help you contribute effectively to this standards development project.

The text proper of this draft begins with the .

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IEEE Standards Association
445 Hoes Lane
Piscataway, NJ 08854, USA

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Throughout this document any notes presented between angle braces are temporary, inserted by the Editors for a variety of purposes. They will be removed prior to SA Ballot and are not part of the normative text. These cover pages will be edited, but will be retained so that information for the stages of SA ballot (including, if appropriate, cross-references to text changed in the course of SA balloting). To avoid changes to page numbering between final WG ballot and initial SA Ballot, the number of pages in this set of cover pages should remain unchanged, with pages intentionally left balnk marked as such. The records of participants in the development of the standard will be added at an appropriate time.

This draft is a proposed amendment to an approved standard. All that it has to show are the proposed changes (including additions) to the standard that it amends. However experience has shown that the development of an amendment that includes the minimum amount of text needed to meet this goal is undesirable. First, such a minimal amendment hands the task of combining the amended text with the base standard not just to an editor rolling up the base text and outstanding amendments into a new edition, but also to everyone who wants to use the standard before that rolled up edition is available, which might be ten years in the future. Second, few if any reviewers have the time to mentally undertake that roll-up process when reviewing each successive draft. Much of the base text can remain out of sight and out of mind, with the consequence that a developed amendment may add material that does not take advantage of material already in the approved, duplicate that material, or even contradict it. If the changes consist of many small fragments, the result may prove barely readable when the merge is done. Accordingly this amendment may contain more of the base text than may appear strictly necessary. The eventual aim is to include sufficient text to make the context of the additions clear without repeated reference to the base text, thus making the intended use of the amendment easier. In early drafts more material can be included, with the aim of making sure that all the text that needs to be reviewed or appreciated when contributing to draft development is readily available to reviewers. There is a known drawback to including this additional text. Commenters tend to assume that any text shown can be amended. Only new text introduced by an *Insert* editing instruction can be freely changed. Where base text is included as part of a *Change* editing instruction, changes are restricted to those that are within the Scope of the project (refer to the PAR).

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All participants in the standardization activities of IEEE 802.1 should be aware of the Working Group Policies and Procedures, and the fact that they have obligations under the IEEE Patent Policy, the IEEE Standards Association (SA) Copyright Policy, and the IEEE SA Participation Policy. For information on these policies see 1.ieee802.org/rules/ and the slides presented at the beginning of each of our Working Group and Task Group meeting.

As part of our IEEE 802® process, the text of the PAR (Project Authorization Request) and CSD (Criteria for Standards Development) of each project is reviewed regularly to ensure their continued validity. The PAR is summarized in these cover pages and a links are provided to the full text of both PAR and CSD. A vote of "Approve" on this draft is also an affirmation that the PAR and CSD for this project are still valid.

Comments on this draft are encouraged. NOTE: All issues related to IEEE standards presentation style, formatting, spelling, etc. are routinely handled between the 802.1 Editor and the IEEE Staff Editors prior to publication, after balloting and the process of achieving agreement on the technical content of the standard is complete. Readers are urged to devote their valuable time and energy only to comments that materially affect either the technical content of the document or the clarity of that technical content. Comments should not simply state what is wrong, but also what might be done to fix the problem.

Full participation in the work of IEEE 802.1 requires attendance at IEEE 802 meetings. Information on 802.1 activities, working papers, and email distribution lists etc. can be found on the 802.1 Website:

> http://ieee802.org/1/

Use of the email distribution list is not presently restricted to 802.1 members, and the working group has a policy of considering comments from all who are interested and willing to contribute to the development of the draft. Individuals not attending meetings have helped to identify sources of misunderstanding and ambiguity in past projects. The email lists exist primarily to allow the members of the working group to develop

standards, and are not a general forum. All contributors to the work of 802.1 should familiarize themselves with the IEEE patent policy and anyone using the email distribution list will be assumed to have done so. Information can be found at http://standards.ieee.org/db/patents/

Comments on this draft may be sent to the 802.1 email exploder, to the Editor, or to the Chairs of the 802.1 Working Group and Security Task Group.

Lily Lv
Editor, P802.1Qdt
Email:lvyunping@huawei.com

Mick Seaman   Glenn Parsons
Editor, P802.1AE   Chair, 802.1 Working Group
Chair, 802.1 Security Task Group   +1 514-379-9037
Email:mickseaman@gmail.com   Email: glenn.parsons@ericsson.com

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As part of our IEEE 802 process, the text of the PAR and CSD (Criteria for Standards Development, formerly referred to as the 5 Criteria or 5C's) is reviewed on a regular basis in order to ensure their continued validity. A vote of "Approve" on this draft is also an affirmation by the balloter that the PAR is still valid.

Draft development

During the early stages of draft development, 802.1 editors have a responsibility to attempt to craft technically coherent drafts from the resolutions of ballot comments and from the other discussions that take place in the working group meetings. Preparation of drafts often exposes inconsistencies in editor's instructions or exposes the need to make choices between approaches that were not fully apparent in the meeting. Choices and requests by the editors' for contributions on specific issues will be found in the editors' Introduction to the current draft and at appropriate points in the draft.

The ballot comments received on each draft, and the editors' proposed and final disposition of comments on working group drafts, are part of the audit trail of the development of the standard and are available, along with all the revisions of the draft on the 802.1 website (for address see above).

During the early stages of draft development the proposed text can be moved around a great deal, and even minor rearrangement can lead to a lot of 'change', not all of which is noteworthy from the point of the reviewer, so the use of automatic change bars is not very effective. In early drafts change bars may be omitted or applied manually, with a view to drawing the readers attention to the most significant areas of change. Readers interested in viewing every change are encouraged to use Adobe Acrobat to compare the document with their selected prior draft. Note that the FrameMaker change bar feature is useless when it comes to indicating changes to Figures.

iProject Authorization Request, Scope, Purpose, and Criteria for Standards Development (CSD)

The complete PAR, as approved by IEEE NesCom 13th May 2022, can be found at:

https://development.standards.ieee.org/myproject-web/public/view.html#pardetail/9692

and the CSD (Criteria for Standards Development) at:

https://mentor.ieee.org/802-ec/dcn/22/ec-22-0083-00-ACSD-p802-1qdt.pdf

extracts of relevant material from the PAR and CSD follow.

PAR Scope, Purpose, and Need

The Scope of the standard (IEEE Std 802.1Q) as amended by this project remains unchanged, with the exception of the expansiion of the acronymn MAC as shown below. The Purpose (clause 1.3) of IEEE Sd 802.1Q is not changed by this project.

Scope:

The scope of this standard is to specify provision of connectionless user data confidentiality, frame data integrity, and data origin authenticity by media access independent protocols and entities that operate transparently to MAC Clients.

Scope of the Project:

This amendment specifies procedures and managed objects for automated Priority-based Flow Control (PFC) headroom calculation and Media Access Control Security (MACsec) protection of PFC frames, using the existing Precision Time Protocol (PTP) and enhancements to the Data Center Bridging Capability Exchange protocol (DCBX).

This amendment places emphasis on the requirements for low latency and lossless transmission in large-scale and geographically dispersed data centers.

This amendment also addresses errors of the existing IEEE Std 802.1Q functionality

Purpose:

Bridges, as specified by this standard, allow the compatible interconnection of information technology equipment attached to separate individual LANs.

Need for the Project:

PFC is used to avoid packet loss in low latency, high reliability Ethernet data centers and data center interconnects. For PFC to function properly and without wasting memory, the amount of headroom buffer must be calculated. Deployment in large scale data center networks and long distance interconnects is currently problematic and requires manual configuration. There are customer requirements for the integrity and confidentiality protection of all frames transmitted between geographically distributed data centers. The current specification is inconsistent and incomplete regarding the operation of PFC and MACsec together.

CSD managed objects

This project will develop necessary managed objects described by a YANG model and will update existing SNMP MIBs.

CSD broad market potential

The data center market continues to grow very fast. Networks with tens of thousands of nodes are common in cloud data centers. There is a trend to converge computing and storage on Ethernet in data center networks, supporting cloud services and high-performance applications such as Artificial Intelligence (AI), Machine Learning (ML), and High-Performance Computing (HPC). Remote Direct Memory Access over

Converged Ethernet (RoCEv2) is widely deployed, both within data centers and across data center interconnects. RoCEv2 requires lossless operation on Ethernet to avoid wasteful retransmissions. Priority-based Flow Control (PFC, specified in IEEE Std 802.1Q) enhancements make Ethernet technology more applicable and appealing for data center environments.

Most cloud data center providers are using RoCEv2 within their networks, require lossless operation, and currently need to configure PFC manually. RoCEv2 is also used by large enterprises, financial institutions, and other high-performance computing environments. Further there is strong interest in accessing new high-speed solid-state data storage technologies over Ethernet networks using RoCEv2. There are public cloud vendor requirements for Media Access Control Security (MACsec, specified in IEEE Std 802.1AE) integrity and confidentiality protection of all frames transmitted between geographically distributed data centers.

CSD compatability

The project will be in conformance with IEEE Std 802, IEEE Std 802.1AC, and the existing provisions of IEEE Std 802.1Q.

CSD distinct identity

There are no other IEEE 802 standards or projects that specify automatic configuration of PFC headroom, and the current standard does not adequately specify MACsec protection of PFC frames. Interoperability issues have been encountered.

CSD technical feasibility

The proposed project incorporates techniques for peer-to-peer link delay measurement and information exchange mechanisms that are currently specified and available in many production bridges and end-stations. PFC operation with MACsec support has been deployed, although existing implementations do not necessarily interoperate.

The proposed project enables peer nodes to advertise the new capability through the Data Center Bridging Capability Exchange (DCBX, specified in IEEE Std 802.1Q) mechanism which is widely deployed today using "Link Layer Discovery Protocol (LLDP, specified in IEEE Std 802.1AB). Roundtrip delay measurements for participating systems are based on the existing Precision Time Protocol (PTP, specified in IEEE Std 1588) delay measurement mechanism.

The proposed project can reduce cost of data center bridges by avoiding wasting memory.

The proposed project does not change the cost characteristics of bridges and end stations.

A modest reduction in installation cost of new equipment is expected. There are no incremental installation costs relative to the existing PTP and DCBX that will be used by the proposed standard.

The proposed project can reduce operational cost by configuration automation.

1 Introduction to the current draft

2 This introduction is not part of the draft, and will be revised for SA ballot. A set of cover pages will be
3 retained for use during SA ballot.

4 This is an initial draft of P802.1Qdt.

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2

(Amendment to IEEE Std 802.1Q™–2022 as amended by
IEEE Std 802.1Qcz™–2022)

Draft Standard for
Local and metropolitan area networks—

Bridges and Bridged Networks

Amendment: Priority-based Flow Control Enhancements

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LAN/MAN Standards Committee

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Abstract: This amendment specifies procedures and managed objects for automated Priority-based Flow Control (PFC) headroom calculation and Media Access Control Security (MACsec) protection of PFC frames, using the existing Precision Time Protocol (PTP) and enhancements to the Data Center Bridging Capability Exchange protocol (DCBX).

Keywords: Bridged Network, IEEE 802.1AE™, IEEE 802.1Q™, LAN, local area network, MAC security, MACsec, privacy, Virtual Bridged Network, virtual LAN, VLAN Bridge

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1. Available at: https://development.standards.ieee.org/myproject-web/public/view.html#landing.
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Participants

<<The following lists will be updated in the usual way prior to publication>>

At the time this standard was completed, the IEEE 802.1 working group had the following membership:

Glenn Parsons, *Chair*

Jessy Royer, *Vice Chair*

Mick Seaman, *Security Task Group Chair*

Lily Lv, *Editor*

The following members of the individual balloting committee voted on this standard. Balloters may have voted for approval, disapproval, or abstention.

A.N. Other

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Introduction

This introduction is not part of IEEE Std 802.1Qdt-20XX, IEEE Standard for Local and metropolitan area networks—Bridges and Bridged Networks—Amendment: Priority-based Flow Control Enhancements

This standard amends IEEE Std 802.1Q^{TM}-2022 as previously amended by IEEE Std 802.1Qcz^{TM}-2022. In particular it enhances and clarifies the capabilities introduced by IEEE Std 802.1Qbb^{TM}-2011.

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Local and Metropolitan Networks —

Bridges and Bridged Networks

Amendment: Priority-based Flow Control Enhancements

(Amendment to IEEE Std 802.1Q™–2022 as amended by IEEE Std 802.1Qcz™–2022)

NOTE—The editing instructions contained in this amendment define how to merge the material contained therein into the existing base standard and its amendments to form the comprehensive standard.

The editing instructions are shown in **bold italics**. Four editing instructions are used: change, delete, insert, and replace. ***Change*** is used to make corrections in existing text or tables. The editing instruction specifies the location of the change and describes what is being changed by using ~~strikethrough~~ (to remove old material) and <u>underscore</u> (to add new material). ***Delete*** removes existing material. ***Insert*** adds new material without disturbing the existing material. Deletions and insertions may require renumbering. If so, renumbering instructions are given in the editing instruction. ***Replace*** is used to make changes in figures or equations by removing the existing figure or equation and replacing it with a new one. Editing instructions, change markings, and this note will not be carried over into future editions because the changes will be incorporated into the base standard.

1. Overview

1.1 Scope

Change the text of 1.1 Scope as follows:

This standard specifies Bridges that interconnect individual LANs, each supporting the IEEE 802 Media Access Control (MAC) Service using a different or identical media access control method, to provide Bridged Networks and VLANs.

1.3 Introduction

For the purpose of compatible interconnection of information technology equipment using the IEEE 802 MAC Service supported by interconnected IEEE 802 standard LANs using different or identical media access control methods, this standard specifies the operation of MAC Bridges and VLAN Bridges. To this end, it

a) Positions the support of VLANs within an architectural description of the MAC Sublayer.

b) Defines the principles of operation of the MAC Bridge and VLAN Bridge in terms of the support and preservation of the MAC Service, and the maintenance of quality of service (QoS).

c) Specifies an Enhanced Internal Sublayer Service (EISS) provided to the Media Access-Independent functions that provide frame relay in a VLAN Bridge.

d) Establishes the principles and a model of Virtual Bridged Network operation.

e) Identifies the functions to be performed by Bridges, and provides an architectural model of the operation of a Bridge in terms of processes and entities that provide those functions.

f) Specifies a frame format that allows a VLAN Identifier (VID) and priority information to be carried by VLAN-tagged user data frames.

g) Specifies the rules that govern the addition or removal of VLAN tags to and from user data frames.

h) Establishes the requirements for automatic configuration of VLAN topology.

i) Establishes the requirements for VLAN Bridge Management in a Virtual Bridged Network, identifying managed objects and defining management operations.

j) Defines SMIv2 (IETF STD 58) Management Information Based (MIB) modules for the management of VLAN Bridge capabilities including spanning tree protocols and Provider Bridges.

k) Define YANG configuration and operational state models (Clause 48) in support of Two-Port MAC Relays, Customer VLAN Bridges, and Provider Bridges, including Connectivity Fault Management (CFM) for those bridges.

l) Defines the operation of the Multiple Spanning Tree Algorithm and Protocol (MSTP).

m) Describes the protocols and procedures necessary to support interoperation between Multiple Spanning Tree (MST) and Single Spanning Tree (SST) Bridges in the same Virtual Bridged Networks.

n) Specifies the requirements to be satisfied by equipment claiming conformance to this standard.

To enable a service provider to use a Virtual Bridged Network to provide separate instances of the IEEE 802 MAC Service, MAC Internal Sublayer Service (ISS), and EISS to multiple independent customers, in a manner that does not require cooperation among the customers and that requires a minimum of cooperation between the customers and the provider of the MAC Service, this standard further specifies the operation of Provider Bridges. To this end, it

o) Differentiates Customer VLANs (C-VLANs) that are under the administrative control of a single customer of a service provider, from the Service VLANs (S-VLANs) that are used by a service provider to support different customers.

p) Specifies VLAN tag formats for both C-VLANs and S-VLANs, allowing each to be distinguished and separately applied and administered by customers and by a service provider.

q) Specifies the functionality of a generic VLAN Bridge component within a system and the specific requirements of derived C-VLAN and S-VLAN components.

r) Specifies a C-VLAN Bridge as comprising a single C-VLAN component, and a Provider Bridge as encompassing Bridges that comprise a single S-VLAN component and no C-VLAN components (S-VLAN Bridge) or a single S-VLAN component and one or more C-VLAN components (Provider Edge Bridge).

s) Specifies parameters and mappings that allow the EISS to support traffic classes that comprise distinct aggregate flows supporting different QoS characteristics and provide independent guarantees to different customers, through support of priority and drop precedence marking.

t) Specifies the incorporation of flow metering, transmission queue management, and transmission selection algorithms within the forwarding process of a Bridge.

u) Positions the support of S-VLANs within the architectural description of the MAC Sublayer and specifies their relationship to media access method-dependent functions and to the media-independent functions used by customers to administer their networks, including the support of C-VLANs.

v) Allocates the reserved multicast addresses to media access method-dependent, provider network, and customer network functions, specifying the filtering to be applied in each type of VLAN Bridge component.

w) Defines the principles of network operation in terms of the support and preservation of the MAC Service, and the maintenance of QoS for each service instance, including the segregation of data belonging to different organizations.

x) Specifies customer interfaces to a Provider Bridged Network (PBN) in terms of the operation and configuration of the VLAN Bridge components of Provider Bridges, including interfaces that

   1) Provide access to a single service instance through a Bridge Port.
   2) Allow a customer to select among and identify service instances by Customer VLAN Identifier (C-VID).
   3) Allow a customer to select among and identify service instances by Service VLAN Identifier (S-VID).
   4) Support customer signaling of priority information on a frame by frame basis.
   5) Multiplex service instances over LANs that provide access to a provider network.
   6) Support fault tolerance through redundant provision of access LANs and equipment.

y) Describes the functions to be performed within the PBN in order to support and maintain the connectivity provided to customer service instances.

z) Establishes the requirements for Bridge Management in the PBN, identifying the managed objects and defining the management operations.

aa) Specifies performance requirements, and recommends default values and applicable ranges for the operational parameters of a Provider Bridge.

This standard specifies protocols, procedures, and managed objects to support Connectivity Fault Management (CFM). These allow discovery and verification of the path, through Bridges and LANs, taken for frames addressed to and from specified network users, and support detection and isolation of a connectivity fault to a specific Bridge or LAN. To this end, it

ab) Defines Maintenance Domains, Maintenance Associations (MAs), their constituent Maintenance Points (MPs), and the managed objects required to create and administer them.

ac) Describes the protocols and procedures used by MPs to detect and diagnose connectivity faults within a Maintenance Domain.

This standard specifies protocols, procedures, and managed objects to allow support of provisioning systems that explicitly select traffic engineered paths within Provider Backbone Bridged Networks (PBBNs) by

1 allowing a network operator to disable unknown destination address forwarding, source address learning and
2 spanning tree protocols for administratively selected VIDs, while allowing other network control protocols
3 to dynamically determine active topologies for other services. These interoperable capabilities are supported
4 by management of individual Bridges by Simple Network Management Protocol (SNMP) using an SMIv2
5 MIB, by extensions to the other control protocols specified in this standard, by the use of CFM with the
6 addresses and VIDs that specify traffic engineered connections, and by 1:1 path protection switching
7 capable of load sharing. To this end, it

8 ad) Enables construction of active topologies by an external agent that is responsible for setting up
9   Ethernet Switched Paths (ESPs) by splitting the B-VID space between distributed spanning tree
10   protocols and provisioned control.

11 ae) Supports discard of frames with unknown destination addresses for B-VIDs under provisioned
12   control.

13 af) Supports the operation of Continuity Check, Loopback, and Linktrace protocols on provisioned
14   traffic engineered paths.

15 ag) Supports 1:1 protection switching capable of load sharing for Traffic Engineering service instances
16   (TESIs).

17 ah) Supports protection of a group of TESIs that traverses a sequence of LANs and intervening Bridges
18   using a method that does not require the modification of data or control frames.

19 ai) Provides required extension to SNMP management by SMIv2 MIB modules.

20 This standard does not specify operation of ESPs through multiple Provider Backbone Bridge Traffic
21 Engineering (PBB-TE) Regions. All the Backbone Edge Bridges (BEBs) specified for use in a PBB-TE
22 Region are combined I type and B type Backbone Edge Bridges (IB-BEBs).

23 This standard specifies protocols, procedures, and managed objects to support the Multiple Registration
24 Protocol (MRP). MRP allows participants in an MRP Application to register attributes with other
25 participants in a Bridged Network. Four applications are defined—one to register VIDs [Multiple VLAN
26 Registration Protocol (MVRP)], one to register MAC addresses [Multiple MAC Registration Protocol
27 (MMRP)], one to register Streams and configure associated network resources [Multiple Stream
28 Registration Protocol (MSRP)], and one that provides the ability to flush learned MAC Address Entries held
29 in the Filtering Database (FDB) of an I-component on a per-I-SID basis [Multiple I-SID Registration
30 Protocol (MIRP)]. MVRP will furthermore provide for the rapid healing of network failures without
31 interrupting services to unaffected VLANs. To this end, it specifies the following:

32 aj) MRP and the operation of MRP entities.[1]

33 ak) The generic frame formats used in MRP exchanges.

34 al) The MMRP application of MRP, and the frame formats that it uses.

35 am) The MVRP application of MRP, and the frame formats that it uses.

36 To allow scaling of Provider Networks to at least 2^{24} S-VLANs, this standard further specifies the operation
37 of Provider Backbone Bridges (PBBs) by means of an architecture and Bridge protocols compatible and
38 interoperable with PBN protocols and equipment, allowing interconnection of multiple PBNs. To this end, it

39 an) Introduces BEBs that, by exchanging backbone frames that encapsulate the addresses, VLAN tags,
40   and data of customer frames, support the virtual, media-independent equivalent of a number of
41   independent instances of the service provided by media-dependent frame transmission procedures.

42 ao) Extends the parameters of the ISS and EISS to include a connection identifier, capable of
43   referencing the backbone addresses and other parameters, used to convey customer frames from one
44   BEB to all, or one of, the other BEBs supporting a particular backbone service instance.

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[1] MRP replaces the Generic Attribute Registration Protocol (GARP), defined in IEEE Std 802.1D™-2004 [B13], that was used to
support GVRP and GMRP in earlier revisions of IEEE Std 802.1Q. Similarly, GVRP and GMRP are replaced by MVRP and MMRP,
respectively.

ap) Specifies the format of the Backbone Service Instance tag (I-TAG) that encapsulates the customer addresses, and introduces a Backbone Service Instance Identifier (I-SID) that allows each BEB to support a number of backbone service instances and permits the unambiguous identification of up to 2^{24} backbone service instances within a single PBBN.

aq) Provides a model of BEB operation in terms of VLAN Bridge components that allows the use of Provider Bridges as Backbone Core Bridges (BCBs), with PBBN traffic carried as frames containing I-TAGs on particular Backbone VLANs (B-VLANs) potentially coexisting with PBN traffic carried as frames without I-TAGs on other B-VLANs.

ar) Specifies the interfaces that a PBBN can provide to transport service frames. These comprise a Port-based service interface that assigns all received untagged and priority-tagged frames to a single S-VLAN transported over a single backbone service instance, an S-tagged service interface capable of mapping individual S-VLANs to different backbone service instances, and an I-tagged service interface capable of mapping frames from one set of backbone service instances to another.

as) Describes the use of redundant Bridges and access LANs to protect backbone service access against failure of any of those systems or components.

at) Specifies the management of BEBs in terms of the model of operation [item ap) above], making use of defined management objects for the individual VLAN Bridge components, and adding managed objects to facilitate service creation.

au) Describes the use of CFM to detect and isolate faults in the connectivity provided to individual S-VLANs across the PBBN, in the connectivity provided to the group of S-VLANs supported by a single backbone service instance (identified by an I-SID), and in the connectivity provided to individual B-VLANs within the backbone itself.

av) Specifies extensions to MSTP to allow network administrators to protect against loops through peered PBBNs without requiring coupling of spanning trees that operate independently for each PBBN.

This standard specifies CFM protocols, procedures, and managed objects that provide confirmation of successful transmission of frames conveying specified data. This capability supports diagnosis of faults sensitive to, or caused by, particular data patterns, and their isolation to part of the transmission path. Connectivity verification can be carried out from any single point with bridged connectivity to MPs on the path, can isolate failures to communicate in a specific direction, and can be carried out while service is being provided to other users of the data path. To this end, it

aw) Defines the extensions to CFM capabilities defined by Clause 18 through Clause 22 to facilitate diagnosis and isolation of faults sensitive to, or caused by, particular data patterns in frames transmitted by a service user.

ax) Describes the protocols and procedures for data-driven and data-dependent connectivity fault management (DDCFM).

This standard specifies the function of a Two-Port MAC Relay (TPMR), along with protocols and procedures that support its operation. A TPMR is a type of Bridge that has only two externally accessible Bridge Ports, and supports a subset of the functionality of a MAC Bridge. A TPMR is transparent to all frame-based media-independent protocols, except those explicitly addressed to it and those that are destined for reserved MAC addresses that the relay function of the TPMR is defined not to forward. It is remotely manageable through at least one of its external MACs, and signals a failure of either MAC's LAN through the other MAC. A TPMR should only be attached to point-to-point LANs. The conformance requirements for a TPMR are stated in 5.13 and 5.15.

This standard allows Bridges to provide performance guarantees for time-sensitive (i.e., bounded latency and latency variation) loss-sensitive real-time audio/video (AV) data stream transmission (AV traffic). It specifies priority regeneration and controlled bandwidth queue draining algorithms. VLAN tag encoded priority values are allocated, in aggregate, to segregate frames among queues that support AV traffic and

1 queues that support non-AV traffic, allowing simultaneous support of both AV traffic and other bridged
2 traffic over and between wired and wireless Local Area Networks (LANs). To this end, it

3   ay)   Defines status parameters that allow the boundaries of a Stream Reservation Protocol (SRP—see
4   Clause 35) domain (35.1.4) to be identified and maintained.

5   az)   Specifies how the priority information in frames received at SRP domain boundary ports is
6   regenerated.

7   NOTE 1—The priorities in frames transmitted from outside an SRP domain to a Bridge inside an SRP domain
8   are remapped in order to ensure that traffic that is not associated with a reservation does not disrupt traffic that
9   is associated with a reservation. Hence, traffic entering an SRP domain that uses Priority Code Point values
10   associated with reserved traffic classes will be remapped to Priority Code Point values that are not associated
11   with reserved traffic classes.[2]

12   ba)   Specifies how priority information is used to determine the traffic classes to be used for time-
13   sensitive streams.

14   bb)   Defines a credit-based shaper algorithm to shape traffic in accordance with stream reservations.

15   NOTE 2—The credit-based shaper algorithm operates on the outbound queues; the mechanisms specified for
16   the support of time-sensitive AV traffic do not involve any form of ingress metering or policing.

17 This standard specifies protocols, procedures, and managed objects to support congestion notification. These
18 allow a Virtual Bridged Network or a portion thereof, with a limited bandwidth-delay product, to transfer
19 long-lived data flows with a significantly reduced chance of frame loss compared to a network without
20 congestion notification. To this end, it

21   bc)   Defines a means for VLAN Bridges that support congestion notification to form Congestion
22   Managed Domains within a Virtual Bridged Network.

23   bd)   Defines a means for detecting congested queues in end stations and VLAN Bridges, for signaling
24   such congestion to the end stations sourcing the frames causing the congestion, and for those end
25   stations to control the rate of transmission of those frames.

26 To enable the end-to-end management of resource reservation for QoS guaranteed streams, this standard
27 further specifies protocols, procedures, and managed objects, usable by existing higher layer mechanisms,
28 that allow network resources to be reserved for specific traffic streams traversing a Bridged Network. To this
29 end, it

30   be)   Specifies the use of Dynamic Reservation Entries (8.8.7) in the FDB to control the forwarding of
31   frames associated with a particular Stream.

32   bf)   Specifies a Stream Reservation Protocol (SRP). SRP facilitates the registration, deregistration and
33   maintenance of stream reservation information in relevant Bridges to establish end-to-end stream
34   paths.

35 This standard specifies protocols, procedures, and managed objects to support topology change signaling to
36 alter the binding (held in an I-Component) of Customer addresses to backbone addresses on a per-I-SID
37 basis. This is accomplished by extending the use of MRP. To this end, it specifies the MIRP application of
38 MRP and the frame formats that it uses.

39 NOTE 3—MIRP can only trigger the flushing of learned MAC address information; it does not propagate the
40 registration of I-SIDs. The name Multiple I-SID Registration Protocol is chosen because MIRP is a Multiple
41 Registration Protocol (MRP) application and can be extended to perform I-SID registrations.

42 This standard allows an S-tagged service interface connecting two independently administered PBNs to be
43 used to handle traffic (identified by a single S-VID) for a given customer attached to one PBN as if the
44 customer were directly attached to the other PBN using a Port-based or C-tagged service interface. To this
45 end, it

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[2] Notes in text, tables, and figures are given for information only and do not contain requirements needed to implement the standard.

bg)   Specifies the use of a Port-mapping S-VLAN component to associate selected S-VIDs registered on an external port with distinct internal ports, each of which supports a separate service interface.

Change the text following item bg) as follows:

This standard defines the Data Center Bridging eXchange protocol (DCBX), which is used by Data Center Bridging (DCB) devices to exchange configuration information with directly connected peers.

This standard specifies protocols, procedures, and managed objects to support Priority-based Flow Control (PFC). These allow a Virtual Bridged Network, or a portion thereof, to exert flow control per traffic class. To this end, it

bh)   Defines a means for a system to inhibit transmission of data frames on certain priorities from the remote system on the link.

bi)   Specifies how the MAC Security protocol (MACsec, IEEE Std 802.1AE^{TM}) can be used to protect PFC frames as well as user data frames.

bj)   Defines a means for two participating systems to automatically calculate the minimum buffer requirements to assure lossless operation.

This standard specifies protocols, procedures, and managed objects for Enhanced Transmission Selection (ETS) to support allocation of bandwidth among traffic classes. When the offered load in a traffic class does not use its allocated bandwidth, ETS can allow other traffic classes to use the available bandwidth. DCBX controls the application of ETS.

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2. Normative references

<<Amendments often miss references, fail to update existing references, or (on the other hand) duplicate existing cross-references. Accordingly, this amendment shows the full list of existing cross-references, with change instructions, rather rely on reviewers to consult the base standard for changes.>>

Change the list of normative references in Clause 2 as follows:

The following referenced documents are indispensable for the application of this document (i.e., they must be understood and used, so each referenced document is cited in the text and its relationship to this document is explained). For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments or corrigenda) applies.

ANSI X3.159, American National Standards for Information Systems—Programming Language—C.[3]

IEEE Std 802®, IEEE Standard for Local and metropolitan area networks: Overview and Architecture.[4,5]

IEEE Std 802d™-2017, IEEE Standard for Local and Metropolitan Area Networks: Overview and Architecture—Amendment 1: Allocation of Uniform Resource Name (URN) Values in IEEE 802® Standards.

IEEE Std 802.1AB™, IEEE Standard for Local and metropolitan area networks—Station and Media Access Control Connectivity Discovery.

IEEE Std 802.1AC™, IEEE Standard for Local and metropolitan area networks—Media Access Control (MAC) Service Definition.

IEEE Std 802.1AE™, IEEE Standard for Local and metropolitan area networks—Media Access Control (MAC) Security.

IEEE Std 802.1AS™, IEEE Standard for Local and metropolitan area networks—Timing and Synchronization for Time-Sensitive Applications in Bridged Local Area Networks.

IEEE Std 802.1AX™, IEEE Standard for Local and metropolitan area networks—Link Aggregation.

IEEE Std 802.1BR™, IEEE Standard for Local and metropolitan area networks—Virtual Bridged Local Area Networks—Bridge Port Extension.

IEEE Std 802.1CB™, IEEE Standard for Local and metropolitan area networks—Frame Replication and Elimination for Reliability.

IEEE Std 802.1X™, IEEE Standards for Local and metropolitan area networks—Port Based Network Access Control.

IEEE Std 802.3™, IEEE Standard for Ethernet.

IEEE Std 802.11™, Information technology—Telecommunications and information exchange between systems—Local and metropolitan area networks—Specific requirements—Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications.

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[3] ANSI publications are available from the American National Standards Institute (https://www.ansi.org/).
[4] IEEE publications are available from The Institute of Electrical and Electronics Engineers (https://standards.ieee.org/).
[5] The IEEE standards or products referred to in this clause are trademarks of The Institute of Electrical and Electronics Engineers, Inc.

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IEEE Std 1588™, IEEE Standard for a Precision Clock Synchronization Protocol for Networked Measurement and Control Systems.

IEEE Std 802.20™, IEEE Standard for Local and metropolitan area networks—Part 20: Air Interface for Mobile Broadband Wireless Access Systems Supporting Vehicular Mobility—Physical and Media Access Control Layer Specification.

IETF RFC 1035 (STD 13), Domain Names: Implementation and Specification, November 1987.[6]

IETF RFC 1042, A Standard for the Transmission of IP Datagrams over IEEE 802 Networks, February 1988.

IETF RFC 2104, HMAC: Keyed-Hashing for Message Authentication, February 1997.

IETF RFC 2119 (BCP 14), Key Words for Use in RFCs to Indicate Requirement Levels, March 1997.

IETF RFC 2205, Resource ReSerVation Protocol (RSVP) — Version 1 Functional Specification, September 1997.

IETF RFC 2474, Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers, Nichols, K., Blake, S., Baker, F. and Black, D.

IETF RFC 2578 (STD 58), Structure of Management Information Version 2 (SMIv2), April 1999.

IETF RFC 2579 (STD 58), Textual Conventions for SMIv2, April 1999.

IETF RFC 2580 (STD 58), Conformance Statements for SMIv2, April 1999.

IETF RFC 2685, Virtual Private Networks Identifier, September 1999.

IETF RFC 2750, RSVP Extensions for Policy Control, January 2000.

IETF RFC 2863, The Interfaces Group MIB, June 2000.

IETF RFC 3410, Introduction and Applicability Statements for Internet-Standard Management Framework, December 2002.

IETF RFC 3411, An Architecture for Describing Simple Network Management Protocol (SNMP) Management Frameworks, December 2002.

IETF RFC 3413 (STD 62), Simple Network Management Protocol (SNMP) Applications, December 2002.

IETF RFC 3414 (STD 62), User-based Security Model (USM) for Version 3 of the Simple Network Management Protocol (SNMPv3), December 2002.

IETF RFC 3415 (STD 62), View-based Access Control Model (VACM) for the Simple Network Management Protocol (SNMP), December 2002.

IETF RFC 3417 (STD 62), Transport Mappings for the Simple Network Management Protocol (SNMP), December 2002.

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[6] IETF documents (i.e., RFCs) are available from the Internet Engineering Task Force (https://tools.ietf.org/html/).

IETF RFC 3418 (STD 62), Management Information Base (MIB) for the Simple Network Management Protocol (SNMP), December 2002.

IETF RFC 3419, Textual Conventions for Transport Addresses, December 2002.

IETF RFC 4122, A Universally Unique IDentifier (UUID) URN Namespace, July 2005.

IETF RFC 4188, Definitions of Managed Objects for Bridges, September 2005.

IETF RFC 4291, IP Version 6 Addressing Architecture, February 2006.

IETF RFC 4318, Definitions of Managed Objects for Bridges with Rapid Spanning Tree Protocol, December 2005.

IETF RFC 4363, Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering, and Virtual LAN Extensions, January 2006.

IETF RFC 4789, Simple Network Management Protocol (SNMP) over IEEE 802 Networks, November 2006.

IETF RFC 5120, M-ISIS: Multi Topology (MT) Routing in Intermediate System to Intermediate Systems (IS-ISs), February 2008.

IETF RFC 5303, Three-Way Handshake for IS-IS Point-to-Point Adjacencies, October 2008.

IETF RFC 5305, IS-IS Extensions for Traffic Engineering, October 2008.

IETF RFC 5307, IS-IS Extensions in Support of Generalized Multi-Protocol Label Switching (GMPLS), October 2008.

IETF RFC 6165, Extensions to IS-IS for Layer-2 Systems, April 2011.

IETF RFC 7365, Framework for Data Center (DC) Network Virtualization, October 2014.

IETF RFC 7810, IS-IS Traffic Engineering (TE) Metric Extensions, 2016.

IETF RFC 7811, An Algorithm for Computing Maximally Redundant Trees for IP/LDP Fast-Reroute, 2016.

IETF RFC 7950, The YANG 1.1 Data Modeling Language, August 2016.

IETF RFC 8343, A YANG Data Model for Interface Management, March 2018.

IETF RFC 8394, Split Network Virtualization Edge (Split-NVE) Control Plane Requirements, May 2018.

ISO/IEC 7498-1, Information processing systems — Open Systems Interconnection — Basic Reference Model—Part 1: The Basic Model.[7]

ISO/IEC 8802-2, Standard for Information technology — Telecommunications and information exchange between systems — Local and metropolitan area networks — Specific requirements — Part 2: Logical link control.

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[7] ISO and ISO/IEC documents are available from the International Organization for Standardization (https://www.iso.org/). ISO/IEC publications are also available in the United States from Global Engineering Documents (https://global.ihs.com/). Electronic copies are available in the United States from the American National Standards Institute (https://www.ansi.org/)

ISO/IEC 8802-11, Information technology — Telecommunications and information exchange between systems — Local and metropolitan area networks — Specific requirements — Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) specifications.

ISO/IEC 9577:1999, Information technology — Protocol identification in the network layer.

ISO/IEC 10589:2002, Information technology — Telecommunications and information exchange between systems — Intermediate System to Intermediate System intra-domain routeing information exchange protocol for use in conjunction with the protocol for providing the connectionless-mode network service.

ITU-T Recommendation X.690 (2002), Information Technology—ASN.1 Encoding Rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER), and Distinguished Encoding Rules (DER).[8]

ITU-T Recommendation G.8013/Y.1731, Operation, administration and maintenance (OAM) functions and mechanisms for Ethernet-based Networks.

MEF Technical Specification 10.3 (MEF 10.3), Ethernet Service Attributes Phase 3, October 2013.

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[8] ITU-T publications are available from the International Telecommunications Union (https://www.itu.int/).

5. Conformance

5.11 System requirements for Priority-based Flow Control (PFC)

A system that conforms to the provisions of this standard for PFC (Clause 36) shall

a) Support, on one or more ports, enabling PFC on at least one priority (36.1.2).

b) Support, for each PFC Priority, processing PFC M_CONTROL.requests (36.1.3.1).

c) Support, for each PFC Priority, processing PFC M_CONTROL.indications (36.1.3.3).

d) Abide by the PFC delay constraints (36.1.3.3).

e) Provide PFC-aware system queue functions (36.3).

f) Enable use of PFC only in a domain controlled by DCBX (Clause 38).

A system that conforms to the provisions of this standard for PFC may

g) Support enabling PFC on up to eight priorities per port.

h) Support the IEEE8021-PFC-MIB (17.7.17).

Insert the following items after item h):

i) Support automatic configuration of PFC buffer requirements for lossless operation (36.4).

j) Support MACsec protection on PFC frames (36.5).

12. Bridge management

12.23 Priority-based Flow Control objects

Change the text following item c) as follows:

The following Priority-based Flow Control objects exist for each port that support PFC:

a) **PFCLinkDelayAllowance:** the allowance made for round-trip propagation delay of the link in bits

b) **PFCRequests:** a count of the invoked PFC M_CONTROL.request primitives

c) **PFCIndications:** a count of the received PFC M_CONTROL.indication primitives

d) **PFCHeadroomAllowance:** the allowance made for PFC headroom in bits

<<Editor notes: need additional managed objects to separate automatic value and predefined value>>

Change Table 12-21 as follows:

Table 12-21 shows the format and applicability of these objects.

Table 12-21—Priority-based Flow Control objects

Name	Data type	Operations supported [a]	Conformance [b]
PFCLinkDelayAllowance	unsigned integer	RW	BE
PFCRequests	unsigned integer	R	BE
PFCIndications	unsigned integer	R	BE
PFCHeadroomAllowance	unsigned integer	RW	BE

[a] R = Read only access; RW = Read/Write access.

[b] B = Required for Bridge or Bridge component support of PFC; E = Required for end station support of PFC.

Change NOTE as follows:

NOTE—The PFC Initiator (see 36.3.1) can use the PFCLinkDelayAllowance parameter or PFCHeadroomAllowance parameter as one of the factors to determine when to issue a PFC M_CONTROL.request in order to not discard frames. The PFCLinkDelayAllowance parameter can be written to adjust to different link characteristics that affect the link delay (e.g., link length or link technology). See Annex N for an example of how to compute this parameter. The PFCHeadroomAllowance parameter can be written by automatic headroom calculation (see 36.4.3). Manual setting of PFCHeadroomAllowance parameter will override automatic calculated value. And if automatic headroom calculation is used, PFCLinkDelayAllowance parameter is ignored.

36. Priority-based Flow Control (PFC)

Change the first paragraph as follows:

This clause specifies the operation of PFC (see 36.1) ~~and~~, the architecture of Priority-based Flow Control in a PFC-aware system (see 36.3), automatic PFC headroom calculation (see 36.4) and MACsec protection on PFC frames (see 36.5).

<<Editor notes: include some discussion about how DCBX is used to achieve a consistent configuration.>>

36.1 PFC operation

36.1.1 Overview

Operation of PFC is limited to a data center environment. PFC enables to not discard frames due to congestion for protocols that require this property. However, PFC can cause congestion spreading behavior; therefore, it is intended for use on networks of limited extent. When PFC is used, deployment of congestion notification (see Clause 30) can reduce the frequency with which PFC is invoked.

PFC is a function defined only for a pair of full duplex MACs (e.g., IEEE 802.3 MACs operating in point-to-point full-duplex mode) connected by one point-to-point link. Use of PFC on shared media such as EPON is out of the scope of this standard. Figure 36-1 shows an example of PFC peering when IEEE 802.3 point-to-point full-duplex MACs are used.

Insert new paragraph after the 2nd paragraph:

<<Editor notes: explain Figure 36-2, it includes MACsec path and non-MACsec path. MACsec path refers to new subclause 36.5>>

Replace Figure36-1 with the following:

Figure 36-1—PFC peering

Replace Figure 36-1 with the following:

Figure 36-2—PFC peering
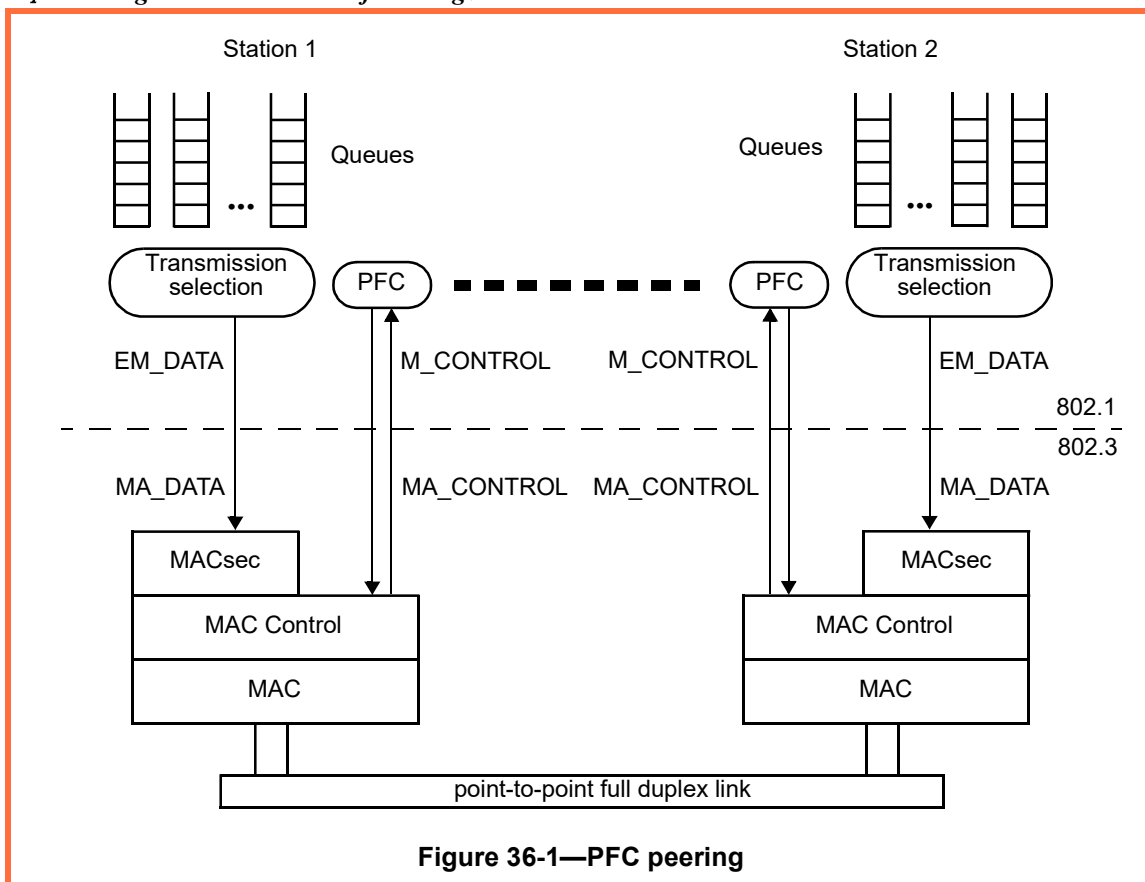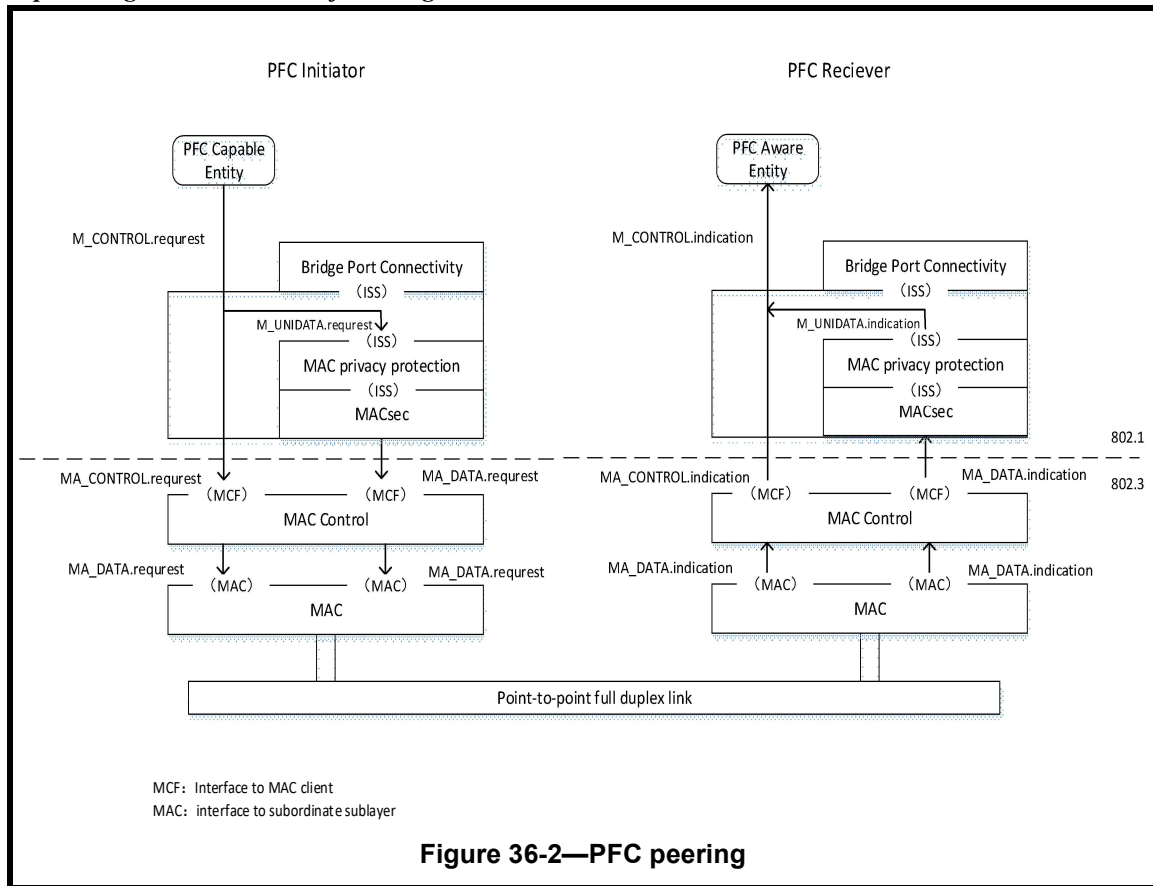
Modify the paragraph as follows:

PFC allows link flow control to be performed on a per-priority basis. In particular, PFC is used to inhibit transmission of data frames associated with one or more priorities for a specified period of time. PFC can be enabled for some priorities on the link and disabled for others. PFC can be propagated hop by hop across the network (see 36.1.3.4).

Insert new paragraph:

Higher layer entities (e.g. spanning tree) have no direct interaction with the PFC entity. When higher layer entity frames are put in a PFC enabled queue it may be paused by PFC. Higher layer entity frames are recommended to be put into a high priority queue which does not apply PFC.

<<Editor notes: need more description of higher layer entity. some description is in subclause 'Processing PFC M_CONTRO.request'>>

Insert new paragraph:

<<Editor notes: explain how PFC work with link aggregation: The queue on the logical port is not aware of PFC status of individual physical ports. Implementations typically assert PFC on a single physical link, not the logical link. The recommendation is pausing one link results in pausing all aggregated links.>>

<<Editor notes: Description in subclause 'PFC Receiver'>>

Insert the following paragraph at the end of this subclause:

PFC is intended to be used on full-duplex links. When PFC is invoked, there is a time delay between the PFC invocation on the PFC initiator and the pause action on the PFC receiver36.1.3.3. In order to guarantee

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no data frames are dropped by the PFC initiator, a certain amount of buffer needs to be available at the PFC initiator to absorb the data in flight after the PFC frame has been transmitted. The reserved buffer space is also known as PFC headroom. A method to automatically calculate the headroom is specified in subclause 36.4.

36.1.2 PFC primitives

36.1.3 Detailed specification of PFC operation

36.1.3.1 Processing PFC M_CONTROL.requests

36.1.3.2 Processing PFC M_CONTROL.indications

36.1.3.3 Timing considerations

Insert new clause after clause 36.1.3.3

36.1.3.4 PFC Propagation

<<Editor notes: move PFC propagation and overall network view up to the beginning in the overview section.>>

<<Editor notes: explain PFC could be propagated hop by hop across the network:
PFC pause frame is initiated when ingress port receiving queue is above headroom threshold. Pause frame stops upstream port egress transmit queue.The pause on the port egress transmit queue impacts different port ingress receive queues of the same switch. This is internal backpressure. Internal backpressure is implementation dependent.>>

<<Editor notes: add a figure showing PFC propagation model.>>

Insert new figure as following:
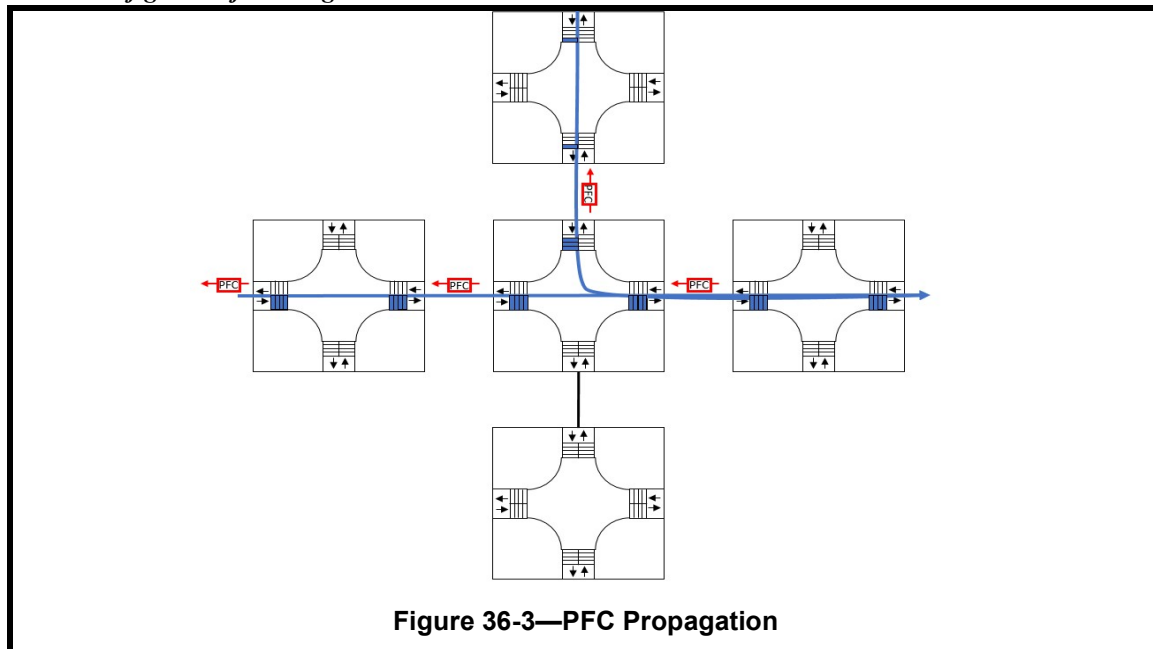
Figure 36-3—PFC Propagation

Insert new clause after clause 36.1

36.2 PFC Variables

36.2.1 Managed objects

<<Editor notes: specify PFC managed objects, including existing objects(PFCLinkDelayAllowance, PFCRequests, and PFCIndications) and one new added objects for headroom calculation(e.g. PFCHeadroom). >>

36.2.2 Internal variables

<<Editor notes: specify PFC internal variables, including prioirty_paused[n], priority_timer[n], pause_quantum, time[n], e[n]>>

36.2.3 TLV variables

<<Editor notes: specify PFC TLV variables, including existing varibles(Willing, MBC, PFC cap, PFC Enable and new added variables for headroom and for MACsec (HDR cap, internal delay, MACsec cap>>

36.3 PFC-aware system queue functions

Insert new subclause 36.4 and 36.5 at the end of clause 36

<<Editor notes: This subclause may change significantly if we re-introduce a new measurement message.>>

<<Editor notes:
1. Frequency of running measurement.
2. Preemption topic?
3. Min and max measurement over some number of measurements.
>>

36.4 Automatic PFC headroom calculation

Automatic PFC headroom calculation provides a method to configure the minimum amount of buffer space required on the PFC initiator to guarantee no packet loss when using PFC.

Automatic PFC headroom calculation follows a worst-case delay model to determine the headroom requirement (see figure N-3 of Annex N). The calculation considers the time between the PFC frame invocations by the PFC initiator, until the last bit of the PFC frame is received by the PFC receiver. The total delay value formula is specified in Annex N as below.

$DV = 2 \times (Max\ Frame) + (PFC\ Frame) + 2 \times (Cable\ Delay) + TXds1 + RXds2 + HDs2 + TXds2 + RXds1$

Cable delay is the propagation delay over the transmission medium.

TXds1 and RXds1 are the interface delay of PFC initiator. RXds2 and TXds2 are the interface delay of PFC receiver. Interface delay is specified in Annex N.3.

HDs2 is higher layer delay of PFC receiver. Higher layer delay is specified in Annex N.4.

The total delay value can be divided into medium delay, internal processing delay and fixed delay, shown in Figure 36-4.

Figure 36-4—Total delay value

In the Figure 36-4, medium delay depends on the deployment environment. A measurement mechanism is described in Clause 36.4.1. Internal processing delay is vendor specific, comprises interface delay and higher layer delay. The value of internal processing delay is calculated using the mechanism described in Clause 36.4.2. Fixed delay equals to length of time to transmit 2 times maximum frame and PFC frame. With medium delay, internal processing delay and fixed delay, Clause 36.4.3 describes the calculation of PFC headroom.

36.4.1 Medium delay measurement

Medium delay is the time of a full-duplex point-to-point round trip transmission. If it is symmetric point-to-point link, medium delay is 2 times cable delay. The measurement uses the peer-to-peer delay mechanism shown in Figure 36-5. It is the same as the mechanism specified in IEEE Std 1588-2019, supporting both one-step procedure and two-step procedure.
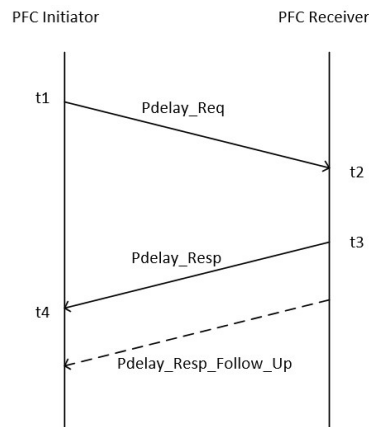
Figure 36-5—Medium delay measurement

For one-step procedure,

    a)   PFC initiator issues a Pdelay_Req message and generates a timestamp, t1.

    b)   PFC receiver generates a timestamp, t2, upon receipt of the Pdelay_Req message.

    c)   Upon receipt of Pdelay_Req message, PFC receiver issues a Pdelay_Resp message and generate a timestamp, t3. Pdelay_Resp message conveys the difference between the timestamp t2 and t3.

    d)   PFC initiator generates a timestamp, t4, upon receipt of the Pdelay_Resp

For two-step procedure,

    a)   PFC initiator issues a Pdelay_Req message and generates a timestamp, t1.

    b)   PFC receiver generates a timestamp, t2, upon receipt of the Pdelay_Req message.

    c)   Upon receipt of Pdelay_Req message, PFC receiver issues a Pdelay_Resp message and generate a timestamp, t3. Pdelay_Resp message conveys the timestamp t2.

    d)   PFC receiver issues a Pdelay_Resp_Follow_Up message. Pdelay_Resp_Follow_Up message conveys the timestamp t3.

e)   PFC initiator generates a timestamp, t4, upon receipt of the Pdelay_Resp

PFC initiator uses these 4 timestamps to compute medium delay.

Medium delay (MD) = t4 – t1 – (t3 – t2)

36.4.2 Internal processing delay calculation

Shown in Figure 36-4, the total value of internal processing delay equals to the sum of PFC initiator interface delay including TXds1, RXds1, and PFC receiver interface delay including TXds2, RXds2 and HDs2. The values are implementation specific. Although some MAC interfaces, such as IEEE Std 802.3 specify the maximum value of the interface delay, implementations always are much smaller. Both PFC initiator and PFC receiver obtain their own internal processing delays. PFC receiver conveys its internal processing delay to PFC initiator using DCBX (see clause 38). The calculation of total internal processing delay is done at PFC initiator. After receiving PFC receiver's internal processing delay, PFC initiator adds the received value and its internal processing delay, to get the total value of internal processing delay.

36.4.3 PFC headroom calculation

The calculation of PFC headroom takes place at the PFC initiator. PFC initiator gets the delay value by adding medium delay (see Clause 36.4.1), internal processing delay (see Clause 36.4.2) and fixed delay.

Besides delay value, PFC headroom calculation needs a correction coefficient. That is to adjust the accuracy considering implementation specific impact, such as internal buffer fragmentation. So the headroom calculation formula is illustrated as below.

PFC headroom = Delay value * alpha

alpha is implementation specific coefficient.

36.5 Support of MACsec protection on PFC frames

<<Editor notes: specify shim layer which is used to support MACsec protection on PFC>>

<<Editor notes: add additional description about topologies in MACsec protection on PFC scenarios: PFC is still limited to point-to-point topologies. >>

PFC functionality generates and processes MAC control primitives. MACsec functionality generates and processes MAC service primitives. In order to protect PFC frames with MACsec, it is necessary to provide a shim layer that converts the PFC MAC control primitives to MAC service primitives.

As shown in Figure 36-1, after converting the control primitives from the upper layer PFC function to corresponding MAC service primitives, the MAC service primitives are sent to the MACsec function for encryption. Upon reception of an encrypted PFC frame, the reverse is performed. The decrypted MAC service primitives are converted to MAC control primitives and submit to upper layer PFC function.
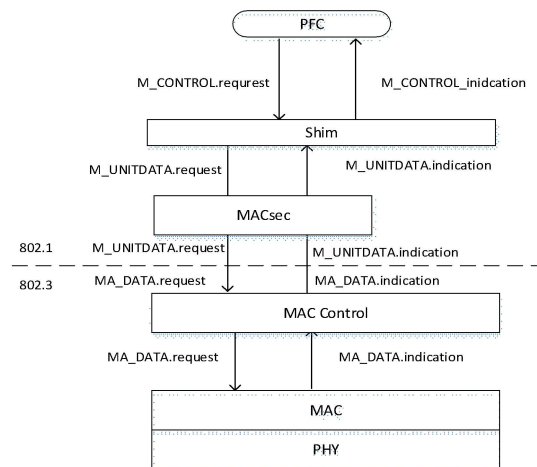
Figure 36-6—MACsec enabled PFC frame transmission

When the shim function receives an M_CONTROL.request primitive and MACsec is enabled, the shim function generates a corresponding M_UNITDATA.request to the underlying MAC service. The parameters of M_CONROL.request primitive are destination_address, opcode, and request_operand_list. The parameters of M_UNITDATA.request primitive are destination_address, source_address, mac_service_data_unit, priority, drop_eligible, frame_check_sequence, service_access_point_identifier, connection_identifier.

— The destination_address parameter is passed unaltered

— The opcode (2 octets) and request_operand_list (18 octets) are combined as mac_service_data_unit

— Generate parameters of source_address, frame_check_sequence priority, drop_eligible, service_access_point_identifier, and connection_identifier.

　　1) Priority parameter is set to 7, to give the MAC control frame highest priority for processing.

　　2) Drop_eligible parameter is set to FAULSE.

　　3) Service_access_point_identifier and connection_identifier paramters are set to NULL.

When the shim function receives an M_UNITDATA.indication primitive from the underlying MAC service, it reads the destination_address parameter. If destination_address parameter is 01-80-C2-00-00-01 which indicates it is a MAC control frame, the shim converts M_UNITDATA.indication to a corresponding M_CONTROL.indication. The parameters of M_UNITDATA.indication are destination_address, source_address, mac_service_data_unit, priority, drop_eligible, frame_check_sequence, service_access_point_identifier, connection_identifier. The parameters of M_CONROL.indication primitive are opcode, and indication_operand_list.

— The parameters of destination_address, source_address, priority, drop_eligible, frame_check_sequence, service_access_point_identifier, connection_identifier are dropped.

— The mac_service_data_unit parmeter is parsed to extract opcode parameter and indication_operand_list parameter.

　　1) The first 2 octets is opcode parameter.

　　2) The following 18 octets is operand_list parameter.

The shim function is transparent when MACsec is not enabled, as shown in Figure 36-7

1
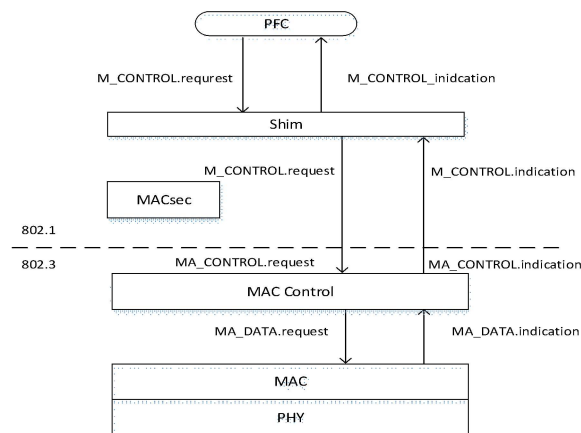
Figure 36-7—MACsec disabled PFC frame transmission

2 When the shim function receives an M_CONTROL.request primitive and MACsec is not enabled, it
3 transparently passes the primitive to the underlying MAC control interface.

4 When the shim function receives an M_CONTROL.indication from underlying MAC service, it
5 transparently passed the primitive to upper layer PFC function.

6 When the shim function receives an M_UNITDATA.indication primitive from the underlying MAC service
7 and MACsec is not enabled, it transparently passes the primitive to the upper layer MAC service.

8 Note: MAC privacy protection (802.1AEdk) on PFC is not recommended. Because there are limitations if enabling PrY
9 on PFC. It will introduce extra delays for transmission, making it difficult to reserve enough buffer as headroom.
10 Moreover, privacy channel will tunnel PFC to remote and possibly towards to multiple destinations.

38. Data Center Bridging eXchange protocol (DCBX)

38.1 Goals

Modify item a) as following：

The goals of DCBX are as follows:

a)   Discovery of DCB capability in a peer port; for example, it can be used to determine if two link peer ports support PFC, if automatic PFC headroom configuration is supported, and if MACsec protection on PFC frames is supported.

48. YANG Data Models

The YANG data models specified in this clause include the following:

— A VLAN Bridge components data model (48.2.1) that allows control and status monitoring of one or more C-VLAN or S-VLAN Bridge components (8.2) that compose all or part of a system's functionality, and the Bridge Port interfaces that support those components.

— A Two-Port MAC Relay data model (48.2.2) that both subsets and augments the VLAN Bridge components model to model a VLAN-unaware TPMR (3.282)

— A Customer VLAN Bridge model (48.2.3) that comprises a single VLAN Bridge component from the VLAN Bridge components model.

— A Provider Bridges model that uses one or multiple components from the VLAN Bridge components model to compose an S-VLAN component Provider Bridge or a Provider Edge Bridge.

— Connectivity Fault Management (CFM) models (48.2.3) for use with the VLAN Bridge components and related models in systems that provide CFM functionality.

— A Stream filters and stream gates model (48.2.6) that augments the VLAN Bridge components model.

— An Asynchronous Traffic Shaping (ATS) model that augments the VLAN Bridge components model and the Stream filters and stream gates model.

— An Priority-Based Flow Control (PFC) model that augments the VLAN Bridge components model.

48.2 IEEE 802.1Q YANG models

Insert new subclause at the end of clause 48.2.

48.2.8 Priority-Based Flow Control (PFC) model

<<Editor notes: specify PFC YANG model for managed objects.>>

48.3 Structure of the YANG models

The YANG models specified by this standard use the YANG modules summarized in Table 48-1.[9]

In the YANG module definitions, if any discrepancy between the DESCRIPTION text and the corresponding definition in any other part of this standard occur, the definitions outside this clause (Clause 48) take precedence.

Modify Table 48-1 as follows:

<<Editor notes: Insert PFC module in table 48-1>>

Table 48-1—Summary of the YANG modules

Module	References	Managed functionality	Initial YANG specification Notes
ieee802-types	48.6.1	Type definitions	IEEE Std 802.1Qcp General type definitions for IEEE 802 standards.
ieee802-dot1q-types	48.6.2	Type definitions	IEEE Std 802.1Qcp General type definitions used by IEEE Std 802.1Q.
ieee-802-dot1q-tsn-types	48.6.3	Type definitions	IEEE Std 802.1Qcp Type definitions and groupings for TSN user/network components.
ieee802-dot1q-bridge	48.5.4, 48.6.4	Clause 8	IEEE Std 802.1Qcp VLAN bridge component capabilities.
ieee802-dot1q-tpmr	48.5.5, 48.6.5	5.13, 5.15	IEEE Std 802.1Qcp TPMR augmentation of ieee802-dot1q-bridge.
ieee802-dot1q-pb	48.5.6, 48.6.6	Clause 20	IEEE Std 802.1Qcp Provider Bridge augmentation of ieee802-dot1q-bridge.
ieee802-dot1q-cfm-types	48.5.7, 48.6.7	Clause 20	IEEE Std 802.1Qcx General type definitions for CFM modules.
ieee802-dot1q-cfm	48.5.8, 48.6.8	Clause 20	IEEE Std 802.1Qcx Base CFM module defining Maintenance Domains, Maintenance Associations, Maintenance Groups, MEPs and CFM session actions.
ieee802-dot1q-cfm-bridge	48.5.9, 48.6.9	Clause 20	IEEE Std 802.1Qcx Bridge and Bridge Port extension/ augmentation of ieee802-dot1q-cfm including CFM Stack, Default MD Levels, and Configuration Error Lists.
ieee802-dot1q-cfm-alarm	48.5.10, 48.6.10	Clause 20	IEEE Std 802.1Qcx Common CFM alarms, also supports alarms based on different frameworks (e.g., ietf-alarms).

---

[9] An amendment's designation is often used to refer to functionality in an IEEE standard after the amendment has been incorporated in a revision of the standard, even if the functionality has been revised. The amendment that added each YANG module is identified to help locate the relevant provisions of this standard.

Table 48-1—Summary of the YANG modules (continued)

Module	References	Managed functionality	Initial YANG specification Notes
ieee802-dot1q-stream-filters-gates	48.5.11, 48.6.11	8.6, 8.6.5.3, 8.6.5.4	IEEE Std 802.1Qcr Basic stream filtering and stream gating capabilities.
ieee802-dot1q-ats	48.5.12, 48.6.12	8.6	IEEE Std 802.1Qcr ATS extensions to ieee802-dot1q-stream-filters-gates and ieee802-dot1q-bridge modules.
ieee802-dot1q-pfc			

The relationship between the models listed in 48.3 and the YANG modules listed in Table 48-1 is described in 48.4.1 through 48.4.5.

Insert new subclause at the end of clause 48.3.

48.3.8 Priority-Based Flow Control (PFC) model

<<Editor notes: specify PFC YANG model structure for managed objects.>>

48.4 Security considerations

The YANG modules defined in this clause are designed to be accessed via a network configuration protocol, e.g., NETCONF protocol (IETF RFC 6241 [B41]). In the case of NETCONF, the lowest NETCONF layer is the secure transport layer and the mandatory to implement secure transport is SSH (IETF RFC 6242 [B42]). The NETCONF access control model (IETF RFC 6536 [B46]) provides the means to restrict access for particular NETCONF users to a preconfigured subset of all available NETCONF protocol operations and content.

It is the responsibility of a system's implementor and administrator to ensure that the protocol entities in the system that support NETCONF, and any other remote configuration protocols that make use of these YANG modules, are properly configured to allow access only to those principals (users) that have legitimate rights to read or write data nodes. This standard does not specify how the credentials of those users are to be stored or validated.

48.4.1 Security considerations of the VLAN Bridge components model

There are a number of management objects defined in the ieee802-dot1q-bridge YANG module that are configurable (i.e., read-write) and/or operational (i.e., read-only). Such objects may be considered sensitive or vulnerable in some network environments. A network configuration protocol, such as NETCONF, can support protocol operations that can edit or delete YANG module configuration data (e.g., edit-config, delete-config, copy-config). If this is done in a non-secure environment without proper protection, then negative effects on the network operation are possible.

The following objects in the ieee802-dot1q-bridge YANG module can be manipulated to interfere with the operation of VLANs and priority classes. This could, for example, be used to force a reinitialization of state machines, thus causing network instability, or to change the forwarding and filtering policies. Another possibility would be for an attacker to override established policy on Port priorities, thus giving a user (or an attacker) unauthorized preferential treatment.

   interfaces/interface/bridge-port

   interfaces/interface/bridge-port/priority-regeneration

   interfaces/interface/bridge-port/transmission-selection-table

   bridges/bridge/component/traffic-class-enabled

   bridges/bridge/component/bridge-vlan/protocol-group-database

   interfaces/interface/bridge-port/traffic-class

   interfaces/interface/bridge-port/protocol-group-vid-set

a) The configurable object bridges/bridge/component/filtering-database/aging-time controls how fast dynamically learned forwarding information is aged out. Setting this object to a large value may simplify FDB overflow attacks. Setting this object to too small a value may compromise the throughput of the network by causing excessive flooding.

b) The configurable object bridges/bridge/component/filtering-database/filtering-entries/entry-type provides a filtering mechanism controlling which Ports frames originating from a specific source may be forwarded to. Write access to this table can be used to turn provisioned filtering off or to add filters to prevent rightful use of the network.

Some of the readable data in this YANG module may be considered sensitive or vulnerable in some network environments. It is thus important to control all types of access (e.g., including NETCONF get, get-config operations) to these objects and possibly to even encrypt the values of these objects when sending them over the network. These tables and objects and their sensitivity/vulnerability are described as follows:

— The object bridges/bridge/component/capabilities could be used by an attacker to determine which attacks might be useful to attempt against a given device.

— The readable objects defined in the ieee802-dot1q-bridge module provide information about the topology of a bridged network and the attached active stations. The addresses listed in the bridges/bridge/component/filtering-database/filtering-entries usually reveal information about the manufacturer of the MAC hardware, which can be useful information for mounting other specific attacks. In some networks, information about attached active stations can be considered personal identifying information about the user of the station. Unauthorized use of these objects can be considered a privacy threat.

48.4.2 Security considerations of the Two-Port MAC Relay model

There are a number of management objects defined in the ieee802-dot1q-tpmr YANG module that are configurable (i.e., read-write) and/or operational (i.e., read-only). Such objects may be considered sensitive or vulnerable in some network environments. A network configuration protocol, such as NETCONF (IETF RFC 6241 [B41]), can support protocol operations that can edit or delete YANG module configuration data (e.g., edit-config, delete-config, copy-config). If this is done in a non-secure environment without proper protection, then negative effects on the network operation are possible.

The following objects in the ieee802-dot1q-tpmr YANG module could be manipulated to interfere with the operation of MAC status propagation on a TPMR port and, for example, be used to cause network instability:

interfaces/interface/bridge-port/mac-status-propagation/link-notify

interfaces/interface/bridge-port/mac-status-propagation/link-notify-wait

interfaces/interface/bridge-port/mac-status-propagation/link-notify-retry

interfaces/interface/bridge-port/mac-status-propagation/mac-notify

interfaces/interface/bridge-port/mac-status-propagation/mac-notify-time

interfaces/interface/bridge-port/mac-status-propagation/mac-recover-time

48.4.3 Security considerations of the Customer VLAN Bridge model

The Customer VLAN Bridge YANG model is based on, and has the same security considerations as, the VLAN Bridge components model. See 48.4.1.

48.4.4 Security considerations of the Provider Bridge model

There are a number of management objects defined in the ieee802-dot1q-pb YANG module that are configurable (i.e., read-write) and/or operational (i.e., read-only). Such objects may be considered sensitive or vulnerable in some network environments. A network configuration protocol, such as NETCONF (IETF RFC 6241 [B41]), can support protocol operations that can edit or delete YANG module configuration data (e.g., edit-config, delete-config, copy-config). If this is done in a non-secure environment without proper protection, then negative effects on the network operation are possible.

The following objects in the ieee802-dot1q-pb YANG module can be manipulated to interfere with the operation of VLANs. This could, for example, be used to force a reinitialization of state machines, thus causing network instability, or to change the forwarding and filtering policies.

interfaces/interface/bridge-port

interfaces/interface/bridge-port/cvid-registration

interfaces/interface/bridge-port/service-priority-regeneration

48.4.5 Security considerations of the CFM model

There are a number of management objects defined in the ieee802-dot1q-cfm, ieee802-dot1q-cfm-bridge, and ieee802-dot1q-cfm-alarm YANG modules that are configurable (i.e., read-write) and/or operational (i.e., read-only). Such objects may be considered sensitive or vulnerable in some network environments. A network configuration protocol, such as NETCONF (IETF RFC 6241 [B41]), can support protocol operations that can edit or delete YANG module configuration data (e.g., edit-config, delete-config, copy-config). If this is done in a non-secure environment without proper protection, then negative effects on the network operation are possible.

The following objects in the ieee802-dot1q-cfm YANG module could be manipulated to interfere with the operation of a CFM port. This could, for example, be used to force a reinitialization of CFM state machines, thus causing network instability, or to change the management policies.

    cfm/maintenance-domain

    cfm/maintenance-group

See 48.4.1 for related ieee802-dot1q-bridge YANG model security considerations.

48.4.6 Security considerations of the Stream filters and stream gates model

There are a number of management objects defined in the ieee802-dot1q-stream-filters-gates YANG module that are configurable (i.e., read-write) and/or operational (i.e., read-only). Such objects may be considered sensitive or vulnerable in some network environments. A network configuration protocol, such as NETCONF (IETF RFC 6241 [B41]), can support protocol operations that can edit or delete YANG module configuration data (e.g., edit-config, delete-config, copy-config). If this is done in a non-secure environment without proper protection, then negative effects on the network operation are possible.

The following objects in the ieee802-dot1q-stream-filters-gates YANG module could be manipulated to interfere with the operation of stream filtering and gating. This could, for example, be used to force a reinitialization of PSFP or ATS state machines, thus causing network instability.

    bridges/bridge/component/stream-filters

    bridges/bridge/component/stream-gates

See 48.4.1 for related ieee802-dot1q-bridge YANG model security considerations.

48.4.7 Security considerations of the Asynchronous Traffic Shaping model

.There are a number of management objects defined in the ieee802-dot1q-ats YANG module that are configurable (i.e., read-write) and/or operational (i.e., read-only). Such objects may be considered sensitive or vulnerable in some network environments. A network configuration protocol, such as NETCONF (IETF RFC 6241 [B41]), can support protocol operations that can edit or delete YANG module configuration data (e.g., edit-config, delete-config, copy-config). If this is done in a non-secure environment without proper protection, then negative effects on the network operation is possible.

The following objects in the ieee802-dot1q-ats YANG module could be manipulated to interfere with the operation of stream filtering. This could, for example, be used to force a reinitialization of ATS state machines, thus causing network instability.

    bridges/bridge/component/stream-filters

    interfaces/interface/bridge-port/ats-port-parameters

    bridges/bridge/component/schedulers

    bridges/bridge/component/scheduler-groups

See 48.4.1 and 48.4.6 for related ieee802-dot1q-bridge and ieee802-dot1q-stream-filters-gates YANG model security considerations.

Insert new subclause at the end of clause 48.4

48.4.8 Security considerations of the Priority-based Flow Control model

<<Editor notes: PFC managed objects PFCLinkDelayAllowance, PFCHeadroom are configurable (read/write). Security considerations are needed. >>

48.5 YANG schema tree definitions

Insert a new subclause at the end of clause 48.5

48.5.13 Schema for the ieee802-dot1q-pfc YANG module

<<Editor notes: add schema of PFC YANG module>>

48.6.2 The ieee802-dot1q-types YANG module

Change subclause 48.6.2:

<<Editor notes: PFC content needs to be added in 48.6.2>>

```
module ieee802-dot1q-types {
  namespace urn:ieee:std:802.1Q:yang:ieee802-dot1q-types;
  prefix dot1q-types;
  import ietf-yang-types {
    prefix yang;
  }
  organization
    "IEEE 802.1 Working Group";
  contact
    "WG-URL: http://ieee802.org/1/
    WG-EMail: stds-802-1-l@ieee.org

    Contact: IEEE 802.1 Working Group Chair
    Postal: C/O IEEE 802.1 Working Group
            IEEE Standards Association
            445 Hoes Lane
            Piscataway, NJ 08854
            USA

    E-mail: stds-802-1-chairs@ieee.org";
  description
    "Common types used within dot1Q-bridge modules.

    Copyright (C) IEEE (2022).

    This version of this YANG module is part of IEEE Std 802.1Q; see the
    standard itself for full legal notices.";
  revision 2022-01-19 {
    description
      "Published as part of IEEE Std 802.1Q-2022.";
    reference
      "IEEE Std 802.1Q-2022, Bridges and Bridged Networks.";
  }
  revision 2020-06-04 {
    description
      "Published as part of IEEE Std 802.1Qcx-2020. Second version.";
    reference
      "IEEE Std 802.1Qcx-2020, Bridges and Bridged Networks - YANG Data
      Model for Connectivity Fault Management.";
  }
  revision 2018-03-07 {
    description
      "Published as part of IEEE Std 802.1Q-2018. Initial version.";
    reference
      "IEEE Std 802.1Q-2018, Bridges and Bridged Networks.";
  }
  identity dot1q-vlan-type {
    description
      "Base identity from which all 802.1Q VLAN tag types are derived
      from.";
  }
  identity c-vlan {
    base dot1q-vlan-type;
    description
      "An 802.1Q Customer VLAN, using the 81-00 EtherType";
    reference
      "5.5 of IEEE Std 802.1Q-2022";
  }
  identity s-vlan {
    base dot1q-vlan-type;
    description
      "An 802.1Q Service VLAN, using the 88-A8 EtherType originally
      introduced in 802.1ad, and incorporated into 802.1Q (2011)";
    reference
      "5.6 of IEEE Std 802.1Q-2022";
```

```
 1   }
 2   identity transmission-selection-algorithm {
 3     description
 4       "Specify the transmission selection algorithms of IEEE Std
 5       802.1Q-2022 Table 8-6";
 6   }
 7   identity strict-priority {
 8     base transmission-selection-algorithm;
 9     description
10       "Indicates the strict priority transmission selection algorithm.";
11     reference
12       "Table 8-6 of IEEE Std 802.1Q-2022";
13   }
14   identity credit-based-shaper {
15     base transmission-selection-algorithm;
16     description
17       "Indicates the credit based shaper transmission selection
18       algorithm.";
19     reference
20       "Table 8-6 of IEEE Std 802.1Q-2022";
21   }
22   identity enhanced-transmission-selection {
23     base transmission-selection-algorithm;
24     description
25       "Indicates the enhanced transmission selection algorithm.";
26     reference
27       "Table 8-6 of IEEE Std 802.1Q-2022";
28   }
29   identity asynchronous-traffic-shaping {
30     base transmission-selection-algorithm;
31     description
32       "Indicates the asynchronous transmission selection algorithm.";
33     reference
34       "Table 8-6 of IEEE Std 802.1Q-2022";
35   }
36   identity vendor-specific {
37     base transmission-selection-algorithm;
38     description
39       "Indicates a vendor specific transmission selection algorithm.";
40     reference
41       "Table 8-6 of IEEE Std 802.1Q-2022";
42   }
43   typedef name-type {
44     type string {
45       length "0..32";
46     }
47     description
48       "A text string of up to 32 characters, of locally determined
49       significance.";
50   }
51   typedef port-number-type {
52     type uint32 {
53       range "1..4095";
54     }
55     description
56       "The port number of the Bridge port for which this entry contains
57       Bridge management information.";
58   }
59   typedef priority-type {
60     type uint8 {
61       range "0..7";
62     }
63     description
64       "A range of priorities from 0 to 7 (inclusive). The Priority Code
65       Point (PCP) is a 3-bit field that refers to the class of service
66       associated with an 802.1Q VLAN tagged frame. The field specifies a
67       priority value between 0 and 7, these values can be used by
68       quality of service (QoS) to prioritize different classes of
69       traffic.";
70   }
71   typedef vid-range-type {
72     type string {
```

```
 1      pattern
 2        "([1-9]"+
 3        "[0-9]{0,3}"+
 4        "(-[1-9][0-9]{0,3})?"+
 5        "(,[1-9][0-9]{0,3}(-[1-9][0-9]{0,3})?)*)";
 6    }
 7    description
 8      "A list of VLAN Ids, or non overlapping VLAN ranges, in ascending
 9      order, between 1 and 4094.
10
11      This type is used to match an ordered list of VLAN Ids, or
12      contiguous ranges of VLAN Ids. Valid VLAN Ids must be in the range
13      1 to 4094, and included in the list in non overlapping ascending
14      order.
15
16      For example: 1,10-100,250,500-1000";
17  }
18  typedef vlanid {
19    type uint16 {
20      range "1..4094";
21    }
22    description
23      "The vlanid type uniquely identifies a VLAN. This is the 12-bit
24      VLAN-ID used in the VLAN Tag header. The range is defined by the
25      referenced specification. This type is in the value set and its
26      semantics equivalent to the VlanId textual convention of the
27      SMIv2.";
28  }
29  typedef vlan-index-type {
30    type uint32 {
31      range "1..4094 | 4096..4294967295";
32    }
33    description
34      "A value used to index per-VLAN tables. Values of 0 and 4095 are
35      not permitted. The range of valid VLAN indices. If the value is
36      greater than 4095, then it represents a VLAN with scope local to
37      the particular agent, i.e., one without a global VLAN-ID assigned
38      to it. Such VLANs are outside the scope of IEEE 802.1Q, but it is
39      convenient to be able to manage them in the same way using this
40      YANG module.";
41    reference
42      "9.6 of IEEE Std 802.1Q-2022";
43  }
44  typedef mstid-type {
45    type uint32 {
46      range "1..4094";
47    }
48    description
49      "In an MSTP Bridge, an MSTID, i.e., a value used to identify a
50      spanning tree (or MST) instance";
51    reference
52      "13.8 of IEEE Std 802.1Q-2022";
53  }
54  typedef pcp-selection-type {
55    type enumeration {
56      enum 8P0D {
57        description
58          "8 priorities, 0 drop eligible";
59      }
60      enum 7P1D {
61        description
62          "7 priorities, 1 drop eligible";
63      }
64      enum 6P2D {
65        description
66          "6 priorities, 2 drop eligible";
67      }
68      enum 5P3D {
69        description
70          "5 priorities, 3 drop eligible";
71      }
72    }
```

```
 1      description
 2        "Priority Code Point selection types.";
 3      reference
 4        "12.6.2.5.3, 6.9.3 of IEEE Std 802.1Q-2022";
 5    }
 6    typedef protocol-frame-format-type {
 7      type enumeration {
 8        enum Ethernet {
 9          description
10            "Ethernet frame format";
11        }
12        enum rfc1042 {
13          description
14            "RFC 1042 frame format";
15        }
16        enum snap8021H {
17          description
18            "SNAP 802.1H frame format";
19        }
20        enum snapOther {
21          description
22            "Other SNAP frame format";
23        }
24        enum llcOther {
25          description
26            "Other LLC frame format";
27        }
28      }
29      description
30        "A value representing the frame format to be matched.";
31      reference
32        "12.10.1.7.1 of IEEE Std 802.1Q-2022";
33    }
34    typedef ethertype-type {
35      type string {
36        pattern "[0-9a-fA-F]{2}-[0-9a-fA-F]{2}";
37      }
38      description
39        "The EtherType value represented in the canonical order defined by
40        IEEE 802. The canonical representation uses uppercase characters.";
41      reference
42        "9.2 of IEEE Std 802-2014";
43    }
44    typedef dot1q-tag-type {
45      type identityref {
46        base dot1q-vlan-type;
47      }
48      description
49        "Identifies a specific 802.1Q tag type";
50      reference
51        "9.5 IEEE Std 802.1Q-2022";
52    }
53    typedef traffic-class-type {
54      type uint8 {
55        range "0..7";
56      }
57      description
58        "This is the numerical value associated with a traffic class in a
59        Bridge. Larger values are associated with higher priority traffic
60        classes.";
61      reference
62        "3.273 of IEEE Std 802.1Q-2022";
63    }
64    grouping dot1q-tag-classifier-grouping {
65      description
66        "A grouping which represents an 802.1Q VLAN, matching both the
67        EtherType and a single VLAN Id.";
68      leaf tag-type {
69        type dot1q-tag-type;
70        mandatory true;
71        description
72          "VLAN type";
```

```
 1      }
 2    leaf vlan-id {
 3      type vlanid;
 4      mandatory true;
 5      description
 6        "VLAN Id";
 7    }
 8  }
 9  grouping dot1q-tag-or-any-classifier-grouping {
10    description
11      "A grouping which represents an 802.1Q VLAN, matching both the
12      EtherType and a single VLAN Id or 'any' to match on any VLAN Id.";
13    leaf tag-type {
14      type dot1q-tag-type;
15      mandatory true;
16      description
17        "VLAN type";
18    }
19    leaf vlan-id {
20      type union {
21        type vlanid;
22        type enumeration {
23          enum any {
24            value 4095;
25            description
26              "Matches 'any' VLAN in the range 1 to 4094 that is not
27              matched by a more specific VLAN Id match";
28          }
29        }
30      }
31      mandatory true;
32      description
33        "VLAN Id or any";
34    }
35  }
36  grouping dot1q-tag-ranges-classifier-grouping {
37    description
38      "A grouping which represents an 802.1Q VLAN that matches a range
39      of VLAN Ids.";
40    leaf tag-type {
41      type dot1q-tag-type;
42      mandatory true;
43      description
44        "VLAN type";
45    }
46    leaf vlan-ids {
47      type vid-range-type;
48      mandatory true;
49      description
50        "VLAN Ids";
51    }
52  }
53  grouping dot1q-tag-ranges-or-any-classifier-grouping {
54    description
55      "A grouping which represents an 802.1Q VLAN, matching both the
56      EtherType and a single VLAN Id, ordered list of ranges, or 'any'
57      to match on any VLAN Id.";
58    leaf tag-type {
59      type dot1q-tag-type;
60      mandatory true;
61      description
62        "VLAN type";
63    }
64    leaf vlan-id {
65      type union {
66        type vid-range-type;
67        type enumeration {
68          enum any {
69            value 4095;
70            description
71              "Matches 'any' VLAN in the range 1 to 4094.";
72          }
```

```
 1          }
 2        }
 3      mandatory true;
 4      description
 5        "VLAN Ids or any";
 6    }
 7  }
 8  grouping priority-regeneration-table-grouping {
 9    description
10      "The priority regeneration table provides the ability to map
11      incoming priority values on a per-Port basis, under management
12      control.";
13    reference
14      "6.9.4 of IEEE Std 802.1Q-2022";
15    leaf priority0 {
16      type priority-type;
17      default "0";
18      description
19        "Priority 0";
20      reference
21        "12.6.2.3, 6.9.4 of IEEE Std 802.1Q-2022";
22    }
23    leaf priority1 {
24      type priority-type;
25      default "1";
26      description
27        "Priority 1";
28      reference
29        "12.6.2.3, 6.9.4 of IEEE Std 802.1Q-2022";
30    }
31    leaf priority2 {
32      type priority-type;
33      default "2";
34      description
35        "Priority 2";
36      reference
37        "12.6.2.3, 6.9.4 of IEEE Std 802.1Q-2022";
38    }
39    leaf priority3 {
40      type priority-type;
41      default "3";
42      description
43        "Priority 3";
44      reference
45        "12.6.2.3, 6.9.4 of IEEE Std 802.1Q-2022";
46    }
47    leaf priority4 {
48      type priority-type;
49      default "4";
50      description
51        "Priority 4";
52      reference
53        "12.6.2.3, 6.9.4 of IEEE Std 802.1Q-2022";
54    }
55    leaf priority5 {
56      type priority-type;
57      default "5";
58      description
59        "Priority 5";
60      reference
61        "12.6.2.3, 6.9.4 of IEEE Std 802.1Q-2022";
62    }
63    leaf priority6 {
64      type priority-type;
65      default "6";
66      description
67        "Priority 6";
68      reference
69        "12.6.2.3, 6.9.4 of IEEE Std 802.1Q-2022";
70    }
71    leaf priority7 {
72      type priority-type;
```

```
 1       default "7";
 2       description
 3         "Priority 7";
 4       reference
 5         "12.6.2.3, 6.9.4 of IEEE Std 802.1Q-2022";
 6     }
 7   }
 8   grouping pcp-decoding-table-grouping {
 9     description
10       "The Priority Code Point decoding table enables the decoding of
11       the priority and drop-eligible parameters from the PCP.";
12     reference
13       "6.9.3 of IEEE Std 802.1Q-2022";
14     list pcp-decoding-map {
15       key "pcp";
16       description
17         "This map associates the priority code point field found in the
18         VLAN to a priority and drop eligible value based upon the
19         priority code point selection type.";
20       leaf pcp {
21         type pcp-selection-type;
22         description
23           "The priority code point selection type.";
24         reference
25           "12.6.2.7, 6.9.3 of IEEE Std 802.1Q-2022";
26       }
27       list priority-map {
28         key "priority-code-point";
29         description
30           "This map associated a priority code point value to priority
31           and drop eligible parameters.";
32         leaf priority-code-point {
33           type priority-type;
34           description
35             "Priority associated with the pcp.";
36           reference
37             "12.6.2.7, 6.9.3 of IEEE Std 802.1Q-2022";
38         }
39         leaf priority {
40           type priority-type;
41           description
42             "Priority associated with the pcp.";
43           reference
44             "12.6.2.7, 6.9.3 of IEEE Std 802.1Q-2022";
45         }
46         leaf drop-eligible {
47           type boolean;
48           description
49             "Drop eligible value for pcp";
50           reference
51             "12.6.2.7, 6.9.3 of IEEE Std 802.1Q-2022";
52         }
53       }
54     }
55   }
56   grouping pcp-encoding-table-grouping {
57     description
58       "The Priority Code Point encoding table encodes the priority and
59       drop-eligible parameters in the PCP field of the VLAN tag.";
60     reference
61       "12.6.2.9, 6.9.3 of IEEE Std 802.1Q-2022";
62     list pcp-encoding-map {
63       key "pcp";
64       description
65         "This map associated the priority and drop-eligible parameters
66         to the priority used to encode the PCP of the VLAN based upon
67         the priority code point selection type.";
68       leaf pcp {
69         type pcp-selection-type;
70         description
71           "The priority code point selection type.";
72         reference
```

```
         "12.6.2.7, 6.9.3 of IEEE Std 802.1Q-2022";
     }
   list priority-map {
     key "priority dei";
     description
       "This map associated the priority and drop-eligible parameters
       to the priority code point field of the VLAN tag.";
     leaf priority {
       type priority-type;
       description
         "Priority associated with the pcp.";
       reference
         "12.6.2.7, 6.9.3 of IEEE Std 802.1Q-2022";
     }
     leaf dei {
       type boolean;
       description
         "The drop eligible value.";
       reference
         "12.6.2, 8.6.6 of IEEE Std 802.1Q-2022";
     }
     leaf priority-code-point {
       type priority-type;
       description
         "PCP value for priority when DEI value";
       reference
         "12.6.2.9, 6.9.3 of IEEE Std 802.1Q-2022";
     }
   }
 }
}
grouping service-access-priority-table-grouping {
  description
    "The Service Access Priority Table associates a received priority
    with a serice access priority.";
  reference
    "12.6.2.17, 6.13.1 of IEEE Std 802.1Q-2022";
  leaf priority0 {
    type priority-type;
    default "0";
    description
      "Service access priority value for priority 0";
    reference
      "12.6.2.17, 6.13.1 of IEEE Std 802.1Q-2022";
  }
  leaf priority1 {
    type priority-type;
    default "1";
    description
      "Service access priority value for priority 1";
    reference
      "12.6.2.17, 6.13.1 of IEEE Std 802.1Q-2022";
  }
  leaf priority2 {
    type priority-type;
    default "2";
    description
      "Service access priority value for priority 2";
    reference
      "12.6.2.17, 6.13.1 of IEEE Std 802.1Q-2022";
  }
  leaf priority3 {
    type priority-type;
    default "3";
    description
      "Service access priority value for priority 3";
    reference
      "12.6.2.17, 6.13.1 of IEEE Std 802.1Q-2022";
  }
  leaf priority4 {
    type priority-type;
    default "4";
```

```
 1        description
 2          "Service access priority value for priority 4";
 3        reference
 4          "12.6.2.17, 6.13.1 of IEEE Std 802.1Q-2022";
 5      }
 6      leaf priority5 {
 7        type priority-type;
 8        default "5";
 9        description
10          "Service access priority value for priority 5";
11        reference
12          "12.6.2.17, 6.13.1 of IEEE Std 802.1Q-2022";
13      }
14      leaf priority6 {
15        type priority-type;
16        default "6";
17        description
18          "Service access priority value for priority 6";
19        reference
20          "12.6.2.17, 6.13.1 of IEEE Std 802.1Q-2022";
21      }
22      leaf priority7 {
23        type priority-type;
24        default "7";
25        description
26          "Service access priority value for priority 7";
27        reference
28          "12.6.2.17, 6.13.1 of IEEE Std 802.1Q-2022";
29      }
30    }
31    grouping traffic-class-table-grouping {
32      description
33        "The Traffic Class Table models the operations that can be
34        performed on, or inquire about, the current contents of the
35        Traffic Class Table (8.6.6) for a given Port.";
36      reference
37        "12.6.3, 8.6.6 of IEEE Std 802.1Q-2022";
38      list traffic-class-map {
39        key "priority";
40        description
41          "The priority index into the traffic class table.";
42        leaf priority {
43          type priority-type;
44          description
45            "The priority of the traffic class entry.";
46          reference
47            "8.6.6 of IEEE Std 802.1Q-2022";
48        }
49        list available-traffic-class {
50          key "num-traffic-class";
51          description
52            "The traffic class index associated with a given priority
53            within the traffic class table.";
54          reference
55            "8.6.6 of IEEE Std 802.1Q-2022";
56          leaf num-traffic-class {
57            type uint8 {
58              range "1..8";
59            }
60            description
61              "The available number of traffic classes.";
62            reference
63              "8.6.6 of IEEE Std 802.1Q-2022";
64          }
65          leaf traffic-class {
66            type traffic-class-type;
67            description
68              "The traffic class index associated with a given traffic
69              class entry.";
70            reference
71              "8.6.6 of IEEE Std 802.1Q-2022";
72          }
```

```
 1        }
 2      }
 3    }
 4    grouping transmission-selection-table-grouping {
 5      description
 6        "The Transmission Selection Algorithm Table models the operations
 7        that can be performed on, or inquire about, the current contents
 8        of the Transmission Selection Algorithm Table (12.20.2) for a
 9        given Port.";
10      reference
11        "12.20.2, 8.6.8 of IEEE Std 802.1Q-2022";
12      list transmission-selection-algorithm-map {
13        key "traffic-class";
14        description
15          "The traffic class to index into the transmission selection
16          table.";
17        leaf traffic-class {
18          type traffic-class-type;
19          description
20            "The traffic class of the entry.";
21          reference
22            "8.6.6 of IEEE Std 802.1Q-2022";
23        }
24        leaf transmission-selection-algorithm {
25          type identityref {
26            base dot1q-types:transmission-selection-algorithm;
27          }
28          description
29            "Transmission selection algorithm";
30          reference
31            "8.6.8, Table 8-6 of IEEE Std 802.1Q-2022";
32        }
33      }
34    }
35    grouping port-map-grouping {
36      description
37        "A set of control indicators, one for each Port. A Port Map,
38        containing a control element for each outbound Port";
39      reference
40        "8.8.1, 8.8.2 of IEEE Std 802.1Q-2022";
41      list port-map {
42        key "port-ref";
43        description
44          "The list of entries composing the port map.";
45        leaf port-ref {
46          type port-number-type;
47          description
48            "The interface port reference associated with this map.";
49          reference
50            "8.8.1 of IEEE Std 802.1Q-2022";
51        }
52        choice map-type {
53          description
54            "Type of port map";
55          container static-filtering-entries {
56            description
57              "Static filtering entries attributes.";
58            leaf control-element {
59              type enumeration {
60                enum forward {
61                  description
62                    "Forwarded, independently of any dynamic filtering
63                    information held by the FDB.";
64                }
65                enum filter {
66                  description
67                    "Filtered, independently of any dynamic filtering
68                    information.";
69                }
70                enum forward-filter {
71                  description
72                    "Forwarded or filtered on the basis of dynamic
```

```
 1                    filtering information, or on the basis of the default
 2                    Group filtering behavior for the outbound Port (8.8.6)
 3                    if no dynamic filtering information is present
 4                    specifically for the MAC address.";
 5                }
 6              }
 7            description
 8              "containing a control element for each outbound Port,
 9               specifying that a frame with a destination MAC address,
10               and in the case of VLAN Bridge components, VID that meets
11               this specification.";
12            reference
13              "8.8.1 of IEEE Std 802.1Q-2022";
14          }
15        leaf connection-identifier {
16          type port-number-type;
17          description
18            "A Port MAP may contain a connection identifier (8.8.12)
19             for each outbound port. The connection identifier may be
20             associated with the Bridge Port value maintained in a
21             Dynamic Filtering Entry of the FDB for Bridge Ports.";
22          reference
23            "8.8.1, 8.8.12 of IEEE Std 802.1Q-2022";
24        }
25      }
26      container static-vlan-registration-entries {
27        description
28          "Static VLAN registration entries.";
29        leaf registrar-admin-control {
30          type enumeration {
31            enum fixed-new-ignored {
32              description
33                "Registration Fixed (New ignored).";
34            }
35            enum fixed-new-propagated {
36              description
37                "Registration Fixed (New propagated.";
38            }
39            enum forbidden {
40              description
41                "Registration Forbidden.";
42            }
43            enum normal {
44              description
45                "Normal Registration.";
46            }
47          }
48          description
49            "The Registrar Administrative Control values for MVRP and
50            MIRP for the VID.";
51          reference
52            "8.8.2 of IEEE Std 802.1Q-2022";
53        }
54        leaf vlan-transmitted {
55          type enumeration {
56            enum tagged {
57              description
58                "VLAN-tagged";
59            }
60            enum untagged {
61              description
62                "VLAN-untagged";
63            }
64          }
65          description
66            "Whether frames are to be VLAN-tagged or untagged when
67            transmitted.";
68          reference
69            "8.8.2 of IEEE Std 802.1Q-2022";
70        }
71      }
72      container mac-address-registration-entries {
```

```
1              description
2                "MAC address registration entries attributes.";
3              leaf control-element {
4                type enumeration {
5                  enum registered {
6                    description
7                      "Forwarded, independently of any dynamic filtering
8                      information held by the FDB.";
9                  }
10                 enum not-registered {
11                   description
12                     "Filtered, independently of any dynamic filtering
13                     information.";
14                 }
15               }
16               description
17                 "containing a control element for each outbound Port,
18                 specifying that a frame with a destination MAC address,
19                 and in the case of VLAN Bridge components, VID that meets
20                 this specification.";
21               reference
22                 "8.8.4 of IEEE Std 802.1Q-2022";
23             }
24           }
25           container dynamic-vlan-registration-entries {
26             description
27               "Dynamic VLAN registration entries attributes.";
28             leaf control-element {
29               type enumeration {
30                 enum registered {
31                   description
32                     "Forwarded, independently of any dynamic filtering
33                     information held by the FDB.";
34                 }
35               }
36               description
37                 "containing a control element for each outbound Port,
38                 specifying that a frame with a destination MAC address,
39                 and in the case of VLAN Bridge components, VID that meets
40                 this specification.";
41               reference
42                 "8.8.5 of IEEE Std 802.1Q-2022";
43             }
44           }
45           container dynamic-reservation-entries {
46             description
47               "Dynamic reservation entries attributes.";
48             leaf control-element {
49               type enumeration {
50                 enum forward {
51                   description
52                     "Forwarded, independently of any dynamic filtering
53                     information held by the FDB.";
54                 }
55                 enum filter {
56                   description
57                     "Filtered, independently of any dynamic filtering
58                     information.";
59                 }
60               }
61               description
62                 "Containing a control element for each outbound Port,
63                 specifying that a frame with a destination MAC address,
64                 and in the case of VLAN Bridge components, VID that meets
65                 this specification.";
66               reference
67                 "8.8.7 of IEEE Std 802.1Q-2022";
68             }
69           }
70           container dynamic-filtering-entries {
71             description
72               "Dynamic filtering entries attributes.";
```

```
1          leaf control-element {
2            type enumeration {
3              enum forward {
4                description
5                  "Forwarded, independently of any dynamic filtering
6                  information held by the FDB.";
7              }
8            }
9            description
10             "Containing a control element for each outbound Port,
11             specifying that a frame with a destination MAC address,
12             and in the case of VLAN Bridge components, VID that meets
13             this specification.";
14           reference
15             "8.8.3 of IEEE Std 802.1Q-2022";
16         }
17       }
18     }
19   }
20 }
21 grouping bridge-port-statistics-grouping {
22   description
23     "Grouping of bridge port statistics.";
24   reference
25     "12.6.1.1.3 of IEEE Std 802.1Q-2022";
26   leaf delay-exceeded-discards {
27     type yang:counter64;
28     description
29       "The number of frames discarded by this port due to excessive
30       transit delay through the Bridge. It is incremented by both
31       transparent and source route Bridges.";
32     reference
33       "12.6.1.1.3, 8.6.6 of IEEE Std 802.1Q-2022";
34   }
35   leaf mtu-exceeded-discards {
36     type yang:counter64;
37     description
38       "The number of frames discarded by this port due to an excessive
39       size. It is incremented by both transparent and source route
40       Bridges.";
41     reference
42       "Item g) in 12.6.1.1.3 of IEEE Std 802.1Q-2022";
43   }
44   leaf frame-rx {
45     type yang:counter64;
46     description
47       "The number of frames that have been received by this port from
48       its segment. Note that a frame received on the interface
49       corresponding to this port is only counted by this object if and
50       only if it is for a protocol being processed by the local
51       bridging function, including Bridge management frames.";
52     reference
53       "12.6.1.1.3 of IEEE Std 802.1Q-2022";
54   }
55   leaf octets-rx {
56     type yang:counter64;
57     description
58       "The total number of octets in all valid frames received
59       (including BPDUs, frames addressed to the Bridge as an end
60       station, and frames that were submitted to the Forwarding
61       Process).";
62     reference
63       "12.6.1.1.3 of IEEE Std 802.1Q-2022";
64   }
65   leaf frame-tx {
66     type yang:counter64;
67     description
68       "The number of frames that have been transmitted by this port to
69       its segment. Note that a frame transmitted on the interface
70       corresponding to this port is only counted by this object if and
71       only if it is for a protocol being processed by the local
72       bridging function, including Bridge management frames.";
```

```
 1      }
 2    leaf octets-tx {
 3      type yang:counter64;
 4      description
 5        "The total number of octets that have been transmitted by this
 6        port to its segment.";
 7    }
 8    leaf discard-inbound {
 9      type yang:counter64;
10      description
11        "Count of received valid frames that were discarded (i.e.,
12        filtered) by the Forwarding Process.";
13      reference
14        "12.6.1.1.3 of IEEE Std 802.1Q-2022";
15    }
16    leaf forward-outbound {
17      type yang:counter64;
18      description
19        "The number of frames forwarded to the associated MAC Entity
20        (8.5).";
21      reference
22        "12.6.1.1.3 of IEEE Std 802.1Q-2022";
23    }
24    leaf discard-lack-of-buffers {
25      type yang:counter64;
26      description
27        "The count of frames that were to be transmitted through the
28        associated Port but were discarded due to lack of buffers.";
29      reference
30        "12.6.1.1.3 of IEEE Std 802.1Q-2022";
31    }
32    leaf discard-transit-delay-exceeded {
33      type yang:counter64;
34      description
35        "The number of frames discarded by this port due to excessive
36        transit delay through the Bridge. It is incremented by both
37        transparent and source route Bridges.";
38      reference
39        "12.6.1.1.3 of IEEE Std 802.1Q-2022";
40    }
41    leaf discard-on-error {
42      type yang:counter64;
43      description
44        "The number of frames that were to be forwarded on the
45        associated MAC but could not be transmitted (e.g., frame would
46        be too large, 6.5.8).";
47      reference
48        "12.6.1.1.3 of IEEE Std 802.1Q-2022";
49    }
50  }
51 }
52
```

Insert new subclause at the end of clause 48.6:

48.6.3 The ieee802-dot1q-pfc YANG module

<<Editor notes: specific PFC YANG model>>

Annex D

(normative)

IEEE 802.1 Organizationally Specific TLVs

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

D.2.10 Organizationally Specific TLV definitionsPriority-based Flow Control Configuration TLV

The TLV illustrated in Figure D-1 is encoded into each LLDP message and may be transmitted by a system in order to indicate how PFC should be configured. Shall be sent using Symmetric attribute passing.

Replace Figure D-10 with the following:

TLV type = 127	TLV information string length = 6	802.1 OUI 00-80-C2	802.1 subtype = 11	Willing	MBC	Re-served	PFC cap	PFC Enable
7 bits	9 bits	3 octets	1 octet	1 bit	1 bit	2 bits	4 bits	1 octet

TLV header ◄———► | ◄——————————— TLV information string = 6 octets ———————————►

Figure D-1—Priority-based Flow Control Configuration TLV format

TLV type = 127	TLV information string length = 8	802.1 OUI 00-80-C2	802.1 subtype =11	Willing	MBC	MACsec cap	HDR cap	PFC cap	PFC Enable	Internal delay
7 bits	9 bits	3 octets	1 octets	1 bit	1 bit	1 bit	1 bit	4 bits	1 octets	2 octets

TLV header ◄———► | ◄——————————— TLV information string = 8 octets ———————————►

Figure D-10—Priority-based Flow Control Configuration TLV format

D.2.10.2 TLV information string length

Modify the description as following:

A 9-bit unsigned integer, occupying the LSB of the first octet of the TLV (the MSB of the TLV information string length) and the entire second octet of the TLV, containing the total number of octets in the TLV information string of the Priority-based Flow Control Configuration TLV. This does not count the TLV type and TLV information string length fields. It is equal to 6 8.

Insert new subclauses at the end of clause D.2.10:

D.2.10.7 MACsec cap

A 1-bit unsigned integer that indicates the device support of MACsec protection on PFC frames. If the MACsec cap bit is 1, and PFC is enabled on at least one traffic class, the MACsec protection is enabled.

D.2.10.8 HDR cap

A 1-bit unsigned integer that indicates the device support of automatic PFC headroom calculation. If the HDR cap bit is 1, and PFC is enabled on at least one traffic class, the automatic headroom calculation is enabled.

D.2.10.9 Internal delay

A 2-octet unsigned integer contains the length of time for which the device process received PFC pause frame. It includes TX interface delay, RX interface delay and higher layer delay. The value is measured in units of pause_quanta, equal to the time required to transmit 512 bits of a frame at the data rate of the MAC.

D.3 IEEE 802.1 Organizationally Specific TLV management

D.3.2 IEEE 802.1 managed objects—TLV variables

Insert new subclause at the end of clause D.3.2:

D.3.2.11 PFC TLV managed objects

a)   Willing: see D.2.10.3.

b)   MBC: seeD.2.10.4

c)   PFC cap: see D.2.10.5.

d)   PFC Enable: see D.2.10.6.

e)   MACsec cap: see D.2.10.7.

f)   HDR cap: see D.2.10.8.

g)   Internal delay: see D.2.10.9.

D.5 IEEE 802.1/LLDP extension MIB

D.5.2 Structure of the IEEE 802.1/LLDP extension MIB

Modify Table D-15 as follows:

Table D-1 shows the structure of the MIB and the relationship of the MIB objects to the LLDP operational status/control variables, LLDP statistics variables, and TLV variables.

Table D-1—IEEE 802.1/LLDP extension MIB object cross reference

MIB table	MIB object	LLDP reference
Configuration group		
lldpV2Xdot1ConfigPortVlanTable		Augments lldpV2Xdot1ConfigPortVlanTable
	lldpV2Xdot1ConfigPortVlanTxEnable	Normal LLDPDUs, see IEEE Std 802.1AB
lldpV2Xdot1ConfigVlanNameTable		Augments lldpV2Xdot1LocVlanNameEntry
	lldpV2Xdot1ConfigVlanNameTxEnable	Normal LLDPDUs, see IEEE Std 802.1AB
lldpV2Xdot1ConfigProtoVlanTable		Augments lldpV2Xdot1LocProtoVlanEntry
	lldpV2Xdot1ConfigProtoVlanTxEnable	Normal LLDPDUs, see IEEE Std 802.1AB
lldpV2Xdot1ConfigProtocolTable		Augments lldpV2Xdot1LocProtocolEntry
	lldpV2Xdot1ConfigProtocolTxEnable	Normal LLDPDUs, see IEEE Std 802.1AB
lldpV2Xdot1ConfigVidUsageDigestTable		Augments lldpV2Xdot1LocVidUsageDigestEntry
	lldpV2Xdot1ConfigVidUsageDigestTxEnable	Normal LLDPDUs, see IEEE Std 802.1AB
lldpV2Xdot1ConfigManVidTable		Augments lldpV2Xdot1LocManVidEntry
	lldpV2Xdot1ConfigManVidTxEnable	Normal LLDPDUs, see IEEE Std 802.1AB
lldpXdot1CnConfigCnTable		Augments lldpV2Xdot1LocManVidEntry
	lldpXdot1CnConfigCnTxEnable	Normal LLDPDUs, see IEEE Std 802.1AB
lldpXdot1EvbConfigEvbTable		Augments lldpV2Xdot1LocManVidEntry
	lldpXdot1EvbConfigEvbTxEnable	Normal LLDPDUs, see IEEE Std 802.1AB
lldpXdot1EvbConfigCdcpTable		Augments lldpV2Xdot1LocManVidEntry
	lldpXdot1EvbConfigCdcpTxEnable	Normal LLDPDUs, see IEEE Std 802.1AB
Local system information		
lldpV2Xdot1LocTable		D.2.1
	lldpV2LocPortIfIndex	(Table index)
	lldpV2Xdot1LocPortVlanId	PVID, D.2.1.1

Table D-1—IEEE 802.1/LLDP extension MIB object cross reference (continued)

MIB table	MIB object	LLDP reference
lldpV2Xdot1LocProtoVlanTable		D.2.2
	lldpV2LocPortIfIndex	(Table index)
	lldpV2Xdot1LocProtoVlanId	PPVID, D.2.2.2
	lldpV2Xdot1LocProtoVlanSupported	flags, D.2.2.1
	lldpV2Xdot1LocProtoVlanEnabled	flags, D.2.2.1
lldpV2Xdot1LocVlanNameTable		D.2.3
	lldpV2LocPortIfIndex	(Table index)
	lldpV2Xdot1LocVlanId	VID, D.2.3.2 (Table index)
	lldpV2Xdot1LocVlanName	VLAN name, D.2.3.4
lldpV2Xdot1LocProtocolTable		D.2.4
	lldpV2LocPortIfIndex	(Table index)
	lldpV2Xdot1LocProtocolIndex	(Table index)
	lldpV2Xdot1LocProtocolId	protocol identity, D.2.4.3
lldpV2Xdot1LocVidUsageDigestTable		D.2.5
	lldpV2LocPortIfIndex	(Table index)
	lldpV2Xdot1LocVidUsageDigest	VID usage digest, D.2.5.1
lldpV2Xdot1LocManVidTable		D.2.6
	lldpV2LocPortIfIndex	(Table index)
	lldpV2Xdot1LocManVid	Management VID, D.2.6.1
lldpV2Xdot1LocLinkAggTable		IEEE Std 802.1AX
	lldpV2LocPortIfIndex	(Table index)
	lldpV2Xdot1LocLinkAggStatus	aggregation status, IEEE Std 802.1AX
	lldpV2Xdot1LocLinkAggPortId	aggregated port ID, IEEE Std 802.1AX
lldpV2Xdot1LocCnTable		D.2.7
	lldpV2LocPortIfIndex	(Table index)
	lldpV2Xdot1LocCNPVIndicators	CPNV indicators, D.2.7.3
	lldpV2Xdot1LocReadyIndicators	Ready indicators, D.2.7.4
lldpV2Xdot1LocEvbTlvTable		D.2.12
	lldpV2LocPortIfIndex	(Table index)
	lldpV2Xdot1LocEvbTlvString	EVB TLV string, D.2.12
lldpV2Xdot1LocCDCPTlvTable		D.2.13
	lldpV2LocPortIfIndex	(Table index)
	lldpV2Xdot1LocCDCPTlvString	CDCP TLV string, D.2.13

Table D-1—IEEE 802.1/LLDP extension MIB object cross reference (continued)

MIB table	MIB object	LLDP reference
Remote system information		
lldpV2Xdot1RemTable		D.2.1
	lldpV2RemTimeMark	(Table index)
	lldpV2RemLocalIfIndex	(Table index)
	lldpV2RemLocalDestMACAddress	(Table index)
	lldpV2RemIndex	(Table index)
	lldpV2Xdot1RemPortVlanId	PVID, D.2.1.1
lldpV2Xdot1RemProtoVlanTable		D.2.2
	lldpV2RemTimeMark	(Table index)
	lldpV2RemLocalIfIndex	(Table index)
	lldpV2RemLocalDestMACAddress	(Table index)
	lldpV2RemIndex	(Table index)
	lldpV2Xdot1RemProtoVlanId	PPVID, D.2.2.2 (Table index)
	lldpV2Xdot1RemProtoVlanSupported	flags, D.2.2.1
	lldpV2Xdot1RemProtoVlanEnabled	flags, D.2.2.1
lldpV2Xdot1RemVlanNameTable		D.2.3
	lldpV2RemTimeMark	(Table index)
	lldpV2RemLocalIfIndex	(Table index)
	lldpV2RemLocalDestMACAddress	(Table index)
	lldpV2RemIndex	(Table index)
	lldpV2Xdot1RemVlanId	VID, D.2.3.2 (Table index)
	lldpV2Xdot1RemVlanName	VLAN name, D.2.3.4
lldpV2Xdot1RemProtocolTable		D.2.4
	lldpV2RemTimeMark	(Table index)
	lldpV2RemLocalIfIndex	(Table index)
	lldpV2RemLocalDestMACAddress	(Table index)
	lldpV2RemIndex	(Table index)
	lldpV2Xdot1RemProtocolIndex	(Table index)
	lldpV2Xdot1RemProtocolId	protocol identity, D.2.4.3

Table D-1—IEEE 802.1/LLDP extension MIB object cross reference (continued)

MIB table	MIB object	LLDP reference
lldpV2Xdot1RemVidUsageDigestV2Table		D.2.5
	lldpV2RemTimeMark	(Table index)
	lldpV2RemLocalIfIndex	(Table index)
	lldpV2RemLocalDestMACAddress	(Table index)
	lldpV2Xdot1RemIndex	(Table index)
	lldpV2Xdot1RemVidUsageDigestV2	VID usage digest, D.2.5.1
lldpV2Xdot1RemManVidV2Table		D.2.6
	lldpV2RemTimeMark	(Table index)
	lldpV2RemLocalIfIndex	(Table index)
	lldpV2RemLocalDestMACAddress	(Table index)
	lldpV2Xdot1RemIndex	(Table index)
	lldpV2Xdot1RemManVidV2	Management VID, D.2.6.1
lldpV2Xdot1RemLinkAggTable		IEEE Std 802.1AX
	lldpV2RemTimeMark	(Table index)
	lldpV2RemLocalIfIndex	(Table index)
	lldpV2RemLocalDestMACAddress	(Table index)
	lldpV2RemIndex	(Table index)
	lldpV2Xdot1RemLinkAggStatus	aggregation status, IEEE Std 802.1AX
	lldpV2Xdot1RemLinkAggPortId	aggregation port ID, IEEE Std 802.1AX
lldpV2Xdot1RemCnTable		D.2.7
	lldpV2RemTimeMark	(Table index)
	lldpV2RemLocalIfIndex	(Table index)
	lldpV2RemLocalDestMACAddress	(Table index)
	lldpV2LocPortIfIndex	(Table index)
	lldpV2Xdot1RemCNPVIndicators	CPNV indicators, D.2.7.3
	lldpV2Xdot1RemReadyIndicators	Ready indicators, D.2.7.4
lldpV2Xdot1RemEvbTlvTable		D.2.12
	lldpV2RemTimeMark	(Table index)
	lldpV2RemLocalIfIndex	(Table index)
	lldpV2RemLocalDestMACAddress	(Table index)
	lldpV2RemIndex	(Table index)
	lldpV2Xdot1RemEvbTlvString	EVB TLV string, D.2.12

Table D-1—IEEE 802.1/LLDP extension MIB object cross reference (continued)

MIB table	MIB object	LLDP reference
lldpV2Xdot1RemCDCPTlvTable		D.2.13
	lldpV2RemTimeMark	(Table index)
	lldpV2RemLocalIfIndex	(Table index)
	lldpV2RemLocalDestMACAddress	(Table index)
	lldpV2RemIndex	(Table index)
	lldpV2Xdot1RemCDCPTlvString	CDCP TLV string, D.2.13
lldpXdot1dcbxConfig extension group [a]		
lldpXdot1dcbxConfigETSConfigurationEntry		
	lldpXdot1dcbxConfigETSConfigurationTxEnable	D.2.8
lldpXdot1dcbxConfigETSRecommendationTable		
	lldpXdot1dcbxConfigETSRecommendationTxEnable	D.2.9
lldpXdot1dcbxConfigPFCTable		
	lldpXdot1dcbxConfigPFCTxEnable	D.2.10
lldpXdot1dcbxConfigApplicationPriorityTable		
	lldpXdot1dcbxConfigApplicationPriorityTxEnable	D.2.11
lldpXdot1dcbxConfigApplicationVlanTable		
	lldpXdot1dcbxConfigApplicationVlanTxEnable	D.2.14
lldpXdot1dcbxLocalData extension group[a]		
lldpXdot1dcbxLocETSBasicConfigurationTable		
	lldpXdot1dcbxLocETSConCreditBasedShaperSupport	D.2.8.4
	lldpXdot1dcbxLocETSConMaxTC	D.2.8.5
	lldpXdot1dcbxLocETSConWilling	D.2.8.3
	lldpXdot1dcbxLocETSConTrafficClassBandwidthTable	D.2.8.7
	lldpXdot1dcbxLocETSConTrafficSelectionAlgorithmTable	D.2.8.8
lldpXdot1dcbxLocETSConPriorityAssignmentTable		
	lldpXdot1dcbxLocETSConPriority	D.2.8.6
	lldpXdot1dcbxLocETSConTrafficClass	D.2.8.6
lldpXdot1dcbxLocETSRecommendationTable		
	lldpXdot1dcbxLocETSRecoTrafficClassBandwidthTable	D.2.9.4
lldpXdot1dcbxLocETSRecoTrafficSelectionAlgorithmTable		
	lldpXdot1dcbxLocETSRecoTSAPriority	D.2.9.5
	lldpXdot1dcbxLocETSRecoTrafficSelectionAlgorithm	D.2.9.5

Table D-1—IEEE 802.1/LLDP extension MIB object cross reference (continued)

MIB table	MIB object	LLDP reference
lldpXdot1dcbxLocPFCBasicTable		
	lldpXdot1dcbxLocPFCWilling	D.2.10.3
	lldpXdot1dcbxLocPFCMBC	D.2.10.4
	lldpXdot1dcbxLocPFCCap	D.2.10.5
	lldpXdot1dcbxLocMACsecCap	D.2.10.7
	lldpXdot1dcbxLocHDRCap	D.2.10.8
	lldpXdot1dcbxLocInternalDelay	D.2.10.9
lldpXdot1dcbxLocPFCEnableTable		
	lldpXdot1dcbxLocPFCEnablePriority	D.2.10.6
	lldpXdot1dcbxLocPFCEnableEnabled	D.2.10.6
lldpXdot1dcbxLocApplicationPriorityAppTable		
	lldpXdot1dcbxLocApplicationPriorityAESelector	D.2.11.3
	lldpXdot1dcbxLocApplicationPriorityAEProtocol	D.2.11.3
	lldpXdot1dcbxLocApplicationPriorityAEPriority	D.2.11.3
lldpXdot1dcbxLocApplicationVlanAppTable		
	lldpXdot1dcbxLocApplicationVlanAESelector	D.2.14.3
	lldpXdot1dcbxLocApplicationVlanAEProtocol	D.2.14.3
	lldpXdot1dcbxLocApplicationVlanAEVlanId	D.2.14.3
lldpXdot1dcbxRemoteData extension group[a]		
lldpXdot1dcbxRemETSBasicConfigurationTable		
	lldpXdot1dcbxRemETSConCreditBasedShaperSupport	D.2.8.4
	lldpXdot1dcbxRemETSConMaxTC	D.2.8.5
	lldpXdot1dcbxRemETSConWilling	D.2.8.3
	lldpXdot1dcbxRemETSConTrafficClassBandwidthTable	D.2.8.7
	lldpXdot1dcbxRemETSConTrafficSelectionAlgorithmTable	D.2.8.8
lldpXdot1dcbxRemETSConPriorityAssignmentTable		
	lldpXdot1dcbxRemETSConPriority	D.2.8.6
	lldpXdot1dcbxRemETSConTrafficClass	D.2.8.6
lldpXdot1dcbxRemETSRecommendationTable		
	lldpXdot1dcbxRemETSRecoTrafficClassBandwidthTable	D.2.9.4
lldpXdot1dcbxRemETSRecoTrafficSelectionAlgorithmTable		
	lldpXdot1dcbxRemETSRecoTSAPriority	D.2.9.5
	lldpXdot1dcbxRemETSRecoTrafficSelectionAlgorithm	D.2.9.5

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Amendment: Priority-based Flow Control Enhancements

Table D-1—IEEE 802.1/LLDP extension MIB object cross reference (continued)

MIB table	MIB object	LLDP reference
lldpXdot1dcbxRemPFCBasicTable		
	lldpXdot1dcbxRemPFCWilling	D.2.10.3
	lldpXdot1dcbxRemPFCMBC	D.2.10.4
	lldpXdot1dcbxRemPFCCap	D.2.10.5
	lldpXdot1dcbxRemMACsecCap	D.2.10.7
	lldpXdot1dcbxRemHDRCap	D.2.10.8
	lldpXdot1dcbxRemInternalDelay	D.2.10.9
lldpXdot1dcbxRemPFCEnableTable		
	lldpXdot1dcbxRemPFCEnablePriority	D.2.10.6
	lldpXdot1dcbxRemPFCEnableEnabled	D.2.10.6
lldpXdot1dcbxRemApplicationPriorityAppTable		
	lldpXdot1dcbxRemApplicationPriorityAESelector	D.2.11.3
	lldpXdot1dcbxRemApplicationPriorityAEProtocol	D.2.11.3
	lldpXdot1dcbxRemApplicationPriorityAEPriority	D.2.11.3
lldpXdot1dcbxRemApplicationVlanAppTable		
	lldpXdot1dcbxRemApplicationVlanAESelector	D.2.14.3
	lldpXdot1dcbxRemApplicationVlanAEProtocol	D.2.14.3
	lldpXdot1dcbxRemApplicationVlanAEVlanId	D.2.14.3
lldpXdot1dcbxAdminData extension group[a]		
lldpXdot1dcbxAdminETSBasicConfigurationTable		
	lldpXdot1dcbxAdminETSConCreditBasedShaperSupport	D.2.8.4
	lldpXdot1dcbxAdminETSConMaxTC	D.2.8.5
	lldpXdot1dcbxAdminETSConWilling	D.2.8.3
	lldpXdot1dcbxAdminETSConTrafficClassBandwidthTable	D.2.8.7
	lldpXdot1dcbxAdminETSConTrafficSelectionAlgorithmTable	D.2.8.8
lldpXdot1dcbxAdminETSConPriorityAssignmentTable		
	lldpXdot1dcbxAdminETSConPriority	D.2.8.6
	lldpXdot1dcbxAdminETSConTrafficClass	D.2.8.6
lldpXdot1dcbxAdminETSRecommendationTable		
	lldpXdot1dcbxAdminETSRecoTrafficClassBandwidthTable	D.2.9.4
lldpXdot1dcbxAdminETSRecoTrafficSelectionAlgorithmTable		
	lldpXdot1dcbxAdminETSRecoTSAPriority	D.2.9.5
	lldpXdot1dcbxAdminETSRecoTrafficSelectionAlgorithm	D.2.9.5

Table D-1—IEEE 802.1/LLDP extension MIB object cross reference (continued)

MIB table	MIB object	LLDP reference
lldpXdot1dcbxAdminPFCBasicTable		
	lldpXdot1dcbxAdminPFCWilling	D.2.10.3
	lldpXdot1dcbxAdminPFCMBC	D.2.10.4
	lldpXdot1dcbxAdminPFCCap	D.2.10.5
	lldpXdot1dcbxAdminMACsecCap	D.2.10.7
	lldpXdot1dcbxAdminHDRCap	D.2.10.8
	lldpXdot1dcbxAdminInternalDelay	D.2.10.9
lldpXdot1dcbxAdminPFCEnableTable		
	lldpXdot1dcbxAdminPFCEnablePriority	D.2.10.6
	lldpXdot1dcbxAdminPFCEnableEnabled	D.2.10.6
lldpXdot1dcbxAdminApplicationPriorityAppTable		
	lldpXdot1dcbxAdminApplicationPriorityAESelector	D.2.11.3
	lldpXdot1dcbxAdminApplicationPriorityAEProtocol	D.2.11.3
	lldpXdot1dcbxAdminApplicationPriorityAEPriority	D.2.11.3
lldpXdot1dcbxAdminApplicationVlanAppTable		
	lldpXdot1dcbxAdminApplicationVlanAESelector	D.2.14.3
	lldpXdot1dcbxAdminApplicationVlanAEProtocol	D.2.14.3
	lldpXdot1dcbxAdminApplicationVlanAEVlanId	D.2.14.3

[a] The term Extension Group is used here to be consistent with LLDP (see IEEE Std 802.1AB).

D.5.5 IEEE 802.1 LLDP extension MIB module—version 2 [10] [11]

In the following MIB definition, should any discrepancy between the DESCRIPTION text and the corresponding definition in D.2.1 through D.5 occur, the definition in D.2.1 through D.5 shall take precedence.

Change MIB module:

<<Editor notes: add TLV variables (MACsec cap, HDR cap, internal delay) into MIB module.>>


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

IMPORTS
    MODULE-IDENTITY,
    OBJECT-TYPE,
    Unsigned32
        FROM SNMPv2-SMI
    TruthValue,
    TEXTUAL-CONVENTION
        FROM SNMPv2-TC
    SnmpAdminString
        FROM SNMP-FRAMEWORK-MIB
    MODULE-COMPLIANCE,
    OBJECT-GROUP
        FROM SNMPv2-CONF
    ifGeneralInformationGroup
        FROM IF-MIB
    lldpV2Extensions,
    lldpV2LocPortIfIndex,
    lldpV2RemTimeMark,
    lldpV2RemLocalIfIndex,
    lldpV2RemLocalDestMACAddress,
    lldpV2RemIndex,
    lldpV2PortConfigEntry
        FROM LLDP-V2-MIB
    VlanId
        FROM Q-BRIDGE-MIB
    IEEE8021PriorityValue
        FROM IEEE8021-TC-MIB;

lldpV2Xdot1MIB MODULE-IDENTITY
    LAST-UPDATED "202201010000Z" -- January 1, 2022
    ORGANIZATION "IEEE 802.1 Working Group"
    CONTACT-INFO
        "  WG-URL: http://www.ieee802.org/1/
         WG-EMail: stds-802-1-l@ieee.org
          Contact: IEEE 802.1 Working Group Chair
           Postal: C/O IEEE 802.1 Working Group
                   IEEE Standards Association
                   445 Hoes Lane
                   Piscataway, NJ 08854
                   USA
          E-mail: stds-802-1-chairs@ieee.org"
    DESCRIPTION
            "The LLDP Management Information Base extension module for
            IEEE 802.1 organizationally defined discovery information.

            In order to ensure the uniqueness of the LLDP-V2-MIB,
            lldpV2Xdot1MIB is branched from lldpV2Extensions using an
            Organizationally Unique Identifier (OUI) value as the node.
            An OUI is a 24 bit globally unique number assigned by the
```

---

[10] *Copyright release for MIBs:* Users of this standard may freely reproduce the MIB modules in this standard so that they can be used for their intended purpose.

[11] An ASCII version of this MIB module is attached to the PDF version of this standard, and can be obtained by Web browser from the IEEE 802.1 Website at https://1.ieee802.org/mib-modules/.

```
 1              IEEE Registration Authority - see:
 2
 3              http://standards.ieee.org/develop/regauth/oui/index.html
 4
 5         Unless otherwise indicated, the references in this MIB
 6         module are to IEEE Std 802.1Q-2021.
 7
 8         Copyright (C) IEEE (2022).
 9         This version of this MIB module is part of IEEE Std 802.1Q;
10         see that standard for full legal notices."
11
12    REVISION "202201010000Z" -- January 1, 2022
13    DESCRIPTION
14              "Published as part of IEEE Std 802.1Q-2021.
15              Cross references and contact information updated."
16
17    REVISION "201807010000Z" -- July 1, 2018
18    DESCRIPTION
19              "Published as part of IEEE Std 802.1Q 2018 revision.
20              Cross references updated and corrected.
21              Changes introduced by IEEE Std 802.1Qcd-2015 and
22              IEEE Std 802.1Q-2014 Cor 1-2015 merged. "
23
24    REVISION "201502160000Z" -- February 16, 2015
25    DESCRIPTION
26              "Published as part of IEEE Std 802.1Q 2014 Cor-1.
27              Updated as a result of maintenance items #0132 and #0152"
28
29    REVISION "201502160000Z" -- February 16, 2015
30    DESCRIPTION
31              "Published as part of IEEE Std 802.1Qcd.
32              Adds Application VLAN TLV objects to the DCBX groups of
33              the MIB module."
34
35    REVISION "201412150000Z" -- December 15, 2014
36    DESCRIPTION
37              "Published as part of IEEE Std 802.1Q 2014 revision.
38              Cross references updated and corrected.
39              New tables lldpV2Xdot1RemVidUsageDigestV2Table
40              and lldpV2Xdot1RemManVidV2Table inserted; old
41              versions deprecated. New versions add an index for
42              lldpV2RemIndex. "
43
44    REVISION "201103250000Z" -- March 25, 2011
45    DESCRIPTION
46              "Published as part of IEEE Std 802.1Qaz-2011. Adds the DCBX
47              objects to the MIB module"
48
49    REVISION "201103230000Z" -- March 23, 2011
50    DESCRIPTION
51              "Published as part of IEEE Std 802.1Q-2011 revision.
52              This revision contains changes associated with
53              relocating the extension MIB from IEEE Std 802.1AB to
54              IEEE Std 802.1Q, minor tweaks to the text of the
55              DESCRIPTION statement above to fix references to
56              IEEE Std 802.1Q, updating of references to refer to
57              Annex D, and addition of object definitions for
58              Congestion Notification TLVs and corresponding
59              compliance statements."
60
61    REVISION "200906080000Z" -- June 08, 2009
62    DESCRIPTION
63              "Published as part of IEEE Std 802.1AB-2009 revision.
64              This revision incorporated changes to the MIB to
65              support the use of LLDP with multiple destination MAC
66              addresses, and to import the Link Aggregation TLV
67              from the IEEE 802.3 extension MIB"
68
69 -- OUI for IEEE 802.1 is 32962 (00-80-C2)
70    ::= { lldpV2Extensions 32962 }
71
72 ------------------------------------------------------------------
```

```
 1 -----------------------------------------------------------------------
 2 --
 3 -- Organizationally Defined Information Extension - IEEE 802.1
 4 -- Definitions to support the basicSet TLV set (Table D-1)
 5 --
 6 -----------------------------------------------------------------------
 7 -----------------------------------------------------------------------
 8
 9 lldpV2Xdot1Objects    OBJECT IDENTIFIER ::= { lldpV2Xdot1MIB 1 }
10
11 -- LLDP IEEE 802.1 extension MIB groups
12 lldpV2Xdot1Config     OBJECT IDENTIFIER ::= { lldpV2Xdot1Objects 1 }
13 lldpV2Xdot1LocalData  OBJECT IDENTIFIER ::= { lldpV2Xdot1Objects 2 }
14 lldpV2Xdot1RemoteData OBJECT IDENTIFIER ::= { lldpV2Xdot1Objects 3 }
15
16 -----------------------------------------------------------------------
17 -- Textual Convention definitions
18 -----------------------------------------------------------------------
19
20 LldpV2XLinkAggStatusMap ::= TEXTUAL-CONVENTION
21     STATUS       current
22     DESCRIPTION
23             "This TC describes the link aggregation status.
24
25             The bit 'aggCapable(0)' indicates the link is capable of being
26             aggregated if 1, not capable if 0.
27
28             The bit 'aggEnabled(1)' indicates the link is currently in
29             an aggregation if 1, not in an aggregation if 0.
30
31             The bits 'portTypeLS(1)' and portTypeMS(2)' form the LS
32             and MS bits of a Port Type value respectively:
33             00 = no port type specified
34             01 = transmitted from Aggregation Port
35             10 = transmitted from Aggregator
36             11 = transmitted from an Aggregator with a single
37                  Aggregation Port.
38
39             The remaining bits are reserved for future standardization."
40     SYNTAX  BITS {
41             aggCapable(0),
42             aggEnabled(1),
43             portTypeLS(2),
44             portTypeMS(3)
45     }
46
47 -----------------------------------------------------------------------
48 -- IEEE 802.1 - Configuration for the basicSet TLV set
49 -----------------------------------------------------------------------
50
51 --
52 -- lldpV2Xdot1ConfigPortVlanTable : configure the transmission of the
53 --                          Port VLAN-ID TLVs on set of ports.
54 --
55
56 lldpV2Xdot1ConfigPortVlanTable OBJECT-TYPE
57     SYNTAX      SEQUENCE OF LldpV2Xdot1ConfigPortVlanEntry
58     MAX-ACCESS  not-accessible
59     STATUS      current
60     DESCRIPTION
61             "A table that controls selection of LLDP Port VLAN-ID TLVs
62             to be transmitted on individual ports."
63     ::= { lldpV2Xdot1Config 1 }
64
65 lldpV2Xdot1ConfigPortVlanEntry  OBJECT-TYPE
66     SYNTAX      LldpV2Xdot1ConfigPortVlanEntry
67     MAX-ACCESS  not-accessible
68     STATUS      current
69     DESCRIPTION
70             "LLDP configuration information that controls the
71             transmission of IEEE 802.1 organizationally defined Port
72             VLAN-ID TLV on LLDP transmission-capable ports.
```

```
 1
 2                 This configuration object augments the
 3                 lldpV2PortConfigEntry of the LLDP-MIB, therefore it is only
 4                 present along with the port configuration defined by the
 5                 associated lldpV2PortConfigEntry entry.
 6
 7                 Each active lldpConfigEntry is restored from non-volatile
 8                 storage (along with the corresponding
 9                 lldpV2PortConfigEntry) after a re-initialization of the
10                 management system."
11       AUGMENTS { lldpV2PortConfigEntry }
12       ::= { lldpV2Xdot1ConfigPortVlanTable 1 }
13
14 LldpV2Xdot1ConfigPortVlanEntry ::= SEQUENCE {
15       lldpV2Xdot1ConfigPortVlanTxEnable  TruthValue
16 }
17
18 lldpV2Xdot1ConfigPortVlanTxEnable OBJECT-TYPE
19       SYNTAX      TruthValue
20       MAX-ACCESS  read-write
21       STATUS      current
22       DESCRIPTION
23                 "The lldpV2Xdot1ConfigPortVlanTxEnable, which is defined
24                 as a truth value and configured by the network management,
25                 determines whether the IEEE 802.1 organizationally defined
26                 port VLAN TLV transmission is allowed on a given LLDP
27                 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                 "9.1.2.1 of IEEE Std 802.1AB"
33       DEFVAL  { false }
34       ::= { lldpV2Xdot1ConfigPortVlanEntry 1 }
35
36
37 --
38 -- lldpV2Xdot1ConfigVlanNameTable : configure the transmission of the
39 --                                  VLAN name instances on set of ports.
40 --
41
42 lldpV2Xdot1ConfigVlanNameTable OBJECT-TYPE
43       SYNTAX      SEQUENCE OF LldpV2Xdot1ConfigVlanNameEntry
44       MAX-ACCESS  not-accessible
45       STATUS      current
46       DESCRIPTION
47                 "The table that controls selection of LLDP VLAN name TLV
48                 instances to be transmitted on individual ports."
49       ::= { lldpV2Xdot1Config 2 }
50
51 lldpV2Xdot1ConfigVlanNameEntry  OBJECT-TYPE
52       SYNTAX      LldpV2Xdot1ConfigVlanNameEntry
53       MAX-ACCESS  not-accessible
54       STATUS      current
55       DESCRIPTION
56                 "LLDP configuration information that specifies the set of
57                 ports (represented as a PortList) on which the Local System
58                 VLAN name instance is transmitted.
59
60                 This configuration object augments the lldpV2LocVlanEntry,
61                 therefore it is only present along with the VLAN Name
62                 instance contained in the associated lldpV2LocVlanNameEntry
63                 entry.
64
65                 Each active lldpV2Xdot1ConfigVlanNameEntry is restored
66                 from non-volatile storage (along with the corresponding
67                 lldpV2Xdot1LocVlanNameEntry) after a re-initialization of
68                 the management system."
69       AUGMENTS { lldpV2Xdot1LocVlanNameEntry }
70       ::= { lldpV2Xdot1ConfigVlanNameTable 1 }
71
72
```

```
1
2 LldpV2Xdot1ConfigVlanNameEntry ::= SEQUENCE {
3      lldpV2Xdot1ConfigVlanNameTxEnable   TruthValue
4 }
5
6 lldpV2Xdot1ConfigVlanNameTxEnable  OBJECT-TYPE
7     SYNTAX         TruthValue
8     MAX-ACCESS     read-write
9     STATUS         current
10    DESCRIPTION
11            "The boolean value that indicates whether the corresponding
12            Local System VLAN name instance is transmitted on the
13            port defined by the given lldpV2Xdot1LocVlanNameEntry.
14
15            The value of this object is restored from non-volatile
16            storage after a re-initialization of the management
17            system."
18    REFERENCE
19            "9.1.2.1 of IEEE Std 802.1AB"
20    DEFVAL  { false }
21    ::= { lldpV2Xdot1ConfigVlanNameEntry 1 }
22
23
24 --
25 -- lldpV2Xdot1ConfigProtoVlanTable : configure the transmission of the
26 --                                  protocol VLAN instances on set
27 --                                  of ports.
28 --
29
30 lldpV2Xdot1ConfigProtoVlanTable OBJECT-TYPE
31    SYNTAX         SEQUENCE OF LldpV2Xdot1ConfigProtoVlanEntry
32    MAX-ACCESS     not-accessible
33    STATUS         current
34    DESCRIPTION
35            "The table that controls selection of LLDP Port And
36            Protocol VLAN ID TLV instances to be transmitted on
37            individual ports."
38    ::= { lldpV2Xdot1Config 3 }
39
40 lldpV2Xdot1ConfigProtoVlanEntry  OBJECT-TYPE
41    SYNTAX         LldpV2Xdot1ConfigProtoVlanEntry
42    MAX-ACCESS     not-accessible
43    STATUS         current
44    DESCRIPTION
45            "LLDP configuration information that specifies the set of
46            ports (represented as a PortList) on which the Local System
47            Protocol VLAN instance is transmitted.
48
49            This configuration object augments the
50            lldpV2Xdot1LocVlanEntry, therefore it is only present along
51            with the Port and Protocol VLAN ID instance contained in
52            the associated lldpV2Xdot1LocVlanEntry entry.
53
54            Each active lldpV2Xdot1ConfigProtoVlanEntry is restored
55            from non-volatile storage (along with the corresponding
56            lldpV2Xdot1LocProtoVlanEntry) after a re-initialization of
57            the management system."
58
59    AUGMENTS { lldpV2Xdot1LocProtoVlanEntry }
60    ::= { lldpV2Xdot1ConfigProtoVlanTable 1 }
61
62
63 LldpV2Xdot1ConfigProtoVlanEntry ::= SEQUENCE {
64      lldpV2Xdot1ConfigProtoVlanTxEnable   TruthValue
65 }
66
67 lldpV2Xdot1ConfigProtoVlanTxEnable OBJECT-TYPE
68    SYNTAX         TruthValue
69    MAX-ACCESS     read-write
70    STATUS         current
71    DESCRIPTION
72            "The boolean value that indicates whether the corresponding
```

```
 1              Local System Port and Protocol VLAN instance is
 2              transmitted on the port defined by the given
 3              lldpV2Xdot1LocProtoVlanEntry.
 4
 5              The value of this object is restored from non-volatile
 6              storage after a re-initialization of the management system."
 7      REFERENCE
 8              "9.1.2.1 of IEEE Std 802.1AB"
 9      DEFVAL  { false }
10      ::= { lldpV2Xdot1ConfigProtoVlanEntry 1 }
11
12
13 --
14 -- lldpV2Xdot1ConfigProtocolTable : configure the transmission of the
15 --                                  protocol instances on set
16 --                                  of ports.
17 --
18
19 lldpV2Xdot1ConfigProtocolTable OBJECT-TYPE
20      SYNTAX      SEQUENCE OF LldpV2Xdot1ConfigProtocolEntry
21      MAX-ACCESS  not-accessible
22      STATUS      current
23      DESCRIPTION
24              "The table that controls selection of LLDP Protocol
25              TLV instances to be transmitted on individual ports."
26      ::= { lldpV2Xdot1Config 4 }
27
28 lldpV2Xdot1ConfigProtocolEntry  OBJECT-TYPE
29      SYNTAX      LldpV2Xdot1ConfigProtocolEntry
30      MAX-ACCESS  not-accessible
31      STATUS      current
32      DESCRIPTION
33              "LLDP configuration information that specifies the set of
34              ports (represented as a PortList) on which the Local System
35              Protocol instance is transmitted.
36
37              This configuration object augments the
38              lldpV2Xdot1LocProtoEntry, therefore it is only present
39              along with the Protocol instance contained in the
40              associated lldpV2Xdot1LocProtoEntry entry.
41
42              Each active lldpV2Xdot1ConfigProtocolEntry is restored
43              from non-volatile storage (along with the corresponding
44              lldpV2Xdot1LocProtocolEntry) after a re-initialization of
45              the management system."
46      AUGMENTS { lldpV2Xdot1LocProtocolEntry }
47      ::= { lldpV2Xdot1ConfigProtocolTable 1 }
48
49
50 LldpV2Xdot1ConfigProtocolEntry ::= SEQUENCE {
51      lldpV2Xdot1ConfigProtocolTxEnable   TruthValue
52 }
53
54 lldpV2Xdot1ConfigProtocolTxEnable  OBJECT-TYPE
55      SYNTAX       TruthValue
56      MAX-ACCESS   read-write
57      STATUS       current
58      DESCRIPTION
59              "The boolean value that indicates whether the corresponding
60              Local System Protocol Identity instance is transmitted
61              on the port defined by the given
62              lldpV2Xdot1LocProtocolEntry.
63
64              The value of this object is restored from non-volatile
65              storage after a re-initialization of the management
66              system."
67      REFERENCE
68              "9.1.2.1 of IEEE Std 802.1AB"
69      DEFVAL  { false }
70      ::= { lldpV2Xdot1ConfigProtocolEntry 1 }
71
72 --
```

```
1  -- lldpV2Xdot1ConfigVidUsageDigestTable: configure the transmission
2  -- of the VID Usage Digest TLVs on set of ports.
3  --
4  lldpV2Xdot1ConfigVidUsageDigestTable OBJECT-TYPE
5      SYNTAX SEQUENCE OF LldpV2Xdot1ConfigVidUsageDigestEntry
6      MAX-ACCESS not-accessible
7      STATUS current
8      DESCRIPTION
9          "A table that controls selection of LLDP VID Usage Digest
10         TLVs to be transmitted on individual ports."
11 ::= { lldpV2Xdot1Config 5 }
12
13 lldpV2Xdot1ConfigVidUsageDigestEntry OBJECT-TYPE
14     SYNTAX LldpV2Xdot1ConfigVidUsageDigestEntry
15     MAX-ACCESS not-accessible
16     STATUS current
17     DESCRIPTION
18         "LLDP configuration information that specifies the set of
19         ports (represented as a PortList) on which the local
20         system VID Usage Digest instance will be transmitted.
21         This configuration object augments the
22         lldpLocVidUsageDigestEntry, therefore it is only present
23         along with the VID Usage Digest instance
24         contained in the associated lldpV2Xdot1LocVidUsageDigestEntry
25         entry. Each active lldpConfigVidUsageDigestEntry must be
26         restored from non-volatile storage and re-created (along with
27         the corresponding lldpV2Xdot1LocVidUsageDigestEntry) after
28         a re-initialization of the management system."
29     AUGMENTS { lldpV2Xdot1LocVidUsageDigestEntry }
30 ::= { lldpV2Xdot1ConfigVidUsageDigestTable 1 }
31
32 LldpV2Xdot1ConfigVidUsageDigestEntry ::= SEQUENCE {
33     lldpV2Xdot1ConfigVidUsageDigestTxEnable TruthValue
34     }
35
36 lldpV2Xdot1ConfigVidUsageDigestTxEnable OBJECT-TYPE
37     SYNTAX TruthValue
38     MAX-ACCESS read-write
39     STATUS current
40     DESCRIPTION
41         "The boolean value that indicates whether the corresponding
42         Local System VID Usage Digest instance will be transmitted
43         on the port defined by the given
44         lldpV2Xdot1LocVidUsageDigestEntry. The value of this object
45         must be restored from non-volatile storage after a
46         reinitialization of the management system."
47     REFERENCE
48         "9.1.2.1 of IEEE Std 802.1AB"
49     DEFVAL { false }
50 ::= { lldpV2Xdot1ConfigVidUsageDigestEntry 1 }
51
52
53 --
54 -- lldpV2Xdot1ConfigManVidTable : configure the transmission of the
55 -- Management VID TLVs on set of ports.
56 --
57 lldpV2Xdot1ConfigManVidTable OBJECT-TYPE
58     SYNTAX SEQUENCE OF LldpV2Xdot1ConfigManVidEntry
59     MAX-ACCESS not-accessible
60     STATUS current
61     DESCRIPTION
62         "A table that controls selection of LLDP Management VID
63         TLVs to be transmitted on individual ports."
64 ::= { lldpV2Xdot1Config 6 }
65
66 lldpV2Xdot1ConfigManVidEntry OBJECT-TYPE
67     SYNTAX LldpV2Xdot1ConfigManVidEntry
68     MAX-ACCESS not-accessible
69     STATUS current
70     DESCRIPTION
71         "LLDP configuration information that specifies the set of
72         port/destination address pairs on which the Local
```

```
 1              System Management VID will be transmitted.
 2              This configuration object augments the
 3              lldpV2Xdot1LocManVidEntry, therefore it is
 4              only present along with the Management VID contained
 5              in the associated lldpV2Xdot1LocManVidEntry entry.
 6              Each active lldpV2Xdot1ConfigManVidEntry must be
 7              restored from non-volatile storage (along with the
 8              corresponding lldpV2Xdot1LocManVidEntry) after a
 9              re-initialization of the management system."
10      AUGMENTS { lldpV2Xdot1LocManVidEntry }
11 ::= { lldpV2Xdot1ConfigManVidTable 1 }
12
13 LldpV2Xdot1ConfigManVidEntry ::= SEQUENCE {
14      lldpV2Xdot1ConfigManVidTxEnable TruthValue
15      }
16
17 lldpV2Xdot1ConfigManVidTxEnable OBJECT-TYPE
18      SYNTAX TruthValue
19      MAX-ACCESS read-write
20      STATUS current
21      DESCRIPTION
22          "The lldpV2Xdot1ConfigManVidTxEnable, which is defined as a
23          truth value and configured by the network management,
24          determines whether the IEEE 802.1 organizationally
25          defined Management VID TLV transmission is allowed on a given
26          LLDP transmission-capable port.
27          The value of this object must be restored from
28          non-volatile storage after a re-initialization of the
29          management system."
30      REFERENCE
31          "9.1.2.1 of IEEE Std 802.1AB"
32      DEFVAL { false }
33 ::= { lldpV2Xdot1ConfigManVidEntry 1 }
34
35
36 -----------------------------------------------------------------------
37 -- IEEE 802.1 - Local System Information
38 -----------------------------------------------------------------------
39
40 --
41 -- lldpV2Xdot1LocTable - indexed by ifIndex.
42 --
43
44 lldpV2Xdot1LocTable  OBJECT-TYPE
45      SYNTAX      SEQUENCE OF LldpV2Xdot1LocEntry
46      MAX-ACCESS  not-accessible
47      STATUS      current
48      DESCRIPTION
49              "This table contains one row per port for IEEE 802.1
50              organizationally defined LLDP extension on the local system
51              known to this agent."
52      ::= { lldpV2Xdot1LocalData 1 }
53
54 lldpV2Xdot1LocEntry  OBJECT-TYPE
55      SYNTAX      LldpV2Xdot1LocEntry
56      MAX-ACCESS  not-accessible
57      STATUS      current
58      DESCRIPTION
59              "Information about IEEE 802.1 organizationally defined
60              LLDP extension."
61      INDEX   { lldpV2LocPortIfIndex }
62      ::= { lldpV2Xdot1LocTable 1 }
63
64 LldpV2Xdot1LocEntry ::= SEQUENCE {
65          lldpV2Xdot1LocPortVlanId        Unsigned32
66 }
67
68 lldpV2Xdot1LocPortVlanId OBJECT-TYPE
69      SYNTAX      Unsigned32(0|1..4094)
70      MAX-ACCESS  read-only
71      STATUS      current
72      DESCRIPTION
```

```
 1              "The integer value used to identify the port's VLAN
 2              identifier associated with the local system.   A value
 3              of zero shall be used if the system either does not know
 4              the PVID or does
 5              not support Port-based VLAN operation."
 6      REFERENCE
 7              "D.2.1.1"
 8      ::= { lldpV2Xdot1LocEntry 1 }
 9
10
11
12 --
13 -- lldpV2Xdot1LocProtoVlanTable: Port and Protocol VLAN information
14 -- re-indexed by ifIndex.
15 --
16
17 lldpV2Xdot1LocProtoVlanTable  OBJECT-TYPE
18      SYNTAX      SEQUENCE OF LldpV2Xdot1LocProtoVlanEntry
19      MAX-ACCESS  not-accessible
20      STATUS      current
21      DESCRIPTION
22              "This table contains one or more rows per Port and Protocol
23              VLAN information about the local system."
24      ::= { lldpV2Xdot1LocalData 2 }
25
26 lldpV2Xdot1LocProtoVlanEntry OBJECT-TYPE
27      SYNTAX      LldpV2Xdot1LocProtoVlanEntry
28      MAX-ACCESS  not-accessible
29      STATUS      current
30      DESCRIPTION
31              "Port and protocol VLAN ID Information about a particular
32              port component.  There may be multiple port and protocol
33              VLANs, identified by a particular
34              lldpV2Xdot1LocProtoVlanId, configured on the given port."
35      INDEX   { lldpV2LocPortIfIndex,
36                lldpV2Xdot1LocProtoVlanId }
37      ::= { lldpV2Xdot1LocProtoVlanTable 1 }
38
39 LldpV2Xdot1LocProtoVlanEntry ::= SEQUENCE {
40      lldpV2Xdot1LocProtoVlanId        Unsigned32,
41      lldpV2Xdot1LocProtoVlanSupported TruthValue,
42      lldpV2Xdot1LocProtoVlanEnabled   TruthValue
43 }
44
45 lldpV2Xdot1LocProtoVlanId  OBJECT-TYPE
46      SYNTAX      Unsigned32(0|1..4094)
47      MAX-ACCESS  not-accessible
48      STATUS      current
49      DESCRIPTION
50              "The integer value used to identify the port and protocol
51              VLANs associated with the given port associated with the
52              local system.  A value of zero shall be used if the system
53              either does not know the protocol VLAN ID (PPVID) or does
54              not support port and protocol VLAN operation."
55      REFERENCE
56              "D.2.2.2"
57      ::= { lldpV2Xdot1LocProtoVlanEntry 1 }
58
59 lldpV2Xdot1LocProtoVlanSupported  OBJECT-TYPE
60      SYNTAX      TruthValue
61      MAX-ACCESS  read-only
62      STATUS      current
63      DESCRIPTION
64              "The truth value used to indicate whether the given port
65              (associated with the local system) supports port and
66              protocol VLANs."
67      REFERENCE
68              "D.2.2.1"
69      ::= { lldpV2Xdot1LocProtoVlanEntry 2 }
70
71 lldpV2Xdot1LocProtoVlanEnabled  OBJECT-TYPE
72      SYNTAX      TruthValue
```

```
 1    MAX-ACCESS  read-only
 2    STATUS      current
 3    DESCRIPTION
 4            "The truth value used to indicate whether the port and
 5            protocol VLANs are enabled on the given port associated
 6            with the local system."
 7    REFERENCE
 8            "D.2.2.1"
 9    ::= { lldpV2Xdot1LocProtoVlanEntry 3 }
10
11
12
13 --
14 -- lldpV2Xdot1LocVlanNameTable : VLAN name information about the local
15 -- system indexed by ifIndex.
16 --
17
18 lldpV2Xdot1LocVlanNameTable  OBJECT-TYPE
19    SYNTAX      SEQUENCE OF LldpV2Xdot1LocVlanNameEntry
20    MAX-ACCESS  not-accessible
21    STATUS      current
22    DESCRIPTION
23            "This table contains one or more rows per IEEE 802.1Q VLAN
24            name information on the local system known to this agent."
25    ::= { lldpV2Xdot1LocalData 3 }
26
27 lldpV2Xdot1LocVlanNameEntry OBJECT-TYPE
28    SYNTAX      LldpV2Xdot1LocVlanNameEntry
29    MAX-ACCESS  not-accessible
30    STATUS      current
31    DESCRIPTION
32            "VLAN name Information about a particular port component.
33            There may be multiple VLANs, identified by a particular
34            lldpV2Xdot1LocVlanId, configured on the given port."
35    INDEX   { lldpV2LocPortIfIndex,
36              lldpV2Xdot1LocVlanId }
37    ::= { lldpV2Xdot1LocVlanNameTable 1 }
38
39 LldpV2Xdot1LocVlanNameEntry ::= SEQUENCE {
40      lldpV2Xdot1LocVlanId            VlanId,
41      lldpV2Xdot1LocVlanName          SnmpAdminString
42 }
43
44 lldpV2Xdot1LocVlanId  OBJECT-TYPE
45    SYNTAX      VlanId
46    MAX-ACCESS  not-accessible
47    STATUS      current
48    DESCRIPTION
49            "The integer value used to identify the IEEE 802.1Q
50            VLAN IDs with which the given port is compatible."
51    REFERENCE
52            "D.2.3.2"
53    ::= { lldpV2Xdot1LocVlanNameEntry 1 }
54
55 lldpV2Xdot1LocVlanName  OBJECT-TYPE
56    SYNTAX      SnmpAdminString (SIZE(1..32))
57    MAX-ACCESS  read-only
58    STATUS      current
59    DESCRIPTION
60            "The string value used to identify VLAN name identified
61            by the Vlan Id associated with the given port on the
62            local system.
63
64            This object should contain the value of the
65            dot1QVLANStaticName object (defined in IETF RFC 4363)
66            identified with the given lldpV2Xdot1LocVlanId."
67    REFERENCE
68            "D.2.3.4"
69    ::= { lldpV2Xdot1LocVlanNameEntry 2 }
70
71
72
```

```
 1 --
 2 -- lldpV2Xdot1LocProtocolTable : Protocol Identity information
 3 -- re-indexed by ifIndex and destination address
 4 --
 5
 6 lldpV2Xdot1LocProtocolTable  OBJECT-TYPE
 7     SYNTAX        SEQUENCE OF LldpV2Xdot1LocProtocolEntry
 8     MAX-ACCESS  not-accessible
 9     STATUS        current
10     DESCRIPTION
11             "This table contains one or more rows per protocol identity
12             information on the local system known to this agent."
13     REFERENCE
14             "D.2.4"
15     ::= { lldpV2Xdot1LocalData 4 }
16
17 lldpV2Xdot1LocProtocolEntry  OBJECT-TYPE
18     SYNTAX        LldpV2Xdot1LocProtocolEntry
19     MAX-ACCESS  not-accessible
20     STATUS        current
21     DESCRIPTION
22             "Information about particular protocols that are accessible
23             through the given port component.
24
25             There may be multiple protocols, identified by particular
26             lldpV2Xdot1ProtocolIndex, lldpV2LocPortIfIndex"
27     REFERENCE
28             "D.2.4"
29     INDEX   { lldpV2LocPortIfIndex,
30               lldpV2Xdot1LocProtocolIndex }
31     ::= { lldpV2Xdot1LocProtocolTable 1 }
32
33 LldpV2Xdot1LocProtocolEntry ::= SEQUENCE {
34     lldpV2Xdot1LocProtocolIndex Unsigned32,
35     lldpV2Xdot1LocProtocolId    OCTET STRING
36 }
37
38
39 lldpV2Xdot1LocProtocolIndex  OBJECT-TYPE
40     SYNTAX        Unsigned32(1..2147483647)
41     MAX-ACCESS  not-accessible
42     STATUS        current
43     DESCRIPTION
44             "This object represents an arbitrary local integer value
45             used by this agent to identify a particular protocol
46             identity."
47     ::= { lldpV2Xdot1LocProtocolEntry 1 }
48
49 lldpV2Xdot1LocProtocolId  OBJECT-TYPE
50     SYNTAX        OCTET STRING (SIZE (1..255))
51     MAX-ACCESS  read-only
52     STATUS        current
53     DESCRIPTION
54             "The octet string value used to identify the protocols
55             associated with the given port of the local system."
56     REFERENCE
57             "D.2.4.3"
58     ::= { lldpV2Xdot1LocProtocolEntry 2 }
59
60 --
61 -- lldpV2Xdot1LocVidUsageDigestTable: Table of hash values of
62 -- system VID Usage Table transmitted
63 -- via VID Usage Digest TLV.
64 --
65
66
67 lldpV2Xdot1LocVidUsageDigestTable  OBJECT-TYPE
68     SYNTAX        SEQUENCE OF LldpV2Xdot1LocVidUsageDigestEntry
69     MAX-ACCESS  not-accessible
70     STATUS        current
71     DESCRIPTION
72             "This table contains one row per ifIndex/
```

```
 1            destination MAC address pair for usage digest
 2            information on the local system known to this agent."
 3    REFERENCE
 4            "D.2.5"
 5    ::= { lldpV2Xdot1LocalData 5 }
 6
 7 lldpV2Xdot1LocVidUsageDigestEntry  OBJECT-TYPE
 8    SYNTAX      LldpV2Xdot1LocVidUsageDigestEntry
 9    MAX-ACCESS  not-accessible
10    STATUS      current
11    DESCRIPTION
12            "Usage digest information to be transmitted
13            through the given port."
14    REFERENCE
15            "D.2.5"
16    INDEX   { lldpV2LocPortIfIndex }
17    ::= { lldpV2Xdot1LocVidUsageDigestTable 1 }
18
19 LldpV2Xdot1LocVidUsageDigestEntry ::= SEQUENCE {
20     lldpV2Xdot1LocVidUsageDigest Unsigned32
21 }
22
23
24 lldpV2Xdot1LocVidUsageDigest OBJECT-TYPE
25    SYNTAX Unsigned32
26    MAX-ACCESS read-only
27    STATUS current
28    DESCRIPTION
29        "The integer value obtained by applying the CRC32 function
30        to the 128-octet VID Usage Table. A bit of the VID Usage
31        Table contains the value PBB-TE-USAGE (binary 1) if the
32        corresponding element of the MST Configuration Table
33        (IEEE Std 802.1Q 8.9.1) contains the value PBB-TE MSTID
34        (hex FFE) and otherwise contains the value NON-PBB-TE-USAGE
35        (binary 0)."
36    REFERENCE
37        "D.2.5.1"
38 ::= { lldpV2Xdot1LocVidUsageDigestEntry 1 }
39
40 --
41 -- lldpV2Xdot1LocManVidTable: Table of values configured on the Local
42 -- system for the Management VID, or the value 0 if a Management VID
43 -- has not been provisioned.
44 --
45
46 lldpV2Xdot1LocManVidTable  OBJECT-TYPE
47    SYNTAX      SEQUENCE OF LldpV2Xdot1LocManVidEntry
48    MAX-ACCESS  not-accessible
49    STATUS      current
50    DESCRIPTION
51            "This table contains one row per ifIndex/
52            destination MAC address pair for usage digest
53            information on the local system known to this agent."
54    REFERENCE
55            "D.2.6"
56    ::= { lldpV2Xdot1LocalData 6 }
57
58 lldpV2Xdot1LocManVidEntry  OBJECT-TYPE
59    SYNTAX      LldpV2Xdot1LocManVidEntry
60    MAX-ACCESS  not-accessible
61    STATUS      current
62    DESCRIPTION
63            "Usage digest information to be transmitted
64            through the given port."
65    REFERENCE
66            "D.2.6"
67    INDEX   { lldpV2LocPortIfIndex }
68    ::= { lldpV2Xdot1LocManVidTable 1 }
69
70 LldpV2Xdot1LocManVidEntry ::= SEQUENCE {
71     lldpV2Xdot1LocManVid Unsigned32
72 }
```

```
 1
 2 lldpV2Xdot1LocManVid OBJECT-TYPE
 3    SYNTAX Unsigned32 (0|1..4094)
 4    MAX-ACCESS read-only
 5    STATUS current
 6    DESCRIPTION
 7        "The integer value configured on the Local system for
 8        the Management VID, or
 9        the value 0 if a Management VID has not been provisioned."
10    REFERENCE
11        "D.2.6.1"
12 ::= { lldpV2Xdot1LocManVidEntry 1 }
13
14
15 --------------------------------------------------------------------
16 -- IEEE 802.1 - Local System Information - Link Aggregation
17 --------------------------------------------------------------------
18
19 ---
20 ---
21 --- lldpV2Xdot1LocLinkAggTable: Link Aggregation Information Table
22 ---
23 ---
24 lldpV2Xdot1LocLinkAggTable OBJECT-TYPE
25    SYNTAX      SEQUENCE OF LldpV2Xdot1LocLinkAggEntry
26    MAX-ACCESS  not-accessible
27    STATUS      current
28    DESCRIPTION
29            "This table contains one row per port of link aggregation
30            information (as a part of the LLDP 802.1 organizational
31            extension) on the local system known to this agent."
32    ::= { lldpV2Xdot1LocalData 7 }
33
34 lldpV2Xdot1LocLinkAggEntry OBJECT-TYPE
35    SYNTAX      LldpV2Xdot1LocLinkAggEntry
36    MAX-ACCESS  not-accessible
37    STATUS      current
38    DESCRIPTION
39            "Link Aggregation information about a particular port
40            component."
41    INDEX   { lldpV2LocPortIfIndex }
42    ::= { lldpV2Xdot1LocLinkAggTable 1 }
43
44 LldpV2Xdot1LocLinkAggEntry ::= SEQUENCE {
45     lldpV2Xdot1LocLinkAggStatus      LldpV2XLinkAggStatusMap,
46     lldpV2Xdot1LocLinkAggPortId      Unsigned32
47 }
48
49 lldpV2Xdot1LocLinkAggStatus OBJECT-TYPE
50    SYNTAX      LldpV2XLinkAggStatusMap
51    MAX-ACCESS  read-only
52    STATUS      current
53    DESCRIPTION
54            "The bitmap value contains the link aggregation
55            capabilities and the current aggregation status of the
56            link."
57    REFERENCE
58            "IEEE Std 802.1AX"
59    ::= { lldpV2Xdot1LocLinkAggEntry 1 }
60
61 lldpV2Xdot1LocLinkAggPortId OBJECT-TYPE
62    SYNTAX      Unsigned32(0|1..2147483647)
63    MAX-ACCESS  read-only
64    STATUS      current
65    DESCRIPTION
66            "This object contains the IEEE 802.1 aggregated port
67            identifier, aAggPortID (IEEE Std 802.1AX, 6.3.2.1.1),
68            derived from the ifNumber of the  ifIndex for the port
69            component in link aggregation.
70
71            If the port is not in link aggregation state and/or it
72            does not support link aggregation, this value should be set
```

```
 1                    to zero."
 2      REFERENCE
 3              "IEEE Std 802.1AX"
 4      ::= { lldpV2Xdot1LocLinkAggEntry 2 }
 5
 6
 7
 8 --------------------------------------------------------------------
 9 -- IEEE 802.1 - Remote System Information
10 --------------------------------------------------------------------
11
12 --
13 -- lldpV2Xdot1RemTable - re-indexed for ifIndex and destination MAC
14 -- address
15
16 lldpV2Xdot1RemTable OBJECT-TYPE
17      SYNTAX       SEQUENCE OF LldpV2Xdot1RemEntry
18      MAX-ACCESS  not-accessible
19      STATUS       current
20      DESCRIPTION
21              "This table contains one or more rows per physical network
22              connection known to this agent.  The agent may wish to
23              ensure that only one lldpV2Xdot1RemEntry is present for
24              each local port, or it may choose to maintain multiple
25              lldpV2Xdot1RemEntries for the same local port."
26      ::= { lldpV2Xdot1RemoteData 1 }
27
28 lldpV2Xdot1RemEntry OBJECT-TYPE
29      SYNTAX       LldpV2Xdot1RemEntry
30      MAX-ACCESS  not-accessible
31      STATUS       current
32      DESCRIPTION
33              "Information about a particular port component."
34      INDEX   { lldpV2RemTimeMark,
35                lldpV2RemLocalIfIndex,
36                lldpV2RemLocalDestMACAddress,
37                lldpV2RemIndex }
38      ::= { lldpV2Xdot1RemTable 1 }
39
40 LldpV2Xdot1RemEntry ::= SEQUENCE {
41              lldpV2Xdot1RemPortVlanId         Unsigned32
42 }
43
44 lldpV2Xdot1RemPortVlanId OBJECT-TYPE
45      SYNTAX       Unsigned32(0|1..4094)
46      MAX-ACCESS  read-only
47      STATUS       current
48      DESCRIPTION
49              "The integer value used to identify the port's VLAN
50              identifier associated with the remote system.  if the
51              remote system either does not know the PVID or does not
52              support Port-based VLAN operation, the value of
53              lldpV2Xdot1RemPortVlanId should be zero."
54      REFERENCE
55              "D.2.1.1"
56      ::= { lldpV2Xdot1RemEntry 1 }
57
58
59
60 --
61 -- lldpV2Xdot1RemProtoVlanTable - re-indexed by ifIndex and
62 -- destination MAC address
63 --
64
65 lldpV2Xdot1RemProtoVlanTable  OBJECT-TYPE
66      SYNTAX       SEQUENCE OF LldpV2Xdot1RemProtoVlanEntry
67      MAX-ACCESS  not-accessible
68      STATUS       current
69      DESCRIPTION
70              "This table contains one or more rows per Port and Protocol
71              VLAN information about the remote system, received on the
72              given port."
```

```
1      ::= { lldpV2Xdot1RemoteData 2 }
2
3  lldpV2Xdot1RemProtoVlanEntry OBJECT-TYPE
4      SYNTAX      LldpV2Xdot1RemProtoVlanEntry
5      MAX-ACCESS  not-accessible
6      STATUS      current
7      DESCRIPTION
8              "Port and protocol VLAN name Information about a particular
9              port component.  There may be multiple protocol VLANs,
10             identified by a particular lldpV2Xdot1RemProtoVlanId,
11             configured on the remote system."
12     INDEX   { lldpV2RemTimeMark,
13               lldpV2RemLocalIfIndex,
14               lldpV2RemLocalDestMACAddress,
15               lldpV2RemIndex,
16               lldpV2Xdot1RemProtoVlanId }
17     ::= { lldpV2Xdot1RemProtoVlanTable 1 }
18
19 LldpV2Xdot1RemProtoVlanEntry ::= SEQUENCE {
20             lldpV2Xdot1RemProtoVlanId         Unsigned32,
21             lldpV2Xdot1RemProtoVlanSupported  TruthValue,
22             lldpV2Xdot1RemProtoVlanEnabled    TruthValue
23 }
24
25 lldpV2Xdot1RemProtoVlanId  OBJECT-TYPE
26     SYNTAX      Unsigned32(0|1..4094)
27     MAX-ACCESS  not-accessible
28     STATUS      current
29     DESCRIPTION
30             "The integer value used to identify the port and protocol
31             VLANs associated with the given port associated with the
32             remote system.
33
34             If port and protocol VLANs are not supported on the given
35             port associated with the remote system, or if the port is
36             not enabled with any port and protocol VLAN, the value of
37             lldpV2Xdot1RemProtoVlanId should be zero."
38     REFERENCE
39             "D.2.2.2"
40     ::= { lldpV2Xdot1RemProtoVlanEntry 1 }
41
42 lldpV2Xdot1RemProtoVlanSupported  OBJECT-TYPE
43     SYNTAX      TruthValue
44     MAX-ACCESS  read-only
45     STATUS      current
46     DESCRIPTION
47             "The truth value used to indicate whether the given port
48             (associated with the remote system) is capable of
49             supporting port and protocol VLANs."
50     REFERENCE
51             "D.2.2.1"
52     ::= { lldpV2Xdot1RemProtoVlanEntry 2 }
53
54 lldpV2Xdot1RemProtoVlanEnabled  OBJECT-TYPE
55     SYNTAX      TruthValue
56     MAX-ACCESS  read-only
57     STATUS      current
58     DESCRIPTION
59             "The truth value used to indicate whether the port and
60             protocol VLANs are enabled on the given port associated
61             with
62             the remote system."
63     REFERENCE
64             "D.2.2.1"
65     ::= { lldpV2Xdot1RemProtoVlanEntry 3 }
66
67
68
69 --
70 -- lldpV2Xdot1RemVlanNameTable : VLAN name information of the remote
71 --                               systems
72 -- Re-indexed by ifIndex and destination MAC address
```

```
 1 --
 2
 3 lldpV2Xdot1RemVlanNameTable  OBJECT-TYPE
 4     SYNTAX       SEQUENCE OF LldpV2Xdot1RemVlanNameEntry
 5     MAX-ACCESS  not-accessible
 6     STATUS       current
 7     DESCRIPTION
 8              "This table contains one or more rows per IEEE 802.1Q VLAN
 9              name information about the remote system, received on the
10              given port."
11     REFERENCE
12              "D.2.3"
13     ::= { lldpV2Xdot1RemoteData 3 }
14
15 lldpV2Xdot1RemVlanNameEntry OBJECT-TYPE
16     SYNTAX       LldpV2Xdot1RemVlanNameEntry
17     MAX-ACCESS  not-accessible
18     STATUS       current
19     DESCRIPTION
20              "VLAN name Information about a particular port component.
21              There may be multiple VLANs, identified by a particular
22              lldpV2Xdot1RemVlanId, received on the given port."
23     INDEX   { lldpV2RemTimeMark,
24              lldpV2RemLocalIfIndex,
25              lldpV2RemLocalDestMACAddress,
26              lldpV2RemIndex,
27              lldpV2Xdot1RemVlanId }
28     ::= { lldpV2Xdot1RemVlanNameTable 1 }
29
30 LldpV2Xdot1RemVlanNameEntry ::= SEQUENCE {
31              lldpV2Xdot1RemVlanId       VlanId,
32              lldpV2Xdot1RemVlanName     SnmpAdminString
33 }
34
35
36 lldpV2Xdot1RemVlanId  OBJECT-TYPE
37     SYNTAX       VlanId
38     MAX-ACCESS  not-accessible
39     STATUS       current
40     DESCRIPTION
41              "The integer value used to identify the IEEE 802.1Q
42              VLAN IDs with which the given port of the remote system
43              is compatible."
44     REFERENCE
45              "D.2.3.2"
46     ::= { lldpV2Xdot1RemVlanNameEntry 1 }
47
48 lldpV2Xdot1RemVlanName  OBJECT-TYPE
49     SYNTAX       SnmpAdminString (SIZE(1..32))
50     MAX-ACCESS  read-only
51     STATUS       current
52     DESCRIPTION
53              "The string value used to identify VLAN name identified
54              by the VLAN Id associated with the remote system."
55     REFERENCE
56              "D.2.3.4"
57     ::= { lldpV2Xdot1RemVlanNameEntry 2 }
58
59
60
61 --
62 -- lldpV2Xdot1RemProtocolTable : Protocol information of the remote
63 -- systems Re-indexed by ifIndex and destination MAC address
64 --
65
66 lldpV2Xdot1RemProtocolTable  OBJECT-TYPE
67     SYNTAX       SEQUENCE OF LldpV2Xdot1RemProtocolEntry
68     MAX-ACCESS  not-accessible
69     STATUS       current
70     DESCRIPTION
71              "This table contains one or more rows per protocol
72              information about the remote system, received on
```

```
 1            the given port."
 2      ::= { lldpV2Xdot1RemoteData 4 }
 3
 4 lldpV2Xdot1RemProtocolEntry  OBJECT-TYPE
 5      SYNTAX      LldpV2Xdot1RemProtocolEntry
 6      MAX-ACCESS  not-accessible
 7      STATUS      current
 8      DESCRIPTION
 9            "Protocol information about a particular port component.
10            There may be multiple protocols, identified by a particular
11            lldpV2Xdot1ProtocolIndex, received on the given port."
12      INDEX   { lldpV2RemTimeMark,
13               lldpV2RemLocalIfIndex,
14               lldpV2RemLocalDestMACAddress,
15               lldpV2RemIndex,
16               lldpV2Xdot1RemProtocolIndex }
17      ::= { lldpV2Xdot1RemProtocolTable 1 }
18
19 LldpV2Xdot1RemProtocolEntry ::= SEQUENCE {
20            lldpV2Xdot1RemProtocolIndex     Unsigned32,
21            lldpV2Xdot1RemProtocolId        OCTET STRING
22 }
23
24 lldpV2Xdot1RemProtocolIndex  OBJECT-TYPE
25      SYNTAX      Unsigned32(1..2147483647)
26      MAX-ACCESS  not-accessible
27      STATUS      current
28      DESCRIPTION
29            "This object represents an arbitrary local integer value
30            used by this agent to identify a particular protocol
31            identity."
32      ::= { lldpV2Xdot1RemProtocolEntry 1 }
33
34 lldpV2Xdot1RemProtocolId  OBJECT-TYPE
35      SYNTAX      OCTET STRING (SIZE (1..255))
36      MAX-ACCESS  read-only
37      STATUS      current
38      DESCRIPTION
39            "The octet string value used to identify the protocols
40            associated with the given port of remote system."
41      REFERENCE
42            "D.2.4.3"
43      ::= { lldpV2Xdot1RemProtocolEntry 2 }
44
45
46
47 --
48 -- lldpV2Xdot1RemVidUsageDigestTable: Table of hash values of
49 -- system VID Usage Table received
50 -- via VID Usage Digest TLV.
51 -- This version replaced by a reindexed version (V2).
52 --
53
54
55 lldpV2Xdot1RemVidUsageDigestTable  OBJECT-TYPE
56      SYNTAX      SEQUENCE OF LldpV2Xdot1RemVidUsageDigestEntry
57      MAX-ACCESS  not-accessible
58      STATUS      deprecated
59      DESCRIPTION
60            "This table contains one row per ifIndex/
61            destination MAC address pair for usage digest
62            information received by the local system."
63      REFERENCE
64            "D.2.5"
65      ::= { lldpV2Xdot1RemoteData 5 }
66
67 lldpV2Xdot1RemVidUsageDigestEntry  OBJECT-TYPE
68      SYNTAX      LldpV2Xdot1RemVidUsageDigestEntry
69      MAX-ACCESS  not-accessible
70      STATUS      deprecated
71      DESCRIPTION
72            "Usage digest information received on
```

```
1              the given port/destination address pair."
2     REFERENCE
3             "D.2.5"
4     INDEX   { lldpV2RemTimeMark,
5                lldpV2RemLocalIfIndex,
6                lldpV2RemLocalDestMACAddress }
7     ::= { lldpV2Xdot1RemVidUsageDigestTable 1 }
8
9 LldpV2Xdot1RemVidUsageDigestEntry ::= SEQUENCE {
10     lldpV2Xdot1RemVidUsageDigest  Unsigned32
11 }
12
13
14 lldpV2Xdot1RemVidUsageDigest OBJECT-TYPE
15     SYNTAX Unsigned32
16     MAX-ACCESS read-only
17     STATUS deprecated
18     DESCRIPTION
19         "The integer value obtained by applying the CRC32 function
20         to the 128-octet VID Usage Table. A bit of the VID Usage
21         Table contains the value PBB-TE-USAGE (binary 1) if the
22         corresponding element of the MST Configuration Table
23         (IEEE Std 802.1Q 8.9.1) contains the value PBB-TE MSTID
24         (hex FFE)and otherwise contains the value NON-PBB-TE-USAGE
25         (binary 0)."
26     REFERENCE
27         "D.2.5.1"
28 ::= { lldpV2Xdot1RemVidUsageDigestEntry 1 }
29
30 --
31 -- lldpV2Xdot1RemManVidTable: Table of values configured on remote
32 -- systems for the Management VID, or the value 0 if a Management
33 -- VID has not been provisioned.
34 -- This version replaced by a reindexed version (V2).
35 --
36
37
38 lldpV2Xdot1RemManVidTable  OBJECT-TYPE
39     SYNTAX      SEQUENCE OF LldpV2Xdot1RemManVidEntry
40     MAX-ACCESS  not-accessible
41     STATUS      deprecated
42     DESCRIPTION
43             "This table contains one row per ifIndex/
44             destination MAC address pair for management VID
45             information received from remote systems."
46     REFERENCE
47             "D.2.6"
48     ::= { lldpV2Xdot1RemoteData 6 }
49
50 lldpV2Xdot1RemManVidEntry  OBJECT-TYPE
51     SYNTAX      LldpV2Xdot1RemManVidEntry
52     MAX-ACCESS  not-accessible
53     STATUS      deprecated
54     DESCRIPTION
55             "Management VID information received
56             through the given port/destination address pair."
57     REFERENCE
58             "D.2.6"
59     INDEX   { lldpV2RemTimeMark,
60                lldpV2RemLocalIfIndex,
61                lldpV2RemLocalDestMACAddress }
62     ::= { lldpV2Xdot1RemManVidTable 1 }
63
64 LldpV2Xdot1RemManVidEntry ::= SEQUENCE {
65     lldpV2Xdot1RemManVid           Unsigned32
66 }
67
68 lldpV2Xdot1RemManVid OBJECT-TYPE
69     SYNTAX Unsigned32 (0|1..4094)
70     MAX-ACCESS read-only
71     STATUS deprecated
72     DESCRIPTION
```

```
 1          "The integer value configured on a system for
 2          the Management VID, or
 3          the value 0 if a Management VID has not been provisioned."
 4      REFERENCE
 5          "D.2.6.1"
 6 ::= { lldpV2Xdot1RemManVidEntry 1 }
 7
 8
 9
10 --
11 -- lldpV2Xdot1RemVidUsageDigestV2Table: Table of hash values of
12 -- system VID Usage Table received
13 -- via VID Usage Digest TLV.
14 --
15
16
17 lldpV2Xdot1RemVidUsageDigestV2Table  OBJECT-TYPE
18     SYNTAX      SEQUENCE OF LldpV2Xdot1RemVidUsageDigestV2Entry
19     MAX-ACCESS  not-accessible
20     STATUS      current
21     DESCRIPTION
22             "This table contains one row per ifIndex/
23             destination MAC address pair for usage digest
24             information received by the local system."
25     REFERENCE
26             "D.2.5"
27     ::= { lldpV2Xdot1RemoteData 8 }
28
29 lldpV2Xdot1RemVidUsageDigestV2Entry  OBJECT-TYPE
30     SYNTAX      LldpV2Xdot1RemVidUsageDigestV2Entry
31     MAX-ACCESS  not-accessible
32     STATUS      current
33     DESCRIPTION
34             "Usage digest information received on
35             the given port/destination address pair."
36     REFERENCE
37             "D.2.5"
38     INDEX   { lldpV2RemTimeMark,
39               lldpV2RemLocalIfIndex,
40               lldpV2RemLocalDestMACAddress,
41               lldpV2RemIndex }
42     ::= { lldpV2Xdot1RemVidUsageDigestV2Table 1 }
43
44 LldpV2Xdot1RemVidUsageDigestV2Entry ::= SEQUENCE {
45     lldpV2Xdot1RemVidUsageDigestV2  Unsigned32
46 }
47
48
49 lldpV2Xdot1RemVidUsageDigestV2 OBJECT-TYPE
50     SYNTAX Unsigned32
51     MAX-ACCESS read-only
52     STATUS current
53     DESCRIPTION
54         "The integer value obtained by applying the CRC32 function
55         to the 128-octet VID Usage Table. A bit of the VID Usage
56         Table contains the value PBB-TE-USAGE (binary 1) if the
57         corresponding element of the MST Configuration Table
58         (IEEE Std 802.1Q 8.9.1) contains the value PBB-TE MSTID
59         (hex FFE)and otherwise contains the value NON-PBB-TE-USAGE
60         (binary 0)."
61     REFERENCE
62         "D.2.5.1"
63 ::= { lldpV2Xdot1RemVidUsageDigestV2Entry 1 }
64
65
66 --
67 -- lldpV2Xdot1RemManVidV2Table: Table of values configured on remote
68 -- systems for the Management VID, or the value 0 if a Management
69 -- VID has not been provisioned.
70 --
71
72 lldpV2Xdot1RemManVidV2Table  OBJECT-TYPE
```

```
1     SYNTAX       SEQUENCE OF LldpV2Xdot1RemManVidV2Entry
2     MAX-ACCESS   not-accessible
3     STATUS       current
4     DESCRIPTION
5             "This table contains one row per ifIndex/
6             destination MAC address pair for management VID
7             information received from remote systems."
8     REFERENCE
9             "D.2.6"
10    ::= { lldpV2Xdot1RemoteData 9 }
11
12 lldpV2Xdot1RemManVidV2Entry  OBJECT-TYPE
13    SYNTAX       LldpV2Xdot1RemManVidV2Entry
14    MAX-ACCESS   not-accessible
15    STATUS       current
16    DESCRIPTION
17            "Management VID information received
18            through the given port/destination address pair."
19    REFERENCE
20            "D.2.6"
21    INDEX   { lldpV2RemTimeMark,
22              lldpV2RemLocalIfIndex,
23              lldpV2RemLocalDestMACAddress,
24              lldpV2RemIndex }
25    ::= { lldpV2Xdot1RemManVidV2Table 1 }
26
27 LldpV2Xdot1RemManVidV2Entry ::= SEQUENCE {
28     lldpV2Xdot1RemManVidV2           Unsigned32
29 }
30
31 lldpV2Xdot1RemManVidV2 OBJECT-TYPE
32    SYNTAX Unsigned32 (0|1..4094)
33    MAX-ACCESS read-only
34    STATUS current
35    DESCRIPTION
36        "The integer value configured on a system for
37        the Management VID, or
38        the value 0 if a Management VID has not been provisioned."
39    REFERENCE
40        "D.2.6.1"
41 ::= { lldpV2Xdot1RemManVidV2Entry 1 }
42
43
44
45 ----------------------------------------------------------------------
46 -- Remote System Information - Link Aggregation
47 ----------------------------------------------------------------------
48
49 ---
50 ---
51 --- lldpV2Xdot1RemLinkAggTable: Link Aggregation Information Table
52 ---
53 ---
54 lldpV2Xdot1RemLinkAggTable OBJECT-TYPE
55    SYNTAX       SEQUENCE OF LldpV2Xdot1RemLinkAggEntry
56    MAX-ACCESS   not-accessible
57    STATUS       current
58    DESCRIPTION
59            "This table contains port link aggregation information
60            (as a part of the LLDP IEEE 802.1 organizational extension)
61            of the remote system."
62    ::= { lldpV2Xdot1RemoteData 7 }
63
64 lldpV2Xdot1RemLinkAggEntry OBJECT-TYPE
65    SYNTAX       LldpV2Xdot1RemLinkAggEntry
66    MAX-ACCESS   not-accessible
67    STATUS       current
68    DESCRIPTION
69            "Link Aggregation information about remote system's port
70            component."
71    INDEX   { lldpV2RemTimeMark,
72              lldpV2RemLocalIfIndex,
```

```
 1              lldpV2RemLocalDestMACAddress,
 2              lldpV2RemIndex }
 3     ::= { lldpV2Xdot1RemLinkAggTable 1 }
 4
 5 LldpV2Xdot1RemLinkAggEntry ::= SEQUENCE {
 6              lldpV2Xdot1RemLinkAggStatus        LldpV2XLinkAggStatusMap,
 7              lldpV2Xdot1RemLinkAggPortId        Unsigned32
 8 }
 9
10 lldpV2Xdot1RemLinkAggStatus OBJECT-TYPE
11     SYNTAX      LldpV2XLinkAggStatusMap
12     MAX-ACCESS  read-only
13     STATUS      current
14     DESCRIPTION
15             "The bitmap value contains the link aggregation capabilities
16             and the current aggregation status of the link."
17     REFERENCE
18             "IEEE Std 802.1AX"
19     ::= { lldpV2Xdot1RemLinkAggEntry 1 }
20
21 lldpV2Xdot1RemLinkAggPortId OBJECT-TYPE
22     SYNTAX      Unsigned32(0|1..2147483647)
23     MAX-ACCESS  read-only
24     STATUS      current
25     DESCRIPTION
26             "This object contains the IEEE 802.1 aggregated port
27             identifier, aAggPortID (IEEE Std 802.1AX, 6.3.2.1.1),
28             derived from the ifNumber of the  ifIndex for the port
29             component associated with the remote system.
30
31             If the remote port is not in link aggregation state and/or
32             it does not support link aggregation, this value should be
33             zero."
34     REFERENCE
35             "IEEE Std 802.1AX"
36     ::= { lldpV2Xdot1RemLinkAggEntry 2 }
37
38
39 ----------------------------------------------------------------------
40 -- Conformance Information for the basicSet TLV set
41 ----------------------------------------------------------------------
42
43 lldpV2Xdot1Conformance
44     OBJECT IDENTIFIER ::= { lldpV2Xdot1MIB 2 }
45 lldpV2Xdot1Compliances
46     OBJECT IDENTIFIER ::= { lldpV2Xdot1Conformance 1 }
47 lldpV2Xdot1Groups
48     OBJECT IDENTIFIER ::= { lldpV2Xdot1Conformance 2 }
49
50 -- compliance statements
51
52
53 lldpV2Xdot1TxRxCompliance MODULE-COMPLIANCE
54     STATUS  current
55     DESCRIPTION
56             "A compliance statement for SNMP entities that implement
57             the IEEE 802.1 organizationally defined LLDP extension MIB.
58
59             This group is mandatory for all agents that implement the
60             LLDP 802.1 organizational extension in TX and/or RX mode
61             for the basicSet TLV set.
62
63             This version defines compliance requirements for
64             V2 of the LLDP MIB."
65     MODULE  -- this module
66         MANDATORY-GROUPS { lldpV2Xdot1ConfigGroup,
67                            ifGeneralInformationGroup
68         }
69     ::= { lldpV2Xdot1Compliances 1 }
70
71
72 lldpV2Xdot1TxCompliance MODULE-COMPLIANCE
```

```
1    STATUS  current
2    DESCRIPTION
3            "A compliance statement for SNMP entities that implement
4            the IEEE 802.1 organizationally defined LLDP extension MIB.
5
6            This group is mandatory for agents that implement the
7            LLDP 802.1 organizational extension in the RX mode
8            for the basicSet TLV set.
9
10           This version defines compliance requirements for
11           V2 of the LLDP MIB."
12   MODULE  -- this module
13       MANDATORY-GROUPS { lldpV2Xdot1LocSysGroup }
14
15   ::= { lldpV2Xdot1Compliances 2 }
16
17 lldpV2Xdot1RxCompliance MODULE-COMPLIANCE
18   STATUS  deprecated
19   DESCRIPTION
20           "A compliance statement for SNMP entities that implement
21           the IEEE 802.1 organizationally defined LLDP extension MIB.
22
23           This group is mandatory for agents that implement the
24           LLDP 802.1 organizational extension in the RX mode
25           for the basicSet TLV set.
26
27           This version defines compliance requirements for
28           V2 of the LLDP MIB."
29   MODULE  -- this module
30       MANDATORY-GROUPS { lldpV2Xdot1RemSysGroup }
31
32   ::= { lldpV2Xdot1Compliances 3 }
33
34 lldpV2Xdot1RxComplianceV2 MODULE-COMPLIANCE
35   STATUS   current
36   DESCRIPTION
37           "A compliance statement for SNMP entities that implement
38           the IEEE 802.1 organizationally defined LLDP extension MIB.
39
40           This group is mandatory for agents that implement the
41           LLDP 802.1 organizational extension in the RX mode
42           for the basicSet TLV set.
43
44           This version defines compliance requirements for
45           V2 of the LLDP MIB."
46   MODULE  -- this module
47       MANDATORY-GROUPS { lldpV2Xdot1RemSysV2Group }
48
49   ::= { lldpV2Xdot1Compliances 4 }
50
51
52 -- MIB groupings for the basicSet TLV set
53
54 lldpV2Xdot1ConfigGroup    OBJECT-GROUP
55   OBJECTS {
56       lldpV2Xdot1ConfigPortVlanTxEnable,
57       lldpV2Xdot1ConfigVlanNameTxEnable,
58       lldpV2Xdot1ConfigProtoVlanTxEnable,
59       lldpV2Xdot1ConfigProtocolTxEnable,
60       lldpV2Xdot1ConfigVidUsageDigestTxEnable,
61       lldpV2Xdot1ConfigManVidTxEnable
62   }
63   STATUS  current
64   DESCRIPTION
65           "The collection of objects which are used to configure the
66           IEEE 802.1 organizationally defined LLDP extension
67           implementation behavior for the basicSet TLV set."
68   ::= { lldpV2Xdot1Groups 1 }
69
70 lldpV2Xdot1LocSysGroup  OBJECT-GROUP
71   OBJECTS {
72       lldpV2Xdot1LocPortVlanId,
```

```
1           lldpV2Xdot1LocProtoVlanSupported,
2           lldpV2Xdot1LocProtoVlanEnabled,
3           lldpV2Xdot1LocVlanName,
4           lldpV2Xdot1LocProtocolId,
5           lldpV2Xdot1LocVidUsageDigest,
6           lldpV2Xdot1LocManVid,
7           lldpV2Xdot1LocLinkAggStatus,
8           lldpV2Xdot1LocLinkAggPortId
9       }
10      STATUS  current
11      DESCRIPTION
12              "The collection of objects which are used to represent
13              IEEE 802.1 organizationally defined LLDP extension
14              associated with the Local Device Information for the
15              basicSet TLV set."
16      ::= { lldpV2Xdot1Groups 2 }
17
18 lldpV2Xdot1RemSysGroup  OBJECT-GROUP
19      OBJECTS {
20          lldpV2Xdot1RemPortVlanId,
21          lldpV2Xdot1RemProtoVlanSupported,
22          lldpV2Xdot1RemProtoVlanEnabled,
23          lldpV2Xdot1RemVlanName,
24          lldpV2Xdot1RemProtocolId,
25          lldpV2Xdot1RemVidUsageDigest,
26          lldpV2Xdot1RemManVid,
27          lldpV2Xdot1RemLinkAggStatus,
28          lldpV2Xdot1RemLinkAggPortId
29      }
30      STATUS  deprecated
31      DESCRIPTION
32              "The collection of objects which are used to represent LLDP
33              802.1 organizational extension Remote Device Information
34              for the basicSet TLV set."
35      ::= { lldpV2Xdot1Groups 3 }
36
37 lldpV2Xdot1RemSysV2Group  OBJECT-GROUP
38      OBJECTS {
39          lldpV2Xdot1RemPortVlanId,
40          lldpV2Xdot1RemProtoVlanSupported,
41          lldpV2Xdot1RemProtoVlanEnabled,
42          lldpV2Xdot1RemVlanName,
43          lldpV2Xdot1RemProtocolId,
44          lldpV2Xdot1RemVidUsageDigestV2,
45          lldpV2Xdot1RemManVidV2,
46          lldpV2Xdot1RemLinkAggStatus,
47          lldpV2Xdot1RemLinkAggPortId
48      }
49      STATUS  current
50      DESCRIPTION
51              "The collection of objects which are used to represent LLDP
52              802.1 organizational extension Remote Device Information
53              for the basicSet TLV set."
54      ::= { lldpV2Xdot1Groups 4 }
55
56 -------------------------------------------------------------------------
57 -------------------------------------------------------------------------
58 --
59 -- Organizationally Defined Information Extension - IEEE 802.1
60 -- Definitions to support the cnSet TLV set (Table D-1)
61 -- for Congestion Notification
62 --
63 -------------------------------------------------------------------------
64 -------------------------------------------------------------------------
65
66 lldpXdot1CnMIB OBJECT IDENTIFIER ::= { lldpV2Xdot1MIB 3 }
67 lldpXdot1CnObjects OBJECT IDENTIFIER ::= { lldpXdot1CnMIB 1 }
68
69 -- CN 802.1 MIB Extension groups
70
71 lldpXdot1CnConfig OBJECT IDENTIFIER ::= { lldpXdot1CnObjects 1 }
72 lldpXdot1CnLocalData OBJECT IDENTIFIER ::= { lldpXdot1CnObjects 2 }
```

```
 1 lldpXdot1CnRemoteData OBJECT IDENTIFIER ::= { lldpXdot1CnObjects 3 }
 2
 3 -------------------------------------------------------------------
 4 -- Textual conventions for Congestion Notification
 5 -------------------------------------------------------------------
 6
 7 LldpV2CnBitVector ::= TEXTUAL-CONVENTION
 8     STATUS       current
 9     DESCRIPTION
10             "This TC describes a bit vector used in the Congestion
11             Notification objects. Each bit represents a Boolean status
12             associated with a priority code point. A bit value of 0
13             represents FALSE, 1 represents TRUE.
14
15             The bit 'pri0status(0)' indicates the status for priority 0
16             The bit 'pri1status(1)' indicates the status for priority 1
17             The bit 'pri2status(2)' indicates the status for priority 2
18             The bit 'pri3status(3)' indicates the status for priority 3
19             The bit 'pri4status(4)' indicates the status for priority 4
20             The bit 'pri5status(5)' indicates the status for priority 5
21             The bit 'pri6status(6)' indicates the status for priority 6
22             The bit 'pri7status(7)' indicates the status for priority 7"
23
24     SYNTAX  BITS {
25             pri0status(0),
26             pri1status(1),
27             pri2status(2),
28             pri3status(3),
29             pri4status(4),
30             pri5status(5),
31             pri6status(6),
32             pri7status(7)
33     }
34
35 -------------------------------------------------------------------
36 -- IEEE 802.1 - Congestion Notification Configuration
37 -------------------------------------------------------------------
38
39 --
40 --  lldpXdot1CnConfigCnTable : configure the
41 --  transmission of the Congestion Notification TLV on a set of ports
42 --
43
44 lldpXdot1CnConfigCnTable OBJECT-TYPE
45     SYNTAX        SEQUENCE OF LldpXdot1CnConfigCnEntry
46     MAX-ACCESS    not-accessible
47     STATUS        current
48     DESCRIPTION
49         "A table that controls selection of Congestion Notification
50          TLVs to be transmitted on individual ports."
51     ::= { lldpXdot1CnConfig 1 }
52
53 lldpXdot1CnConfigCnEntry OBJECT-TYPE
54     SYNTAX        LldpXdot1CnConfigCnEntry
55     MAX-ACCESS    not-accessible
56     STATUS        current
57     DESCRIPTION
58         "LLDP configuration information that controls the
59         transmission of IEEE 802.1 organizationally defined
60         Congestion Notification TLV on LLDP transmission-capable ports.
61
62         This configuration object augments the lldpV2PortConfigEntry of
63         the LLDP-MIB, therefore it is only present along with the port
64         configuration defined by the associated lldpV2PortConfigEntry
65         entry.
66
67         Each active lldpConfigEntry is restored from non-volatile
68         storage (along with the corresponding lldpV2PortConfigEntry)
69         after a re-initialization of the management system."
70     AUGMENTS      { lldpV2PortConfigEntry }
71     ::= { lldpXdot1CnConfigCnTable 1 }
72
```

```
 1 LldpXdot1CnConfigCnEntry ::= SEQUENCE {
 2     lldpXdot1CnConfigCnTxEnable TruthValue
 3 }
 4
 5 lldpXdot1CnConfigCnTxEnable OBJECT-TYPE
 6     SYNTAX        TruthValue
 7     MAX-ACCESS    read-write
 8     STATUS        current
 9     DESCRIPTION
10         "The lldpXdot1CnConfigCnTxEnable, which is
11         defined as a truth value and configured by the network
12         management, determines whether the IEEE 802.1 organizationally
13         defined Congestion Notification TLV transmission is allowed
14         on a given LLDP transmission-capable port.
15
16         The value of this object is restored from non-volatile
17         storage after a re-initialization of the management system."
18     REFERENCE
19         "D.2.7"
20     DEFVAL        { false }
21     ::= { lldpXdot1CnConfigCnEntry 1 }
22
23 ----------------------------------------------------------------------
24 -- IEEE 802.1 - Congestion Notification Local System Information
25 ----------------------------------------------------------------------
26
27 ---
28 ---
29 --- lldpV2Xdot1LocCnTable: Port Extension Information Table
30 ---
31 ---
32 lldpV2Xdot1LocCnTable OBJECT-TYPE
33     SYNTAX        SEQUENCE OF LldpV2Xdot1LocCnEntry
34     MAX-ACCESS    not-accessible
35     STATUS        current
36     DESCRIPTION
37             "This table contains one row per port of Congestion
38             Notification information (as a part of the LLDP
39             802.1 organizational extension) on the local system
40             known to this agent."
41     ::= { lldpXdot1CnLocalData 1 }
42
43 lldpV2Xdot1LocCnEntry OBJECT-TYPE
44     SYNTAX        LldpV2Xdot1LocCnEntry
45     MAX-ACCESS    not-accessible
46     STATUS        current
47     DESCRIPTION
48             "Congestion Notification information about a
49             particular port component."
50     INDEX    { lldpV2LocPortIfIndex }
51     ::= { lldpV2Xdot1LocCnTable 1 }
52
53 LldpV2Xdot1LocCnEntry ::= SEQUENCE {
54     lldpV2Xdot1LocCNPVIndicators    LldpV2CnBitVector,
55     lldpV2Xdot1LocReadyIndicators   LldpV2CnBitVector
56 }
57
58 lldpV2Xdot1LocCNPVIndicators OBJECT-TYPE
59     SYNTAX        LldpV2CnBitVector
60     MAX-ACCESS    read-only
61     STATUS        current
62     DESCRIPTION
63             "This object contains the CNPV indicators
64             for the Port."
65     REFERENCE
66             "D.2.7.3"
67     ::= { lldpV2Xdot1LocCnEntry 1 }
68
69 lldpV2Xdot1LocReadyIndicators OBJECT-TYPE
70     SYNTAX        LldpV2CnBitVector
71     MAX-ACCESS    read-only
72     STATUS        current
```

```
 1      DESCRIPTION
 2              "This object contains the Ready indicators
 3              for the Port."
 4      REFERENCE
 5              "D.2.7.4"
 6      ::= { lldpV2Xdot1LocCnEntry 2 }
 7
 8  ------------------------------------------------------------------------
 9  -- IEEE 802.1 - Congestion Notification Remote System Information
10  ------------------------------------------------------------------------
11
12  ---
13  ---
14  --- lldpV2Xdot1RemCnTable: Port Extension Information Table
15  ---
16  ---
17  lldpV2Xdot1RemCnTable OBJECT-TYPE
18      SYNTAX      SEQUENCE OF LldpV2Xdot1RemCnEntry
19      MAX-ACCESS  not-accessible
20      STATUS      current
21      DESCRIPTION
22              "This table contains Congestion Notification information
23              (as a part of the LLDP IEEE 802.1 organizational extension)
24              of the remote system."
25      ::= { lldpXdot1CnRemoteData 1 }
26
27  lldpV2Xdot1RemCnEntry OBJECT-TYPE
28      SYNTAX      LldpV2Xdot1RemCnEntry
29      MAX-ACCESS  not-accessible
30      STATUS      current
31      DESCRIPTION
32              "Port Extension information about remote systems port
33              component."
34      INDEX   { lldpV2RemTimeMark,
35                lldpV2RemLocalIfIndex,
36                lldpV2RemLocalDestMACAddress,
37                lldpV2RemIndex }
38      ::= { lldpV2Xdot1RemCnTable 1 }
39
40  LldpV2Xdot1RemCnEntry ::= SEQUENCE {
41      lldpV2Xdot1RemCNPVIndicators    LldpV2CnBitVector,
42      lldpV2Xdot1RemReadyIndicators   LldpV2CnBitVector
43  }
44
45  lldpV2Xdot1RemCNPVIndicators OBJECT-TYPE
46      SYNTAX      LldpV2CnBitVector
47      MAX-ACCESS  read-only
48      STATUS      current
49      DESCRIPTION
50              "This object contains the CNPV indicators
51              for the Port."
52      REFERENCE
53              "D.2.7.3"
54      ::= { lldpV2Xdot1RemCnEntry 1 }
55
56  lldpV2Xdot1RemReadyIndicators OBJECT-TYPE
57      SYNTAX      LldpV2CnBitVector
58      MAX-ACCESS  read-only
59      STATUS      current
60      DESCRIPTION
61              "This object contains the Ready indicators
62              for the Port."
63      REFERENCE
64              "D.2.7.4"
65      ::= { lldpV2Xdot1RemCnEntry 2 }
66
67  ------------------------------------------------------------------------
68  -- IEEE 802.1 - Congestion Notification Conformance Information
69  ------------------------------------------------------------------------
70
71  lldpXdot1CnConformance OBJECT IDENTIFIER ::= { lldpV2Xdot1MIB 4 }
72
```

```
 1 lldpXdot1CnCompliances
 2     OBJECT IDENTIFIER ::= { lldpXdot1CnConformance 1 }
 3 lldpXdot1CnGroups OBJECT IDENTIFIER ::= { lldpXdot1CnConformance 2 }
 4
 5 --
 6 -- Congestion Notification - Compliance Statements
 7 --
 8
 9 lldpXdot1CnCompliance MODULE-COMPLIANCE
10     STATUS          current
11     DESCRIPTION
12         "A compliance statement for SNMP entities that implement
13          the IEEE 802.1 organizationally defined Congestion
14          Notification LLDP extension MIB.
15
16          This group is mandatory for agents that implement the
17          Congestion Notification cnSet TLV set."
18     MODULE          -- this module
19         MANDATORY-GROUPS  { lldpXdot1CnGroup,
20                             ifGeneralInformationGroup }
21     ::= { lldpXdot1CnCompliances 1 }
22
23
24 --
25 -- Congestion Notification - MIB groupings
26 --
27
28 lldpXdot1CnGroup  OBJECT-GROUP
29     OBJECTS {
30         lldpXdot1CnConfigCnTxEnable,
31         lldpV2Xdot1LocCNPVIndicators,
32         lldpV2Xdot1LocReadyIndicators,
33         lldpV2Xdot1RemCNPVIndicators,
34         lldpV2Xdot1RemReadyIndicators
35     }
36     STATUS  current
37     DESCRIPTION
38         "The collection of objects that support the
39          Congestion Notification cnSet TLV set."
40     ::= { lldpXdot1CnGroups 1 }
41
42 ------------------------------------------------------------------------
43 ------------------------------------------------------------------------
44 --
45 -- Organizationally Defined Information Extension - IEEE 802.1
46 -- Definitions to support the Data Center eXchange Protocol
47 -- (DCBX) TLV set (Table D-1)
48 --
49 ------------------------------------------------------------------------
50 ------------------------------------------------------------------------
51 lldpXdot1dcbxMIB OBJECT IDENTIFIER ::= { lldpV2Xdot1MIB 5 }
52 lldpXdot1dcbxObjects      OBJECT IDENTIFIER ::= { lldpXdot1dcbxMIB 1 }
53
54 -- DCBX 802.1 MIB Extension groups
55
56 lldpXdot1dcbxConfig     OBJECT IDENTIFIER ::= { lldpXdot1dcbxObjects 1 }
57 lldpXdot1dcbxLocalData  OBJECT IDENTIFIER ::= { lldpXdot1dcbxObjects 2 }
58 lldpXdot1dcbxRemoteData OBJECT IDENTIFIER ::= { lldpXdot1dcbxObjects 3 }
59 lldpXdot1dcbxAdminData  OBJECT IDENTIFIER ::= { lldpXdot1dcbxObjects 4 }
60
61 ------------------------------------------------------------------
62 -- IEEE 802.1 - DCBX Textual Conventions
63 ------------------------------------------------------------------
64
65 LldpXdot1dcbxTrafficClassValue ::= TEXTUAL-CONVENTION
66     DISPLAY-HINT "d"
67     STATUS     current
68     DESCRIPTION
69         "Indicates a traffic class.  Values 0-7 correspond to
70          traffic classes."
71     SYNTAX    Unsigned32 (0..7)
72
```

```
 1 LldpXdot1dcbxTrafficClassBandwidthValue ::= TEXTUAL-CONVENTION
 2     DISPLAY-HINT "d"
 3     STATUS     current
 4     DESCRIPTION
 5         "Indicates the bandwidth in percent assigned to a
 6         traffic class."
 7     SYNTAX    Unsigned32 (0..100)
 8
 9 LldpXdot1dcbxAppSelector ::= TEXTUAL-CONVENTION
10     STATUS     current
11     DESCRIPTION
12         "Indicates the contents of a protocol object
13         1: EtherType
14         2: Well Known Port number over TCP, or SCTP
15         3: Well Known Port number over UDP, or DCCP
16         4: Well Known Port number over TCP, SCTP, UDP, and DCCP
17         5: Differentiated Services Code Point (DSCP) value. The
18             6 bit DSCP value is stored in the low order 6 bits of the
19             protocol object. The higher order bits are set to zero.
20             (See IETF RFC 2474 for the definition of the DSCP value.)"
21     SYNTAX INTEGER {
22         asEthertype(1),
23         asTCPPortNumber(2),
24         asUDPPortNumber(3),
25         asTCPUDPPortNumber(4),
26         asDSCPValue(5)
27     }
28
29  LldpXdot1dcbxAppProtocol ::= TEXTUAL-CONVENTION
30      DISPLAY-HINT "d"
31      STATUS          current
32      DESCRIPTION
33          "Contains the application protocol indicator the
34          type of which is specified by an object with
35          the syntax of
36          LldpXdot1dcbxAppSelector"
37      SYNTAX Unsigned32 (0..65535)
38
39 LldpXdot1dcbxSupportedCapacity ::= TEXTUAL-CONVENTION
40     DISPLAY-HINT "d"
41     STATUS     current
42     DESCRIPTION
43         "Indicates the supported capacity of a given feature,
44         for example, the number of traffic classes supported.
45         This TC is used for features that have a maximum
46         capacity of eight and a minimum of one."
47     SYNTAX Unsigned32 (1..8)
48
49 LldpXdot1dcbxTrafficSelectionAlgorithm ::= TEXTUAL-CONVENTION
50     STATUS     current
51     DESCRIPTION
52         "Indicates the Traffic Selection Algorithm
53         0: Strict Priority
54         1: Credit-based shaper
55         2: Enhanced transmission selection
56         3-254: Reserved for furture standardization
57         255: Vendor specific"
58     SYNTAX INTEGER {
59         tsaStrictPriority(0),
60         tsaCreditBasedShaper(1),
61         tsaEnhancedTransmission(2),
62         tsaVendorSpecific(255)
63     }
64
65 ------------------------------------------------------------------
66 -- IEEE 802.1 - DCBX Configuration
67 ------------------------------------------------------------------
68
69 --
70 -- lldpXdot1dcbxConfigETSConfigurationTable : configure the
71 -- transmission of the ETS Configuration TLV on a set of ports
72 --
```

```
 1
 2 lldpXdot1dcbxConfigETSConfigurationTable OBJECT-TYPE
 3     SYNTAX          SEQUENCE OF LldpXdot1dcbxConfigETSConfigurationEntry
 4     MAX-ACCESS      not-accessible
 5     STATUS          current
 6     DESCRIPTION
 7         "A table that controls selection of ETS Configuration
 8          TLVs to be transmitted on individual ports."
 9     ::= { lldpXdot1dcbxConfig 1 }
10
11 lldpXdot1dcbxConfigETSConfigurationEntry OBJECT-TYPE
12     SYNTAX          LldpXdot1dcbxConfigETSConfigurationEntry
13     MAX-ACCESS      not-accessible
14     STATUS          current
15     DESCRIPTION
16         "LLDP configuration information that controls the
17         transmission of IEEE 802.1 organizationally defined
18         ETS Configuration TLV on LLDP transmission-capable ports.
19
20         This configuration object augments the lldpV2PortConfigEntry of
21         the LLDP-MIB, therefore it is only present along with the port
22         configuration defined by the associated lldpV2PortConfigEntry
23         entry.
24
25         Each active lldpConfigEntry is restored from non-volatile
26         storage (along with the corresponding lldpV2PortConfigEntry)
27         after a re-initialization of the management system."
28     AUGMENTS        { lldpV2PortConfigEntry }
29     ::= { lldpXdot1dcbxConfigETSConfigurationTable 1 }
30
31 LldpXdot1dcbxConfigETSConfigurationEntry ::= SEQUENCE {
32     lldpXdot1dcbxConfigETSConfigurationTxEnable TruthValue
33 }
34
35 lldpXdot1dcbxConfigETSConfigurationTxEnable OBJECT-TYPE
36     SYNTAX          TruthValue
37     MAX-ACCESS      read-write
38     STATUS          current
39     DESCRIPTION
40         "The lldpXdot1dcbxConfigETSConfigurationTxEnable, which is
41         defined as a truth value and configured by the network
42         management, determines whether the IEEE 802.1 organizationally
43         defined ETS Configuration TLV transmission is allowed on a
44         given LLDP transmission-capable port.
45
46         The value of this object is restored from non-volatile
47         storage after a re-initialization of the management system."
48     REFERENCE
49         "D.2.8"
50     DEFVAL          { false }
51     ::= { lldpXdot1dcbxConfigETSConfigurationEntry 1 }
52
53 --
54 --  lldpXdot1dcbxConfigETSRecommendationTable : configure the
55 --  transmission of the ETS Recommendation TLV on a set of ports
56 --
57
58 lldpXdot1dcbxConfigETSRecommendationTable OBJECT-TYPE
59     SYNTAX          SEQUENCE OF LldpXdot1dcbxConfigETSRecommendationEntry
60     MAX-ACCESS      not-accessible
61     STATUS          current
62     DESCRIPTION
63         "A table that controls selection of ETS Recommendation
64         TLVs to be transmitted on individual ports."
65     ::= { lldpXdot1dcbxConfig 2 }
66
67 lldpXdot1dcbxConfigETSRecommendationEntry OBJECT-TYPE
68     SYNTAX          LldpXdot1dcbxConfigETSRecommendationEntry
69     MAX-ACCESS      not-accessible
70     STATUS          current
71     DESCRIPTION
72         "LLDP configuration information that controls the
```

```
 1          transmission of IEEE 802.1 organizationally defined
 2          ETS Recommendation 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      ::= { lldpXdot1dcbxConfigETSRecommendationTable 1 }
14
15 LldpXdot1dcbxConfigETSRecommendationEntry ::= SEQUENCE {
16      lldpXdot1dcbxConfigETSRecommendationTxEnable TruthValue
17 }
18
19 lldpXdot1dcbxConfigETSRecommendationTxEnable OBJECT-TYPE
20      SYNTAX        TruthValue
21      MAX-ACCESS    read-write
22      STATUS        current
23      DESCRIPTION
24          "The lldpXdot1dcbxConfigETSRecommendationTxEnable, which is
25          defined as a truth value and configured by the network
26          management, determines whether the IEEE 802.1 organizationally
27          defined ETS Recommendation TLV transmission is allowed on a
28          given LLDP transmission-capable port.
29
30          The value of this object is restored from non-volatile
31          storage after a re-initialization of the management system."
32      REFERENCE
33          "D.2.9"
34      DEFVAL        { false }
35      ::= { lldpXdot1dcbxConfigETSRecommendationEntry 1 }
36 --
37 -- lldpXdot1dcbxConfigPFCTable : configure the transmission of the
38 -- Priority-based Flow Control Configuration TLV on a set of ports
39 --
40
41 lldpXdot1dcbxConfigPFCTable OBJECT-TYPE
42      SYNTAX        SEQUENCE OF LldpXdot1dcbxConfigPFCEntry
43      MAX-ACCESS    not-accessible
44      STATUS        current
45      DESCRIPTION
46          "A table that controls selection of Priority-based
47          Flow Control Configuration TLVs to be transmitted on individual ports."
48      ::= { lldpXdot1dcbxConfig 3 }
49
50 lldpXdot1dcbxConfigPFCEntry OBJECT-TYPE
51      SYNTAX        LldpXdot1dcbxConfigPFCEntry
52      MAX-ACCESS    not-accessible
53      STATUS        current
54      DESCRIPTION
55          "LLDP configuration information that controls the
56          transmission of IEEE 802.1 organizationally defined
57          Priority-based Flow Control Configuration TLV on LLDP
58          transmission-capable ports.
59
60          This configuration object augments the lldpV2PortConfigEntry of
61          the LLDP-MIB, therefore it is only present along with the port
62          configuration defined by the associated lldpV2PortConfigEntry
63          entry.
64
65          Each active lldpConfigEntry is restored from non-volatile
66          storage (along with the corresponding lldpV2PortConfigEntry)
67          after a re-initialization of the management system."
68      AUGMENTS      { lldpV2PortConfigEntry }
69      ::= { lldpXdot1dcbxConfigPFCTable 1 }
70
71 LldpXdot1dcbxConfigPFCEntry ::= SEQUENCE {
72      lldpXdot1dcbxConfigPFCTxEnable TruthValue
```

```
 1 }
 2
 3 lldpXdot1dcbxConfigPFCTxEnable OBJECT-TYPE
 4     SYNTAX        TruthValue
 5     MAX-ACCESS    read-write
 6     STATUS        current
 7     DESCRIPTION
 8         "The lldpXdot1dcbxConfigPFCTxEnable, which is defined
 9         as a truth value and configured by the network management,
10         determines whether the IEEE 802.1 organizationally defined
11         Priority-based Flow Control Configuration TLV transmission is allowed on
12         a given LLDP transmission-capable port.
13
14         The value of this object is restored from non-volatile
15         storage after a re-initialization of the management system."
16     REFERENCE
17         "D.2.10"
18     DEFVAL        { false }
19     ::= { lldpXdot1dcbxConfigPFCEntry 1 }
20
21 --
22 --  lldpXdot1dcbxConfigApplicationPriorityTable : configure the
23 --  transmission of the Application Priority TLV on a set of ports
24 --
25
26 lldpXdot1dcbxConfigApplicationPriorityTable OBJECT-TYPE
27     SYNTAX        SEQUENCE OF
28         LldpXdot1dcbxConfigApplicationPriorityEntry
29     MAX-ACCESS    not-accessible
30     STATUS        current
31     DESCRIPTION
32         "A table that controls selection of Priority-based
33         Flow Control Configuration TLVs to be transmitted on individual ports."
34     ::= { lldpXdot1dcbxConfig 4 }
35
36 lldpXdot1dcbxConfigApplicationPriorityEntry OBJECT-TYPE
37     SYNTAX        LldpXdot1dcbxConfigApplicationPriorityEntry
38     MAX-ACCESS    not-accessible
39     STATUS        current
40     DESCRIPTION
41         "LLDP configuration information that controls the
42         transmission of IEEE 802.1 organizationally defined
43         Application Priority TLV on LLDP transmission-capable ports.
44
45         This configuration object augments the lldpV2PortConfigEntry of
46         the LLDP-MIB, therefore it is only present along with the port
47         configuration defined by the associated lldpV2PortConfigEntry
48         entry.
49
50         Each active lldpConfigEntry is restored from non-volatile
51         storage (along with the corresponding lldpV2PortConfigEntry)
52         after a re-initialization of the management system."
53     AUGMENTS      { lldpV2PortConfigEntry }
54     ::= { lldpXdot1dcbxConfigApplicationPriorityTable 1 }
55
56 LldpXdot1dcbxConfigApplicationPriorityEntry ::= SEQUENCE {
57     lldpXdot1dcbxConfigApplicationPriorityTxEnable TruthValue
58 }
59
60 lldpXdot1dcbxConfigApplicationPriorityTxEnable OBJECT-TYPE
61     SYNTAX        TruthValue
62     MAX-ACCESS    read-write
63     STATUS        current
64     DESCRIPTION
65         "The lldpXdot1dcbxConfigApplicationPriorityTxEnable, which
66         is defined as a truth value and configured by the network
67         management, determines whether the IEEE 802.1 organizationally
68         defined Application Priority TLV transmission is allowed on
69         a given LLDP transmission-capable port.
70
71         The value of this object is restored from non-volatile
72         storage after a re-initialization of the management system."
```

```
 1    REFERENCE
 2        "D.2.11"
 3    DEFVAL          { false }
 4    ::= { lldpXdot1dcbxConfigApplicationPriorityEntry 1 }
 5
 6 --
 7 --  lldpXdot1dcbxConfigApplicationVlanTable : configure the
 8 --  transmission of the Application VLAN TLV on a set of ports
 9 --
10
11 lldpXdot1dcbxConfigApplicationVlanTable OBJECT-TYPE
12    SYNTAX          SEQUENCE OF
13        LldpXdot1dcbxConfigApplicationVlanEntry
14    MAX-ACCESS    not-accessible
15    STATUS          current
16    DESCRIPTION
17        "A table that controls selection of Application VLAN
18        TLVs to be transmitted on individual ports."
19    ::= { lldpXdot1dcbxConfig 5 }
20
21 lldpXdot1dcbxConfigApplicationVlanEntry OBJECT-TYPE
22    SYNTAX          LldpXdot1dcbxConfigApplicationVlanEntry
23    MAX-ACCESS    not-accessible
24    STATUS          current
25    DESCRIPTION
26        "LLDP configuration information that controls the
27        transmission of IEEE 802.1 organizationally defined
28        Application VLAN TLV on LLDP transmission-capable ports.
29
30        This configuration object augments the lldpV2PortConfigEntry of
31        the LLDP-MIB, therefore it is only present along with the port
32        configuration defined by the associated lldpV2PortConfigEntry
33        entry.
34
35        Each active lldpConfigEntry is restored from non-volatile
36        storage (along with the corresponding lldpV2PortConfigEntry)
37        after a re-initialization of the management system."
38    AUGMENTS      { lldpV2PortConfigEntry }
39    ::= { lldpXdot1dcbxConfigApplicationVlanTable 1 }
40
41 LldpXdot1dcbxConfigApplicationVlanEntry ::= SEQUENCE {
42    lldpXdot1dcbxConfigApplicationVlanTxEnable TruthValue
43 }
44
45 lldpXdot1dcbxConfigApplicationVlanTxEnable OBJECT-TYPE
46    SYNTAX          TruthValue
47    MAX-ACCESS    read-write
48    STATUS          current
49    DESCRIPTION
50        "The lldpXdot1dcbxConfigApplicationVlanTxEnable, which
51        is defined as a truth value and configured by the network
52        management, determines whether the IEEE 802.1 organizationally
53        defined Application VLAN TLV transmission is allowed on
54        a given LLDP transmission-capable port.
55
56        The value of this object is restored from non-volatile
57        storage after a re-initialization of the management system."
58    REFERENCE
59        "D.2.14"
60    DEFVAL          { false }
61    ::= { lldpXdot1dcbxConfigApplicationVlanEntry 1 }
62
63 ------------------------------------------------------------------------
64 -- IEEE 802.1 - DCBX Local System Information
65 ------------------------------------------------------------------------
66
67 --
68 -- lldpXdot1dcbxLocETSConfigurationTable - Contains the information
69 -- for the ETS Configuration TLV.
70 --
71 lldpXdot1dcbxLocETSConfiguration OBJECT IDENTIFIER
72    ::= { lldpXdot1dcbxLocalData 1 }
```

```
1
2 lldpXdot1dcbxLocETSBasicConfigurationTable OBJECT-TYPE
3     SYNTAX         SEQUENCE OF LldpXdot1dcbxLocETSBasicConfigurationEntry
4     MAX-ACCESS     not-accessible
5     STATUS         current
6     DESCRIPTION
7         "This table contains one row per port for the IEEE 802.1
8         organizationally defined LLDP ETS Configuration TLV on
9         the local system known to this agent"
10    ::= { lldpXdot1dcbxLocETSConfiguration 1 }
11
12 lldpXdot1dcbxLocETSBasicConfigurationEntry OBJECT-TYPE
13    SYNTAX         LldpXdot1dcbxLocETSBasicConfigurationEntry
14    MAX-ACCESS     not-accessible
15    STATUS         current
16    DESCRIPTION
17        "Information about the IEEE 802.1 organizational defined
18        ETS Configuration TLV LLDP extension."
19    INDEX          { lldpV2LocPortIfIndex }
20    ::= { lldpXdot1dcbxLocETSBasicConfigurationTable 1 }
21
22 LldpXdot1dcbxLocETSBasicConfigurationEntry ::= SEQUENCE {
23    lldpXdot1dcbxLocETSConCreditBasedShaperSupport TruthValue,
24    lldpXdot1dcbxLocETSConTrafficClassesSupported
25        LldpXdot1dcbxSupportedCapacity,
26    lldpXdot1dcbxLocETSConWilling    TruthValue
27 }
28
29 lldpXdot1dcbxLocETSConCreditBasedShaperSupport OBJECT-TYPE
30    SYNTAX         TruthValue
31    MAX-ACCESS     read-only
32    STATUS         current
33    DESCRIPTION
34        "Indicates if the credit-based shaper Traffic Selection
35        Algorithm is supported on the local system."
36    REFERENCE
37        "D.2.8.4"
38    ::= { lldpXdot1dcbxLocETSBasicConfigurationEntry 1 }
39
40 lldpXdot1dcbxLocETSConTrafficClassesSupported OBJECT-TYPE
41    SYNTAX         LldpXdot1dcbxSupportedCapacity
42    MAX-ACCESS     read-only
43    STATUS         current
44    DESCRIPTION
45        "Indicates the number of traffic classes supported."
46    REFERENCE
47        "D.2.8.5"
48    ::= { lldpXdot1dcbxLocETSBasicConfigurationEntry 2 }
49
50 lldpXdot1dcbxLocETSConWilling OBJECT-TYPE
51    SYNTAX         TruthValue
52    MAX-ACCESS     read-only
53    STATUS         current
54    DESCRIPTION
55        "Indicates if the local system is willing to accept the
56        ETS configuration recommended by the remote system."
57    REFERENCE
58        "D.2.8.3"
59    ::= { lldpXdot1dcbxLocETSBasicConfigurationEntry 3 }
60
61 lldpXdot1dcbxLocETSConPriorityAssignmentTable OBJECT-TYPE
62    SYNTAX         SEQUENCE OF
63        LldpXdot1dcbxLocETSConPriorityAssignmentEntry
64    MAX-ACCESS     not-accessible
65    STATUS         current
66    DESCRIPTION
67        "This table contains one row per priority.  The entry in each
68        row indicates the traffic class to which the priority is
69        assigned."
70    ::= { lldpXdot1dcbxLocETSConfiguration 2 }
71
72 lldpXdot1dcbxLocETSConPriorityAssignmentEntry OBJECT-TYPE
```

```
 1     SYNTAX         LldpXdot1dcbxLocETSConPriorityAssignmentEntry
 2     MAX-ACCESS     not-accessible
 3     STATUS         current
 4     DESCRIPTION
 5         "Indicates a priority to traffic class assignment."
 6     INDEX          {
 7                 lldpV2LocPortIfIndex,
 8                 lldpXdot1dcbxLocETSConPriority
 9     }
10     ::= { lldpXdot1dcbxLocETSConPriorityAssignmentTable 1 }
11
12 LldpXdot1dcbxLocETSConPriorityAssignmentEntry ::= SEQUENCE {
13     lldpXdot1dcbxLocETSConPriority      IEEE8021PriorityValue,
14     lldpXdot1dcbxLocETSConPriTrafficClass
15         LldpXdot1dcbxTrafficClassValue
16 }
17
18 lldpXdot1dcbxLocETSConPriority OBJECT-TYPE
19     SYNTAX         IEEE8021PriorityValue
20     MAX-ACCESS     not-accessible
21     STATUS         current
22     DESCRIPTION
23         "Indicates the priority that is assigned to a traffic
24         class."
25     REFERENCE
26         "D.2.8.6"
27     ::= { lldpXdot1dcbxLocETSConPriorityAssignmentEntry 1 }
28
29 lldpXdot1dcbxLocETSConPriTrafficClass OBJECT-TYPE
30     SYNTAX         LldpXdot1dcbxTrafficClassValue
31     MAX-ACCESS     read-only
32     STATUS         current
33     DESCRIPTION
34         "Indicates the traffic class to which this priority is
35         to be assigned."
36     REFERENCE
37         "D.2.8.6"
38     ::= { lldpXdot1dcbxLocETSConPriorityAssignmentEntry 2 }
39
40 lldpXdot1dcbxLocETSConTrafficClassBandwidthTable OBJECT-TYPE
41     SYNTAX         SEQUENCE OF
42         LldpXdot1dcbxLocETSConTrafficClassBandwidthEntry
43     MAX-ACCESS     not-accessible
44     STATUS         current
45     DESCRIPTION
46         "This table contains one row per traffic class.  The
47         entry in each row indicates the traffic class to
48         which the bandwidth is assigned."
49     ::= { lldpXdot1dcbxLocETSConfiguration 3 }
50
51 lldpXdot1dcbxLocETSConTrafficClassBandwidthEntry OBJECT-TYPE
52     SYNTAX         LldpXdot1dcbxLocETSConTrafficClassBandwidthEntry
53     MAX-ACCESS     not-accessible
54     STATUS         current
55     DESCRIPTION
56         "Indicates a traffic class to Bandwidth assignment."
57     INDEX          {
58                 lldpV2LocPortIfIndex,
59                 lldpXdot1dcbxLocETSConTrafficClass
60     }
61     ::= { lldpXdot1dcbxLocETSConTrafficClassBandwidthTable 1 }
62
63 LldpXdot1dcbxLocETSConTrafficClassBandwidthEntry ::= SEQUENCE {
64     lldpXdot1dcbxLocETSConTrafficClass
65         LldpXdot1dcbxTrafficClassValue,
66     lldpXdot1dcbxLocETSConTrafficClassBandwidth
67         LldpXdot1dcbxTrafficClassBandwidthValue
68 }
69
70 lldpXdot1dcbxLocETSConTrafficClass OBJECT-TYPE
71     SYNTAX         LldpXdot1dcbxTrafficClassValue
72     MAX-ACCESS     not-accessible
```

```
1    STATUS         current
2    DESCRIPTION
3        "Indicates the traffic class to
4        which this bandwidth applies"
5    REFERENCE
6        "D.2.8.7"
7    ::= { lldpXdot1dcbxLocETSConTrafficClassBandwidthEntry 1 }
8
9 lldpXdot1dcbxLocETSConTrafficClassBandwidth OBJECT-TYPE
10   SYNTAX         LldpXdot1dcbxTrafficClassBandwidthValue
11   MAX-ACCESS     read-only
12   STATUS         current
13   DESCRIPTION
14       "Indicates the bandwidth assigned to this traffic class."
15   REFERENCE
16       "D.2.8.7"
17   ::= { lldpXdot1dcbxLocETSConTrafficClassBandwidthEntry 2 }
18
19
20 lldpXdot1dcbxLocETSConTrafficSelectionAlgorithmTable OBJECT-TYPE
21   SYNTAX         SEQUENCE OF
22       LldpXdot1dcbxLocETSConTrafficSelectionAlgorithmEntry
23   MAX-ACCESS     not-accessible
24   STATUS         current
25   DESCRIPTION
26       "This table contains one row per traffic class.  The entry
27       in each row indicates the traffic selction algorithm to be
28       used by the traffic class."
29   ::= { lldpXdot1dcbxLocETSConfiguration 4 }
30
31 lldpXdot1dcbxLocETSConTrafficSelectionAlgorithmEntry OBJECT-TYPE
32   SYNTAX         LldpXdot1dcbxLocETSConTrafficSelectionAlgorithmEntry
33   MAX-ACCESS     not-accessible
34   STATUS         current
35   DESCRIPTION
36       "Indicates a traffic class to traffic selection algorithm
37        assignment."
38   INDEX         {
39               lldpV2LocPortIfIndex,
40               lldpXdot1dcbxLocETSConTSATrafficClass
41   }
42   ::= { lldpXdot1dcbxLocETSConTrafficSelectionAlgorithmTable 1 }
43
44 LldpXdot1dcbxLocETSConTrafficSelectionAlgorithmEntry ::= SEQUENCE {
45   lldpXdot1dcbxLocETSConTSATrafficClass
46       LldpXdot1dcbxTrafficClassValue,
47   lldpXdot1dcbxLocETSConTrafficSelectionAlgorithm
48       LldpXdot1dcbxTrafficSelectionAlgorithm
49 }
50
51 lldpXdot1dcbxLocETSConTSATrafficClass OBJECT-TYPE
52   SYNTAX         LldpXdot1dcbxTrafficClassValue
53   MAX-ACCESS     not-accessible
54   STATUS         current
55   DESCRIPTION
56       "Indicates the traffic class that is assigned to a traffic
57       selection algorithm."
58   REFERENCE
59       "D.2.8.8"
60   ::= { lldpXdot1dcbxLocETSConTrafficSelectionAlgorithmEntry 1 }
61
62 lldpXdot1dcbxLocETSConTrafficSelectionAlgorithm OBJECT-TYPE
63   SYNTAX         LldpXdot1dcbxTrafficSelectionAlgorithm
64   MAX-ACCESS     read-only
65   STATUS         current
66   DESCRIPTION
67       "Indicates the Traffic Selection Algorithm to which this
68       traffic class is to be assigned."
69   REFERENCE
70       "D.2.8.8"
71   ::= { lldpXdot1dcbxLocETSConTrafficSelectionAlgorithmEntry 2 }
72
```

```
 1 --
 2 -- lldpXdot1dcbxLocETSRecommendationTable - Contains the information for
 3 -- the ETS Recommendation TLV.
 4 --
 5 lldpXdot1dcbxLocETSReco OBJECT IDENTIFIER ::=
 6   { lldpXdot1dcbxLocalData 2 }
 7
 8 lldpXdot1dcbxLocETSRecoTrafficClassBandwidthTable OBJECT-TYPE
 9     SYNTAX          SEQUENCE OF
10         LldpXdot1dcbxLocETSRecoTrafficClassBandwidthEntry
11     MAX-ACCESS   not-accessible
12     STATUS          current
13     DESCRIPTION
14         "This table contains one row per traffic class.  The
15         entry in each row indicates the traffic class to
16         which the bandwidth is assigned."
17     ::= { lldpXdot1dcbxLocETSReco 1 }
18
19 lldpXdot1dcbxLocETSRecoTrafficClassBandwidthEntry OBJECT-TYPE
20     SYNTAX          LldpXdot1dcbxLocETSRecoTrafficClassBandwidthEntry
21     MAX-ACCESS   not-accessible
22     STATUS          current
23     DESCRIPTION
24         "Indicates a traffic class to Bandwidth assignment."
25     INDEX           {
26                 lldpV2LocPortIfIndex,
27                 lldpXdot1dcbxLocETSRecoTrafficClass
28     }
29     ::= { lldpXdot1dcbxLocETSRecoTrafficClassBandwidthTable 1 }
30
31 LldpXdot1dcbxLocETSRecoTrafficClassBandwidthEntry ::= SEQUENCE {
32     lldpXdot1dcbxLocETSRecoTrafficClass
33         LldpXdot1dcbxTrafficClassValue,
34     lldpXdot1dcbxLocETSRecoTrafficClassBandwidth
35         LldpXdot1dcbxTrafficClassBandwidthValue
36 }
37
38 lldpXdot1dcbxLocETSRecoTrafficClass OBJECT-TYPE
39     SYNTAX          LldpXdot1dcbxTrafficClassValue
40     MAX-ACCESS   not-accessible
41     STATUS          current
42     DESCRIPTION
43         "Indicates the traffic class to
44         which this bandwidth applies"
45     REFERENCE
46         "D.2.9.3"
47     ::= { lldpXdot1dcbxLocETSRecoTrafficClassBandwidthEntry 1 }
48
49 lldpXdot1dcbxLocETSRecoTrafficClassBandwidth OBJECT-TYPE
50     SYNTAX          LldpXdot1dcbxTrafficClassBandwidthValue
51     MAX-ACCESS   read-only
52     STATUS          current
53     DESCRIPTION
54         "Indicates the bandwidth assigned to this traffic class."
55     REFERENCE
56         "D.2.9.4"
57     ::= { lldpXdot1dcbxLocETSRecoTrafficClassBandwidthEntry 2 }
58
59 lldpXdot1dcbxLocETSRecoTrafficSelectionAlgorithmTable OBJECT-TYPE
60     SYNTAX          SEQUENCE OF
61         LldpXdot1dcbxLocETSRecoTrafficSelectionAlgorithmEntry
62     MAX-ACCESS   not-accessible
63     STATUS          current
64     DESCRIPTION
65         "This table contains one row per priority.  The entry in each
66         row indicates the traffic selction algorithm to be used
67         by the traffic class."
68     ::= { lldpXdot1dcbxLocETSReco 2 }
69
70 lldpXdot1dcbxLocETSRecoTrafficSelectionAlgorithmEntry OBJECT-TYPE
71     SYNTAX          LldpXdot1dcbxLocETSRecoTrafficSelectionAlgorithmEntry
72     MAX-ACCESS   not-accessible
```

```
1     STATUS          current
2     DESCRIPTION
3         "Indicates a priority to traffic selection algorithm
4          assignment."
5     INDEX           {
6                 lldpV2LocPortIfIndex,
7                 lldpXdot1dcbxLocETSRecoTSATrafficClass
8     }
9     ::= { lldpXdot1dcbxLocETSRecoTrafficSelectionAlgorithmTable 1 }
10
11 LldpXdot1dcbxLocETSRecoTrafficSelectionAlgorithmEntry ::= SEQUENCE {
12    lldpXdot1dcbxLocETSRecoTSATrafficClass
13        LldpXdot1dcbxTrafficClassValue,
14    lldpXdot1dcbxLocETSRecoTrafficSelectionAlgorithm
15        LldpXdot1dcbxTrafficSelectionAlgorithm
16 }
17
18 lldpXdot1dcbxLocETSRecoTSATrafficClass OBJECT-TYPE
19    SYNTAX          LldpXdot1dcbxTrafficClassValue
20    MAX-ACCESS      not-accessible
21    STATUS          current
22    DESCRIPTION
23        "Indicates the traffic class that is assigned to a traffic
24        selection algorithm."
25    REFERENCE
26        "D.2.9.5"
27    ::= { lldpXdot1dcbxLocETSRecoTrafficSelectionAlgorithmEntry 1 }
28
29 lldpXdot1dcbxLocETSRecoTrafficSelectionAlgorithm OBJECT-TYPE
30    SYNTAX          LldpXdot1dcbxTrafficSelectionAlgorithm
31    MAX-ACCESS      read-only
32    STATUS          current
33    DESCRIPTION
34        "Indicates the Traffic Selection Algorithm to which this
35        traffic class is to be assigned."
36    REFERENCE
37        "D.2.9.5"
38    ::= { lldpXdot1dcbxLocETSRecoTrafficSelectionAlgorithmEntry 2 }
39
40 --
41 -- lldpXdot1dcbxLocPFCTable - Contains the information for the PFC
42 -- Configuration TLV.
43 --
44 lldpXdot1dcbxLocPFC OBJECT IDENTIFIER ::= { lldpXdot1dcbxLocalData 3 }
45
46 lldpXdot1dcbxLocPFCBasicTable OBJECT-TYPE
47    SYNTAX          SEQUENCE OF LldpXdot1dcbxLocPFCBasicEntry
48    MAX-ACCESS      not-accessible
49    STATUS          current
50    DESCRIPTION
51        "This table contains one row per port for the IEEE 802.1
52        organizationally defined LLDP PFC TLV on the local
53        system known to this agent"
54    ::= { lldpXdot1dcbxLocPFC 1 }
55
56 lldpXdot1dcbxLocPFCBasicEntry OBJECT-TYPE
57    SYNTAX          LldpXdot1dcbxLocPFCBasicEntry
58    MAX-ACCESS      not-accessible
59    STATUS          current
60    DESCRIPTION
61        "Information about the IEEE 802.1 organizational defined
62        PFC TLV LLDP extension."
63    INDEX           { lldpV2LocPortIfIndex }
64    ::= { lldpXdot1dcbxLocPFCBasicTable 1 }
65
66 <<Editor notes: PFC relevant part. >>
67
68 LldpXdot1dcbxLocPFCBasicEntry ::= SEQUENCE {
69    lldpXdot1dcbxLocPFCWilling     TruthValue,
70    lldpXdot1dcbxLocPFCMBC             TruthValue,
71    lldpXdot1dcbxLocPFCCap          LldpXdot1dcbxSupportedCapacity
```

```
 1 }
 2
 3 lldpXdot1dcbxLocPFCWilling OBJECT-TYPE
 4     SYNTAX         TruthValue
 5     MAX-ACCESS     read-only
 6     STATUS         current
 7     DESCRIPTION
 8         "Indicates if the local system is willing to accept the
 9         PFC configuration of the remote system."
10     REFERENCE
11         "D.2.10.3"
12     ::= { lldpXdot1dcbxLocPFCBasicEntry 1}
13
14 lldpXdot1dcbxLocPFCMBC OBJECT-TYPE
15     SYNTAX         TruthValue
16     MAX-ACCESS     read-only
17     STATUS         current
18     DESCRIPTION
19         "Indicates if the local system is capable of bypassing
20         MACsec processing when MACsec is disabled."
21     REFERENCE
22         "D.2.10.4"
23     ::= { lldpXdot1dcbxLocPFCBasicEntry 2}
24
25 lldpXdot1dcbxLocPFCCap OBJECT-TYPE
26     SYNTAX         LldpXdot1dcbxSupportedCapacity
27     MAX-ACCESS     read-only
28     STATUS         current
29     DESCRIPTION
30         "Indicates the number of traffic classes on the local device
31         that may simultaneously have PFC enabled."
32     REFERENCE
33         "D.2.10.5"
34     ::= { lldpXdot1dcbxLocPFCBasicEntry 3}
35
36 lldpXdot1dcbxLocPFCEnableTable OBJECT-TYPE
37     SYNTAX         SEQUENCE OF LldpXdot1dcbxLocPFCEnableEntry
38     MAX-ACCESS     not-accessible
39     STATUS         current
40     DESCRIPTION
41         "This table contains eight entries, one entry per priority,
42         indicating if PFC is enabled on the corresponding priority."
43     ::= { lldpXdot1dcbxLocPFC 2 }
44
45 lldpXdot1dcbxLocPFCEnableEntry OBJECT-TYPE
46     SYNTAX         LldpXdot1dcbxLocPFCEnableEntry
47     MAX-ACCESS     not-accessible
48     STATUS         current
49     DESCRIPTION
50         "Each entry indicates if PFC is enabled on the
51         correponding priority"
52     INDEX {
53         lldpV2LocPortIfIndex,
54         lldpXdot1dcbxLocPFCEnablePriority
55     }
56     ::= { lldpXdot1dcbxLocPFCEnableTable 1 }
57
58 LldpXdot1dcbxLocPFCEnableEntry ::= SEQUENCE {
59     lldpXdot1dcbxLocPFCEnablePriority   IEEE8021PriorityValue,
60     lldpXdot1dcbxLocPFCEnableEnabled    TruthValue
61 }
62
63 lldpXdot1dcbxLocPFCEnablePriority OBJECT-TYPE
64     SYNTAX         IEEE8021PriorityValue
65     MAX-ACCESS     not-accessible
66     STATUS         current
67     DESCRIPTION
68         "Prioity for which PFC is enabled / disabled"
69     ::= { lldpXdot1dcbxLocPFCEnableEntry 1 }
70
71 lldpXdot1dcbxLocPFCEnableEnabled OBJECT-TYPE
72     SYNTAX         TruthValue
```

```
 1    MAX-ACCESS    read-only
 2    STATUS        current
 3    DESCRIPTION
 4        "Indicates if PFC is enabled on the corresponding priority"
 5    REFERENCE
 6        "D.2.10.6"
 7    ::= { lldpXdot1dcbxLocPFCEnableEntry 2 }
 8 --
 9 -- lldpXdot1dcbxLocApplicationPriorityTable - Contains the information
10 -- for the Application Priority TLV.
11 --
12
13 lldpXdot1dcbxLocApplicationPriorityAppTable OBJECT-TYPE
14    SYNTAX        SEQUENCE OF
15        LldpXdot1dcbxLocApplicationPriorityAppEntry
16    MAX-ACCESS    not-accessible
17    STATUS        current
18    DESCRIPTION
19        "Table containing entries indicating the priorty to be used
20        for a given application"
21    ::= { lldpXdot1dcbxLocalData 4 }
22
23 lldpXdot1dcbxLocApplicationPriorityAppEntry OBJECT-TYPE
24    SYNTAX        LldpXdot1dcbxLocApplicationPriorityAppEntry
25    MAX-ACCESS    not-accessible
26    STATUS        current
27    DESCRIPTION
28        "Entry that indicates the priority to be used for a
29        given application."
30    INDEX         {
31              lldpV2LocPortIfIndex,
32              lldpXdot1dcbxLocApplicationPriorityAESelector,
33              lldpXdot1dcbxLocApplicationPriorityAEProtocol
34    }
35    ::= { lldpXdot1dcbxLocApplicationPriorityAppTable 1 }
36
37 LldpXdot1dcbxLocApplicationPriorityAppEntry ::= SEQUENCE {
38    lldpXdot1dcbxLocApplicationPriorityAESelector
39        LldpXdot1dcbxAppSelector,
40    lldpXdot1dcbxLocApplicationPriorityAEProtocol
41        LldpXdot1dcbxAppProtocol,
42    lldpXdot1dcbxLocApplicationPriorityAEPriority
43        IEEE8021PriorityValue
44 }
45
46 lldpXdot1dcbxLocApplicationPriorityAESelector OBJECT-TYPE
47    SYNTAX        LldpXdot1dcbxAppSelector
48    MAX-ACCESS    not-accessible
49    STATUS        current
50    DESCRIPTION
51        "Indicates the contents of the protocol object
52        (lldpXdot1dcbxLocApplicationPriorityAEProtocol)
53        1: EtherType
54        2: Well Known Port number over TCP, or SCTP
55        3: Well Known Port number over UDP, or DCCP
56        4: Well Known Port number over TCP, SCTP, UDP, and DCCP
57        5: Differentiated Services Code Point (DSCP) value. The
58           6 bit DSCP value is stored in the low order 6 bits of the
59           protocol object. The higher order bits are set to zero.
60           (See IETF RFC 2474 for the definition of the DSCP value.)"
61    REFERENCE
62        "D.2.11.3"
63    ::= { lldpXdot1dcbxLocApplicationPriorityAppEntry 1 }
64
65 lldpXdot1dcbxLocApplicationPriorityAEProtocol OBJECT-TYPE
66    SYNTAX        LldpXdot1dcbxAppProtocol
67    MAX-ACCESS    not-accessible
68    STATUS        current
69    DESCRIPTION
70        "The protocol indicator of the type indicated by
71        lldpXdot1dcbxLocApplicationPriorityAESelector."
72    REFERENCE
```

```
 1          "D.2.11.3"
 2     ::= { lldpXdot1dcbxLocApplicationPriorityAppEntry 2 }
 3
 4 lldpXdot1dcbxLocApplicationPriorityAEPriority OBJECT-TYPE
 5     SYNTAX        IEEE8021PriorityValue
 6     MAX-ACCESS    read-only
 7     STATUS        current
 8     DESCRIPTION
 9          "The priority code point that should be used in
10          frames transporting the protocol indicated by
11          lldpXdot1dcbxLocApplicationPriorityAESelector and
12          lldpXdot1dcbxLocApplicationPriorityAEProtocol"
13     REFERENCE
14          "D.2.11.3"
15     ::= { lldpXdot1dcbxLocApplicationPriorityAppEntry 3 }
16
17 --
18 -- lldpXdot1dcbxLocApplicationVlanAppTable - Contains the information
19 -- for the Application VLAN TLV.
20 --
21
22 lldpXdot1dcbxLocApplicationVlanAppTable OBJECT-TYPE
23     SYNTAX        SEQUENCE OF
24          LldpXdot1dcbxLocApplicationVlanAppEntry
25     MAX-ACCESS    not-accessible
26     STATUS        current
27     DESCRIPTION
28          "Table containing entries indicating the VLAN to be used
29          for a given application"
30     ::= { lldpXdot1dcbxLocalData 5 }
31
32 lldpXdot1dcbxLocApplicationVlanAppEntry OBJECT-TYPE
33     SYNTAX        LldpXdot1dcbxLocApplicationVlanAppEntry
34     MAX-ACCESS    not-accessible
35     STATUS        current
36     DESCRIPTION
37          "Entry that indicates the VLAN to be used for a
38          given application."
39     INDEX         {
40                    lldpV2LocPortIfIndex,
41                    lldpXdot1dcbxLocApplicationVlanAESelector,
42                    lldpXdot1dcbxLocApplicationVlanAEProtocol
43     }
44     ::= { lldpXdot1dcbxLocApplicationVlanAppTable 1 }
45
46 LldpXdot1dcbxLocApplicationVlanAppEntry ::= SEQUENCE {
47     lldpXdot1dcbxLocApplicationVlanAESelector
48          LldpXdot1dcbxAppSelector,
49     lldpXdot1dcbxLocApplicationVlanAEProtocol
50          LldpXdot1dcbxAppProtocol,
51     lldpXdot1dcbxLocApplicationVlanAEVlanId
52          VlanId
53 }
54
55 lldpXdot1dcbxLocApplicationVlanAESelector OBJECT-TYPE
56     SYNTAX        LldpXdot1dcbxAppSelector
57     MAX-ACCESS    not-accessible
58     STATUS        current
59     DESCRIPTION
60          "Indicates the contents of the protocol object
61          (lldpXdot1dcbxLocApplicationVlanAEProtocol)
62          1: EtherType
63          2: Well Known Port number over TCP, or SCTP
64          3: Well Known Port number over UDP, or DCCP
65          4: Well Known Port number over TCP, SCTP, UDP, and DCCP
66          5: Differentiated Services Code Point (DSCP) value. The
67             6 bit DSCP value is stored in the low order 6 bits of the
68             protocol object. The higher order bits are set to zero.
69             (See IETF RFC 2474 for the definition of the DSCP value.)"
70     REFERENCE
71          "D.2.11.3"
72     ::= { lldpXdot1dcbxLocApplicationVlanAppEntry 1 }
```

```
 1
 2 lldpXdot1dcbxLocApplicationVlanAEProtocol OBJECT-TYPE
 3     SYNTAX        LldpXdot1dcbxAppProtocol
 4     MAX-ACCESS    not-accessible
 5     STATUS        current
 6     DESCRIPTION
 7         "The protocol indicator of the type indicated by
 8         lldpXdot1dcbxLocApplicationVlanAESelector."
 9     REFERENCE
10         "D.2.11.3"
11     ::= { lldpXdot1dcbxLocApplicationVlanAppEntry 2 }
12
13 lldpXdot1dcbxLocApplicationVlanAEVlanId OBJECT-TYPE
14     SYNTAX        VlanId
15     MAX-ACCESS    read-only
16     STATUS        current
17     DESCRIPTION
18         "The VLAN Identifier that should be used in
19         frames transporting the protocol indicated by
20         lldpXdot1dcbxLocApplicationVlanAESelector and
21         lldpXdot1dcbxLocApplicationVlanAEProtocol"
22     REFERENCE
23         "D.2.14.3"
24     ::= { lldpXdot1dcbxLocApplicationVlanAppEntry 3 }
25
26
27 --------------------------------------------------------------------------
28 -- IEEE 802.1 - DCBX Remote System Information
29 --------------------------------------------------------------------------
30
31 --
32 -- lldpXdot1dcbxRemETSConfigurationTable - Contains the information
33 -- for the remote system ETS Configuration TLV.
34 --
35 lldpXdot1dcbxRemETSConfiguration OBJECT IDENTIFIER
36     ::= { lldpXdot1dcbxRemoteData 1 }
37
38 lldpXdot1dcbxRemETSBasicConfigurationTable OBJECT-TYPE
39     SYNTAX        SEQUENCE OF LldpXdot1dcbxRemETSBasicConfigurationEntry
40     MAX-ACCESS    not-accessible
41     STATUS        current
42     DESCRIPTION
43         "This table contains one row per port for the IEEE 802.1
44         organizationally defined LLDP ETS Configuration TLV on
45         the local system known to this agent"
46     ::= { lldpXdot1dcbxRemETSConfiguration 1 }
47
48 lldpXdot1dcbxRemETSBasicConfigurationEntry OBJECT-TYPE
49     SYNTAX        LldpXdot1dcbxRemETSBasicConfigurationEntry
50     MAX-ACCESS    not-accessible
51     STATUS        current
52     DESCRIPTION
53         "Information about the IEEE 802.1 organizational defined
54         ETS Configuration TLV LLDP extension."
55     INDEX         {
56                   lldpV2RemTimeMark,
57                   lldpV2RemLocalIfIndex,
58                   lldpV2RemLocalDestMACAddress,
59                   lldpV2RemIndex
60     }
61     ::= { lldpXdot1dcbxRemETSBasicConfigurationTable 1 }
62
63 LldpXdot1dcbxRemETSBasicConfigurationEntry ::= SEQUENCE {
64     lldpXdot1dcbxRemETSConCreditBasedShaperSupport     TruthValue,
65     lldpXdot1dcbxRemETSConTrafficClassesSupported
66         LldpXdot1dcbxSupportedCapacity,
67     lldpXdot1dcbxRemETSConWilling    TruthValue
68 }
69
70 lldpXdot1dcbxRemETSConCreditBasedShaperSupport OBJECT-TYPE
71     SYNTAX        TruthValue
72     MAX-ACCESS    read-only
```

```
1     STATUS          current
2     DESCRIPTION
3         "Indicates if the credit-based shaper Traffic Selection
4         algorithm is supported on the remote system."
5     REFERENCE
6         "D.2.8.4"
7     ::= { lldpXdot1dcbxRemETSBasicConfigurationEntry 1 }
8
9 lldpXdot1dcbxRemETSConTrafficClassesSupported OBJECT-TYPE
10     SYNTAX          LldpXdot1dcbxSupportedCapacity
11     MAX-ACCESS     read-only
12     STATUS          current
13     DESCRIPTION
14         "Indicates the number of traffic classes supported."
15     REFERENCE
16         "D.2.8.5"
17     ::= { lldpXdot1dcbxRemETSBasicConfigurationEntry 2 }
18
19 lldpXdot1dcbxRemETSConWilling 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         ETS configuration recommended by the remote system."
26     REFERENCE
27         "D.2.8.3"
28     ::= { lldpXdot1dcbxRemETSBasicConfigurationEntry 3 }
29
30 lldpXdot1dcbxRemETSConPriorityAssignmentTable OBJECT-TYPE
31     SYNTAX          SEQUENCE OF
32         LldpXdot1dcbxRemETSConPriorityAssignmentEntry
33     MAX-ACCESS     not-accessible
34     STATUS          current
35     DESCRIPTION
36         "This table contains one row per priority.  The entry in
37         each row indicates the traffic class to which the
38         priority is assigned."
39     ::= { lldpXdot1dcbxRemETSConfiguration 2 }
40
41 lldpXdot1dcbxRemETSConPriorityAssignmentEntry OBJECT-TYPE
42     SYNTAX          LldpXdot1dcbxRemETSConPriorityAssignmentEntry
43     MAX-ACCESS     not-accessible
44     STATUS          current
45     DESCRIPTION
46         "Indicates a priority to traffic class assignment."
47     INDEX           {
48                 lldpV2RemTimeMark,
49                 lldpV2RemLocalIfIndex,
50                 lldpV2RemLocalDestMACAddress,
51                 lldpV2RemIndex,
52                 lldpXdot1dcbxRemETSConPriority
53     }
54     ::= { lldpXdot1dcbxRemETSConPriorityAssignmentTable 1 }
55
56 LldpXdot1dcbxRemETSConPriorityAssignmentEntry ::= SEQUENCE {
57     lldpXdot1dcbxRemETSConPriority      IEEE8021PriorityValue,
58     lldpXdot1dcbxRemETSConPriTrafficClass
59         LldpXdot1dcbxTrafficClassValue
60 }
61
62 lldpXdot1dcbxRemETSConPriority OBJECT-TYPE
63     SYNTAX          IEEE8021PriorityValue
64     MAX-ACCESS     not-accessible
65     STATUS          current
66     DESCRIPTION
67         "Indicates the priority that is assigned to a traffic
68         class."
69     REFERENCE
70         "D.2.8.6"
71     ::= { lldpXdot1dcbxRemETSConPriorityAssignmentEntry 1 }
72
```

```
 1 lldpXdot1dcbxRemETSConPriTrafficClass OBJECT-TYPE
 2     SYNTAX        LldpXdot1dcbxTrafficClassValue
 3     MAX-ACCESS    read-only
 4     STATUS        current
 5     DESCRIPTION
 6         "Indicates the traffic class to which this priority is
 7         to be assigned."
 8     REFERENCE
 9         "D.2.8.6"
10     ::= { lldpXdot1dcbxRemETSConPriorityAssignmentEntry 2 }
11
12 lldpXdot1dcbxRemETSConTrafficClassBandwidthTable OBJECT-TYPE
13     SYNTAX        SEQUENCE OF
14         LldpXdot1dcbxRemETSConTrafficClassBandwidthEntry
15     MAX-ACCESS    not-accessible
16     STATUS        current
17     DESCRIPTION
18         "This table contains one row per traffic class.  The
19         entry in each row indicates the traffic class to
20         which the bandwidth is assigned."
21     ::= { lldpXdot1dcbxRemETSConfiguration 3 }
22
23 lldpXdot1dcbxRemETSConTrafficClassBandwidthEntry OBJECT-TYPE
24     SYNTAX        LldpXdot1dcbxRemETSConTrafficClassBandwidthEntry
25     MAX-ACCESS    not-accessible
26     STATUS        current
27     DESCRIPTION
28         "Indicates a traffic class to Bandwidth assignment."
29     INDEX        {
30                 lldpV2RemTimeMark,
31                 lldpV2RemLocalIfIndex,
32                 lldpV2RemLocalDestMACAddress,
33                 lldpV2RemIndex,
34                 lldpXdot1dcbxRemETSConTrafficClass
35     }
36     ::= { lldpXdot1dcbxRemETSConTrafficClassBandwidthTable 1 }
37
38 LldpXdot1dcbxRemETSConTrafficClassBandwidthEntry ::= SEQUENCE {
39     lldpXdot1dcbxRemETSConTrafficClass
40         LldpXdot1dcbxTrafficClassValue,
41     lldpXdot1dcbxRemETSConTrafficClassBandwidth
42         LldpXdot1dcbxTrafficClassBandwidthValue
43 }
44
45 lldpXdot1dcbxRemETSConTrafficClass 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.2.8.7"
54     ::= { lldpXdot1dcbxRemETSConTrafficClassBandwidthEntry 1 }
55
56 lldpXdot1dcbxRemETSConTrafficClassBandwidth OBJECT-TYPE
57     SYNTAX        LldpXdot1dcbxTrafficClassBandwidthValue
58     MAX-ACCESS    read-only
59     STATUS        current
60     DESCRIPTION
61         "Indicates the bandwidth assigned to this traffic class."
62     REFERENCE
63         "D.2.8.7"
64     ::= { lldpXdot1dcbxRemETSConTrafficClassBandwidthEntry 2 }
65
66
67 lldpXdot1dcbxRemETSConTrafficSelectionAlgorithmTable OBJECT-TYPE
68     SYNTAX        SEQUENCE OF
69         LldpXdot1dcbxRemETSConTrafficSelectionAlgorithmEntry
70     MAX-ACCESS    not-accessible
71     STATUS        current
72     DESCRIPTION
```

```
 1          "This table contains one row per traffic class.  The
 2          entry in each row indicates the traffic selction
 3          algorithm to be used by the traffic class."
 4      ::= { lldpXdot1dcbxRemETSConfiguration 4 }
 5
 6 lldpXdot1dcbxRemETSConTrafficSelectionAlgorithmEntry OBJECT-TYPE
 7      SYNTAX        LldpXdot1dcbxRemETSConTrafficSelectionAlgorithmEntry
 8      MAX-ACCESS    not-accessible
 9      STATUS        current
10      DESCRIPTION
11          "Indicates a traffic class to traffic selection
12          algorithm assignment."
13      INDEX         {
14                    lldpV2RemTimeMark,
15                    lldpV2RemLocalIfIndex,
16                    lldpV2RemLocalDestMACAddress,
17                    lldpV2RemIndex,
18                    lldpXdot1dcbxRemETSConTSATrafficClass
19      }
20      ::= { lldpXdot1dcbxRemETSConTrafficSelectionAlgorithmTable 1 }
21
22 LldpXdot1dcbxRemETSConTrafficSelectionAlgorithmEntry ::= SEQUENCE {
23      lldpXdot1dcbxRemETSConTSATrafficClass
24          LldpXdot1dcbxTrafficClassValue,
25      lldpXdot1dcbxRemETSConTrafficSelectionAlgorithm
26          LldpXdot1dcbxTrafficSelectionAlgorithm
27 }
28
29 lldpXdot1dcbxRemETSConTSATrafficClass OBJECT-TYPE
30      SYNTAX        LldpXdot1dcbxTrafficClassValue
31      MAX-ACCESS    not-accessible
32      STATUS        current
33      DESCRIPTION
34          "Indicates the traffic class that is assigned to a traffic
35          selection algorithm."
36      REFERENCE
37          "D.2.8.8"
38      ::= { lldpXdot1dcbxRemETSConTrafficSelectionAlgorithmEntry 1 }
39
40 lldpXdot1dcbxRemETSConTrafficSelectionAlgorithm OBJECT-TYPE
41      SYNTAX        LldpXdot1dcbxTrafficSelectionAlgorithm
42      MAX-ACCESS    read-only
43      STATUS        current
44      DESCRIPTION
45          "Indicates the Traffic Selection Algorithm to which this
46          traffic class is to be assigned."
47      REFERENCE
48          "D.2.8.8"
49      ::= { lldpXdot1dcbxRemETSConTrafficSelectionAlgorithmEntry 2 }
50
51 --
52 -- lldpXdot1dcbxRemETSRecommendationTable - Contains the information for
53 -- the remote system ETS Recommendation TLV.
54 --
55 lldpXdot1dcbxRemETSReco OBJECT IDENTIFIER ::=
56   { lldpXdot1dcbxRemoteData 2 }
57
58 lldpXdot1dcbxRemETSRecoTrafficClassBandwidthTable OBJECT-TYPE
59      SYNTAX        SEQUENCE OF
60          LldpXdot1dcbxRemETSRecoTrafficClassBandwidthEntry
61      MAX-ACCESS    not-accessible
62      STATUS        current
63      DESCRIPTION
64          "This table contains one row per traffic class.  The
65          entry in each row indicates the traffic class to
66          which the bandwidth is assigned."
67      ::= { lldpXdot1dcbxRemETSReco 1 }
68
69 lldpXdot1dcbxRemETSRecoTrafficClassBandwidthEntry OBJECT-TYPE
70      SYNTAX        LldpXdot1dcbxRemETSRecoTrafficClassBandwidthEntry
71      MAX-ACCESS    not-accessible
72      STATUS        current
```

```
1     DESCRIPTION
2         "Indicates a traffic class to Bandwidth assignment."
3     INDEX           {
4                 lldpV2RemTimeMark,
5                 lldpV2RemLocalIfIndex,
6                 lldpV2RemLocalDestMACAddress,
7                 lldpV2RemIndex,
8                 lldpXdot1dcbxRemETSRecoTrafficClass
9     }
10    ::= { lldpXdot1dcbxRemETSRecoTrafficClassBandwidthTable 1 }
11
12 LldpXdot1dcbxRemETSRecoTrafficClassBandwidthEntry ::= SEQUENCE {
13    lldpXdot1dcbxRemETSRecoTrafficClass
14        LldpXdot1dcbxTrafficClassValue,
15    lldpXdot1dcbxRemETSRecoTrafficClassBandwidth
16        LldpXdot1dcbxTrafficClassBandwidthValue
17 }
18
19 lldpXdot1dcbxRemETSRecoTrafficClass OBJECT-TYPE
20    SYNTAX        LldpXdot1dcbxTrafficClassValue
21    MAX-ACCESS    not-accessible
22    STATUS        current
23    DESCRIPTION
24        "Indicates the traffic class to
25        which this bandwidth applies"
26    REFERENCE
27        "D.2.9.4"
28    ::= { lldpXdot1dcbxRemETSRecoTrafficClassBandwidthEntry 1 }
29
30 lldpXdot1dcbxRemETSRecoTrafficClassBandwidth OBJECT-TYPE
31    SYNTAX        LldpXdot1dcbxTrafficClassBandwidthValue
32    MAX-ACCESS    read-only
33    STATUS        current
34    DESCRIPTION
35        "Indicates the bandwidth assigned to this traffic class."
36    REFERENCE
37        "D.2.9.4"
38    ::= { lldpXdot1dcbxRemETSRecoTrafficClassBandwidthEntry 2 }
39
40 lldpXdot1dcbxRemETSRecoTrafficSelectionAlgorithmTable OBJECT-TYPE
41    SYNTAX        SEQUENCE OF
42        LldpXdot1dcbxRemETSRecoTrafficSelectionAlgorithmEntry
43    MAX-ACCESS    not-accessible
44    STATUS        current
45    DESCRIPTION
46        "This table contains one row per traffic class.  The
47        entry in each row indicates the traffic selction
48        algorithm to be used by the priority."
49    ::= { lldpXdot1dcbxRemETSReco 2 }
50
51 lldpXdot1dcbxRemETSRecoTrafficSelectionAlgorithmEntry OBJECT-TYPE
52    SYNTAX        LldpXdot1dcbxRemETSRecoTrafficSelectionAlgorithmEntry
53    MAX-ACCESS    not-accessible
54    STATUS        current
55    DESCRIPTION
56        "Indicates a priority to traffic selection algorithm
57         assignment."
58    INDEX           {
59                 lldpV2RemTimeMark,
60                 lldpV2RemLocalIfIndex,
61                 lldpV2RemLocalDestMACAddress,
62                 lldpV2RemIndex,
63                 lldpXdot1dcbxRemETSRecoTSATrafficClass
64    }
65    ::= { lldpXdot1dcbxRemETSRecoTrafficSelectionAlgorithmTable 1 }
66
67 LldpXdot1dcbxRemETSRecoTrafficSelectionAlgorithmEntry ::= SEQUENCE {
68    lldpXdot1dcbxRemETSRecoTSATrafficClass
69        LldpXdot1dcbxTrafficClassValue,
70    lldpXdot1dcbxRemETSRecoTrafficSelectionAlgorithm
71        LldpXdot1dcbxTrafficSelectionAlgorithm
72 }
```

```
 1
 2 lldpXdot1dcbxRemETSRecoTSATrafficClass OBJECT-TYPE
 3     SYNTAX          LldpXdot1dcbxTrafficClassValue
 4     MAX-ACCESS      not-accessible
 5     STATUS          current
 6     DESCRIPTION
 7         "Indicates the traffic class that is assigned to a traffic
 8         selection algorithm."
 9     REFERENCE
10         "D.2.9.5"
11     ::= { lldpXdot1dcbxRemETSRecoTrafficSelectionAlgorithmEntry 1 }
12
13 lldpXdot1dcbxRemETSRecoTrafficSelectionAlgorithm OBJECT-TYPE
14     SYNTAX          LldpXdot1dcbxTrafficSelectionAlgorithm
15     MAX-ACCESS      read-only
16     STATUS          current
17     DESCRIPTION
18         "Indicates the Traffic Selection Algorithm to which this
19         traffic class is to be assigned."
20     REFERENCE
21         "D.2.9.5"
22     ::= { lldpXdot1dcbxRemETSRecoTrafficSelectionAlgorithmEntry 2 }
23
24 --
25 -- lldpXdot1dcbxRemPFCTable - Contains the information for the remote
26 -- system PFC TLV.
27 --
28 lldpXdot1dcbxRemPFC OBJECT IDENTIFIER ::= { lldpXdot1dcbxRemoteData 3 }
29
30 lldpXdot1dcbxRemPFCBasicTable OBJECT-TYPE
31     SYNTAX          SEQUENCE OF LldpXdot1dcbxRemPFCBasicEntry
32     MAX-ACCESS      not-accessible
33     STATUS          current
34     DESCRIPTION
35         "This table contains one row per port for the IEEE 802.1
36         organizationally defined LLDP PFC TLV on the local
37         system known to this agent"
38     ::= { lldpXdot1dcbxRemPFC 1 }
39
40 lldpXdot1dcbxRemPFCBasicEntry OBJECT-TYPE
41     SYNTAX          LldpXdot1dcbxRemPFCBasicEntry
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           {
48                     lldpV2RemTimeMark,
49                     lldpV2RemLocalIfIndex,
50                     lldpV2RemLocalDestMACAddress,
51                     lldpV2RemIndex
52     }
53     ::= { lldpXdot1dcbxRemPFCBasicTable 1 }
54
55 LldpXdot1dcbxRemPFCBasicEntry ::= SEQUENCE {
56     lldpXdot1dcbxRemPFCWilling    TruthValue,
57     lldpXdot1dcbxRemPFCMBC        TruthValue,
58     lldpXdot1dcbxRemPFCCap        LldpXdot1dcbxSupportedCapacity
59 }
60
61 lldpXdot1dcbxRemPFCWilling OBJECT-TYPE
62     SYNTAX          TruthValue
63     MAX-ACCESS      read-only
64     STATUS          current
65     DESCRIPTION
66         "Indicates if the remote system is willing to accept the
67         PFC configuration of the local system."
68     REFERENCE
69         "D.2.10.3"
70     ::= { lldpXdot1dcbxRemPFCBasicEntry 1}
71
72 lldpXdot1dcbxRemPFCMBC OBJECT-TYPE
```

```
 1     SYNTAX          TruthValue
 2     MAX-ACCESS      read-only
 3     STATUS          current
 4     DESCRIPTION
 5         "Indicates if the remote system is capable of bypassing
 6         MACsec processing when MACsec is disabled."
 7     REFERENCE
 8         "D.2.10.4"
 9     ::= { lldpXdot1dcbxRemPFCBasicEntry 2}
10
11 lldpXdot1dcbxRemPFCCap OBJECT-TYPE
12     SYNTAX          LldpXdot1dcbxSupportedCapacity
13     MAX-ACCESS      read-only
14     STATUS          current
15     DESCRIPTION
16         "Indicates the number of traffic classes on the remote device
17         that may simultaneously have PFC enabled."
18     REFERENCE
19         "D.2.10.5"
20     ::= { lldpXdot1dcbxRemPFCBasicEntry 3}
21
22 lldpXdot1dcbxRemPFCEnableTable OBJECT-TYPE
23     SYNTAX          SEQUENCE OF LldpXdot1dcbxRemPFCEnableEntry
24     MAX-ACCESS      not-accessible
25     STATUS          current
26     DESCRIPTION
27         "This table contains eight entries, one entry per priority,
28         indicating if PFC is enabled on the corresponding priority."
29     ::= { lldpXdot1dcbxRemPFC 2 }
30
31 lldpXdot1dcbxRemPFCEnableEntry OBJECT-TYPE
32     SYNTAX          LldpXdot1dcbxRemPFCEnableEntry
33     MAX-ACCESS      not-accessible
34     STATUS          current
35     DESCRIPTION
36         "Each entry indicates if PFC is enabled on the
37         correponding priority"
38     INDEX           {
39                     lldpV2RemTimeMark,
40                     lldpV2RemLocalIfIndex,
41                     lldpV2RemLocalDestMACAddress,
42                     lldpV2RemIndex,
43                     lldpXdot1dcbxRemPFCEnablePriority
44     }
45     ::= { lldpXdot1dcbxRemPFCEnableTable 1 }
46
47 LldpXdot1dcbxRemPFCEnableEntry ::= SEQUENCE {
48     lldpXdot1dcbxRemPFCEnablePriority   IEEE8021PriorityValue,
49     lldpXdot1dcbxRemPFCEnableEnabled    TruthValue
50 }
51
52 lldpXdot1dcbxRemPFCEnablePriority OBJECT-TYPE
53     SYNTAX          IEEE8021PriorityValue
54     MAX-ACCESS      not-accessible
55     STATUS          current
56     DESCRIPTION
57         "Prioity for which PFC is enabled / disabled"
58     ::= { lldpXdot1dcbxRemPFCEnableEntry 1 }
59
60 lldpXdot1dcbxRemPFCEnableEnabled OBJECT-TYPE
61     SYNTAX          TruthValue
62     MAX-ACCESS      read-only
63     STATUS          current
64     DESCRIPTION
65         "Indicates if PFC is enabled on the corresponding priority"
66     REFERENCE
67         "D.2.10.6"
68     ::= { lldpXdot1dcbxRemPFCEnableEntry 2 }
69
70 --
71 -- lldpXdot1dcbxRemApplicationPriorityTable - Contains the information
72 -- for the remote system Application Priority TLV.
```

```
 1 --
 2
 3 lldpXdot1dcbxRemApplicationPriorityAppTable OBJECT-TYPE
 4     SYNTAX        SEQUENCE OF
 5         LldpXdot1dcbxRemApplicationPriorityAppEntry
 6     MAX-ACCESS    not-accessible
 7     STATUS        current
 8     DESCRIPTION
 9         "Table containing entries indicating the priorty to be used
10         for a given application"
11     ::= { lldpXdot1dcbxRemoteData 4 }
12
13 lldpXdot1dcbxRemApplicationPriorityAppEntry OBJECT-TYPE
14     SYNTAX        LldpXdot1dcbxRemApplicationPriorityAppEntry
15     MAX-ACCESS    not-accessible
16     STATUS        current
17     DESCRIPTION
18         "Entry that indicates the priority to be used for a
19         given application."
20     INDEX         {
21                 lldpV2RemTimeMark,
22                 lldpV2RemLocalIfIndex,
23                 lldpV2RemLocalDestMACAddress,
24                 lldpV2RemIndex,
25                 lldpXdot1dcbxRemApplicationPriorityAESelector,
26                 lldpXdot1dcbxRemApplicationPriorityAEProtocol
27     }
28     ::= { lldpXdot1dcbxRemApplicationPriorityAppTable 1 }
29
30 LldpXdot1dcbxRemApplicationPriorityAppEntry ::= SEQUENCE {
31     lldpXdot1dcbxRemApplicationPriorityAESelector
32         LldpXdot1dcbxAppSelector,
33     lldpXdot1dcbxRemApplicationPriorityAEProtocol
34         LldpXdot1dcbxAppProtocol,
35     lldpXdot1dcbxRemApplicationPriorityAEPriority
36         IEEE8021PriorityValue
37 }
38
39 lldpXdot1dcbxRemApplicationPriorityAESelector OBJECT-TYPE
40     SYNTAX        LldpXdot1dcbxAppSelector
41     MAX-ACCESS    not-accessible
42     STATUS        current
43     DESCRIPTION
44         "Indicates the contents of the protocol object
45         (lldpXdot1dcbxRemApplicationPriorityAEProtocol)
46         1: EtherType
47         2: Well Known Port number over TCP, or SCTP
48         3: Well Known Port number over UDP, or DCCP
49         4: Well Known Port number over TCP, SCTP, UDP, and DCCP
50         5: Differentiated Services Code Point (DSCP) value. The
51             6 bit DSCP value is stored in the low order 6 bits of the
52             protocol object. The higher order bits are set to zero.
53             (See IETF RFC 2474 for the definition of the DSCP value.)"
54     REFERENCE
55         "D.2.11.3"
56     ::= { lldpXdot1dcbxRemApplicationPriorityAppEntry 1 }
57
58 lldpXdot1dcbxRemApplicationPriorityAEProtocol OBJECT-TYPE
59     SYNTAX        LldpXdot1dcbxAppProtocol
60     MAX-ACCESS    not-accessible
61     STATUS        current
62     DESCRIPTION
63         "The protocol indicator of the type indicated by
64         lldpXdot1dcbxRemApplicationPriorityAESelector."
65     REFERENCE
66         "D.2.11.3"
67     ::= { lldpXdot1dcbxRemApplicationPriorityAppEntry 2 }
68
69 lldpXdot1dcbxRemApplicationPriorityAEPriority OBJECT-TYPE
70     SYNTAX        IEEE8021PriorityValue
71     MAX-ACCESS    read-only
72     STATUS        current
```

```
 1    DESCRIPTION
 2        "The priority code point that should be used in
 3        frames transporting the protocol indicated by
 4        lldpXdot1dcbxRemApplicationPriorityAESelector and
 5        lldpXdot1dcbxRemApplicationPriorityAEProtocol"
 6    REFERENCE
 7        "D.2.11.3"
 8    ::= { lldpXdot1dcbxRemApplicationPriorityAppEntry 3 }
 9
10 --
11 -- lldpXdot1dcbxRemApplicationVlanAppTable - Contains the information
12 -- for the remote system Application VLAN TLV.
13 --
14
15 lldpXdot1dcbxRemApplicationVlanAppTable OBJECT-TYPE
16    SYNTAX        SEQUENCE OF
17        LldpXdot1dcbxRemApplicationVlanAppEntry
18    MAX-ACCESS    not-accessible
19    STATUS        current
20    DESCRIPTION
21        "Table containing entries indicating the VLAN to be used
22        for a given application"
23    ::= { lldpXdot1dcbxRemoteData 5 }
24
25 lldpXdot1dcbxRemApplicationVlanAppEntry OBJECT-TYPE
26    SYNTAX        LldpXdot1dcbxRemApplicationVlanAppEntry
27    MAX-ACCESS    not-accessible
28    STATUS        current
29    DESCRIPTION
30        "Entry that indicates the VLAN to be used for a
31        given application."
32    INDEX         {
33                lldpV2RemTimeMark,
34                lldpV2RemLocalIfIndex,
35                lldpV2RemLocalDestMACAddress,
36                lldpV2RemIndex,
37                lldpXdot1dcbxRemApplicationVlanAESelector,
38                lldpXdot1dcbxRemApplicationVlanAEProtocol
39    }
40    ::= { lldpXdot1dcbxRemApplicationVlanAppTable 1 }
41
42 LldpXdot1dcbxRemApplicationVlanAppEntry ::= SEQUENCE {
43    lldpXdot1dcbxRemApplicationVlanAESelector
44        LldpXdot1dcbxAppSelector,
45    lldpXdot1dcbxRemApplicationVlanAEProtocol
46        LldpXdot1dcbxAppProtocol,
47    lldpXdot1dcbxRemApplicationVlanAEVlanId
48        VlanId
49 }
50
51 lldpXdot1dcbxRemApplicationVlanAESelector OBJECT-TYPE
52    SYNTAX        LldpXdot1dcbxAppSelector
53    MAX-ACCESS    not-accessible
54    STATUS        current
55    DESCRIPTION
56        "Indicates the contents of the protocol object
57        (lldpXdot1dcbxRemApplicationVlanAEProtocol)
58        1: EtherType
59        2: Well Known Port number over TCP, or SCTP
60        3: Well Known Port number over UDP, or DCCP
61        4: Well Known Port number over TCP, SCTP, UDP, and DCCP
62        5: Differentiated Services Code Point (DSCP) value. The
63            6 bit DSCP value is stored in the low order 6 bits of the
64            protocol object. The higher order bits are set to zero.
65            (See IETF RFC 2474 for the definition of the DSCP value.)"
66    REFERENCE
67        "D.2.11.3"
68    ::= { lldpXdot1dcbxRemApplicationVlanAppEntry 1 }
69
70 lldpXdot1dcbxRemApplicationVlanAEProtocol OBJECT-TYPE
71    SYNTAX        LldpXdot1dcbxAppProtocol
72    MAX-ACCESS    not-accessible
```

```
1    STATUS         current
2    DESCRIPTION
3        "The protocol indicator of the type indicated by
4        lldpXdot1dcbxRemApplicationVlanAESelector."
5    REFERENCE
6        "D.2.11.3"
7    ::= { lldpXdot1dcbxRemApplicationVlanAppEntry 2 }

8
9 lldpXdot1dcbxRemApplicationVlanAEVlanId OBJECT-TYPE
10   SYNTAX         VlanId
11   MAX-ACCESS     read-only
12   STATUS         current
13   DESCRIPTION
14       "The VLAN Identifier that should be used in
15       frames transporting the protocol indicated by
16       lldpXdot1dcbxRemApplicationVlanAESelector and
17       lldpXdot1dcbxRemApplicationVlanAEProtocol"
18   REFERENCE
19       "D.2.14.3"
20   ::= { lldpXdot1dcbxRemApplicationVlanAppEntry 3 }

21
22
23 -----------------------------------------------------------------------
24 -- IEEE 802.1 - DCBX Administrative Information
25 -----------------------------------------------------------------------
26
27 --
28 -- lldpXdot1dcbxAdminETSConfigurationTable - Contains the information
29 -- for the ETS Configuration TLV.
30 --
31 lldpXdot1dcbxAdminETSConfiguration OBJECT IDENTIFIER
32   ::= { lldpXdot1dcbxAdminData 1 }

33
34 lldpXdot1dcbxAdminETSBasicConfigurationTable OBJECT-TYPE
35   SYNTAX         SEQUENCE OF
36       LldpXdot1dcbxAdminETSBasicConfigurationEntry
37   MAX-ACCESS     not-accessible
38   STATUS         current
39   DESCRIPTION
40       "This table contains one row per port for the IEEE 802.1
41       organizationally defined LLDP ETS Configuration TLV
42       on the local system known to this agent"
43   ::= { lldpXdot1dcbxAdminETSConfiguration 1 }

44
45 lldpXdot1dcbxAdminETSBasicConfigurationEntry OBJECT-TYPE
46   SYNTAX         LldpXdot1dcbxAdminETSBasicConfigurationEntry
47   MAX-ACCESS     not-accessible
48   STATUS         current
49   DESCRIPTION
50       "Information about the IEEE 802.1 organizational defined
51       ETS Configuration TLV LLDP extension."
52   INDEX          { lldpV2LocPortIfIndex }
53   ::= { lldpXdot1dcbxAdminETSBasicConfigurationTable 1 }

54
55 LldpXdot1dcbxAdminETSBasicConfigurationEntry ::= SEQUENCE {
56   lldpXdot1dcbxAdminETSConCreditBasedShaperSupport      TruthValue,
57   lldpXdot1dcbxAdminETSConTrafficClassesSupported
58       LldpXdot1dcbxSupportedCapacity,
59   lldpXdot1dcbxAdminETSConWilling    TruthValue
60 }

61
62 lldpXdot1dcbxAdminETSConCreditBasedShaperSupport OBJECT-TYPE
63   SYNTAX         TruthValue
64   MAX-ACCESS     read-only
65   STATUS         current
66   DESCRIPTION
67       "Indicates support for the credit-based shaper Traffic
68       Selection Algorithm."
69   REFERENCE
70       "D.2.8.4"
71   ::= { lldpXdot1dcbxAdminETSBasicConfigurationEntry 1 }
72
```

```
 1 lldpXdot1dcbxAdminETSConTrafficClassesSupported OBJECT-TYPE
 2     SYNTAX          LldpXdot1dcbxSupportedCapacity
 3     MAX-ACCESS      read-only
 4     STATUS          current
 5     DESCRIPTION
 6         "Indicates the number of traffic classes supported."
 7     REFERENCE
 8         "D.2.8.5"
 9     ::= { lldpXdot1dcbxAdminETSBasicConfigurationEntry 2 }
10
11 lldpXdot1dcbxAdminETSConWilling OBJECT-TYPE
12     SYNTAX          TruthValue
13     MAX-ACCESS      read-write
14     STATUS          current
15     DESCRIPTION
16         "Indicates if the local system is willing to accept the
17         ETS configuration recommended by the remote system."
18     REFERENCE
19         "D.2.8.3"
20     DEFVAL          { false }
21     ::= { lldpXdot1dcbxAdminETSBasicConfigurationEntry 3 }
22
23 lldpXdot1dcbxAdminETSConPriorityAssignmentTable OBJECT-TYPE
24     SYNTAX          SEQUENCE OF
25         LldpXdot1dcbxAdminETSConPriorityAssignmentEntry
26     MAX-ACCESS      not-accessible
27     STATUS          current
28     DESCRIPTION
29         "This table contains one row per priority.  The entry in each
30         row indicates the traffic class to which the priority is
31         assigned."
32     ::= { lldpXdot1dcbxAdminETSConfiguration 2 }
33
34 lldpXdot1dcbxAdminETSConPriorityAssignmentEntry OBJECT-TYPE
35     SYNTAX          LldpXdot1dcbxAdminETSConPriorityAssignmentEntry
36     MAX-ACCESS      not-accessible
37     STATUS          current
38     DESCRIPTION
39         "Indicates a priority to traffic class assignment."
40     INDEX           {
41                 lldpV2LocPortIfIndex,
42                 lldpXdot1dcbxAdminETSConPriority
43     }
44     ::= { lldpXdot1dcbxAdminETSConPriorityAssignmentTable 1 }
45
46 LldpXdot1dcbxAdminETSConPriorityAssignmentEntry ::= SEQUENCE {
47     lldpXdot1dcbxAdminETSConPriority        IEEE8021PriorityValue,
48     lldpXdot1dcbxAdminETSConPriTrafficClass
49         LldpXdot1dcbxTrafficClassValue
50 }
51
52 lldpXdot1dcbxAdminETSConPriority OBJECT-TYPE
53     SYNTAX          IEEE8021PriorityValue
54     MAX-ACCESS      not-accessible
55     STATUS          current
56     DESCRIPTION
57         "Indicates the priority that is assigned to a traffic
58         class."
59     REFERENCE
60         "D.2.8.6"
61     ::= { lldpXdot1dcbxAdminETSConPriorityAssignmentEntry 1 }
62
63 lldpXdot1dcbxAdminETSConPriTrafficClass OBJECT-TYPE
64     SYNTAX          LldpXdot1dcbxTrafficClassValue
65     MAX-ACCESS      read-write
66     STATUS          current
67     DESCRIPTION
68         "Indicates the traffic class to which this priority is
69         to be assigned."
70     REFERENCE
71         "D.2.8.6"
72     DEFVAL      { 0 }
```

```
1      ::= { lldpXdot1dcbxAdminETSConPriorityAssignmentEntry 2 }
2
3  lldpXdot1dcbxAdminETSConTrafficClassBandwidthTable OBJECT-TYPE
4      SYNTAX        SEQUENCE OF
5          LldpXdot1dcbxAdminETSConTrafficClassBandwidthEntry
6      MAX-ACCESS    not-accessible
7      STATUS        current
8      DESCRIPTION
9          "This table contains one row per traffic class.  The
10         entry in each row indicates the traffic class to
11         which the bandwidth is assigned."
12     ::= { lldpXdot1dcbxAdminETSConfiguration 3 }
13
14 lldpXdot1dcbxAdminETSConTrafficClassBandwidthEntry OBJECT-TYPE
15     SYNTAX        LldpXdot1dcbxAdminETSConTrafficClassBandwidthEntry
16     MAX-ACCESS    not-accessible
17     STATUS        current
18     DESCRIPTION
19         "Indicates a traffic class to Bandwidth assignment."
20     INDEX         {
21                 lldpV2LocPortIfIndex,
22                 lldpXdot1dcbxAdminETSConTrafficClass
23     }
24     ::= { lldpXdot1dcbxAdminETSConTrafficClassBandwidthTable 1 }
25
26 LldpXdot1dcbxAdminETSConTrafficClassBandwidthEntry ::= SEQUENCE {
27     lldpXdot1dcbxAdminETSConTrafficClass
28         LldpXdot1dcbxTrafficClassValue,
29     lldpXdot1dcbxAdminETSConTrafficClassBandwidth
30         LldpXdot1dcbxTrafficClassBandwidthValue
31 }
32
33 lldpXdot1dcbxAdminETSConTrafficClass OBJECT-TYPE
34     SYNTAX        LldpXdot1dcbxTrafficClassValue
35     MAX-ACCESS    not-accessible
36     STATUS        current
37     DESCRIPTION
38         "Indicates the traffic class to
39         which this bandwidth applies"
40     REFERENCE
41         "D.2.8.7"
42     ::= { lldpXdot1dcbxAdminETSConTrafficClassBandwidthEntry 1 }
43
44 lldpXdot1dcbxAdminETSConTrafficClassBandwidth OBJECT-TYPE
45     SYNTAX        LldpXdot1dcbxTrafficClassBandwidthValue
46     MAX-ACCESS    read-write
47     STATUS        current
48     DESCRIPTION
49         "Indicates the bandwidth assigned to this traffic class.
50         The sum of the bandwidths assigned to a given port is
51         required at all times to eqaul 100.  An operation that
52         attempts to change this table such that the bandwidth
53         entires do not total 100 shall be rejected. An implication
54         of this is that modification of this table requires that
55         multiple set operations be included in a single SNMP PDU,
56         commonly referred to as an MSET operation, to perform
57         simultaneous set operations to keep the sum at 100.  Any
58         attempt to change a single entry in this table will result
59         in the operation being rejected since entries in the
60         table referring to the given port will no longer
61         sum to 100."
62     REFERENCE
63         "D.2.8.7"
64     ::= { lldpXdot1dcbxAdminETSConTrafficClassBandwidthEntry 2 }
65
66 lldpXdot1dcbxAdminETSConTrafficSelectionAlgorithmTable OBJECT-TYPE
67     SYNTAX        SEQUENCE OF
68         LldpXdot1dcbxAdminETSConTrafficSelectionAlgorithmEntry
69     MAX-ACCESS    not-accessible
70     STATUS        current
71     DESCRIPTION
72         "This table contains one row per traffic class.  The entry
```

```
1          in each row indicates the traffic selction algorithm to
2          be used by the priority."
3      ::= { lldpXdot1dcbxAdminETSConfiguration 4 }
4
5  lldpXdot1dcbxAdminETSConTrafficSelectionAlgorithmEntry OBJECT-TYPE
6      SYNTAX         LldpXdot1dcbxAdminETSConTrafficSelectionAlgorithmEntry
7      MAX-ACCESS     not-accessible
8      STATUS         current
9      DESCRIPTION
10          "Indicates a traffic class to traffic selection
11          algorithm assignment."
12     INDEX          {
13                 lldpV2LocPortIfIndex,
14                 lldpXdot1dcbxAdminETSConTSATrafficClass
15     }
16     ::= { lldpXdot1dcbxAdminETSConTrafficSelectionAlgorithmTable 1 }
17
18 LldpXdot1dcbxAdminETSConTrafficSelectionAlgorithmEntry ::= SEQUENCE {
19     lldpXdot1dcbxAdminETSConTSATrafficClass
20          LldpXdot1dcbxTrafficClassValue,
21     lldpXdot1dcbxAdminETSConTrafficSelectionAlgorithm
22          LldpXdot1dcbxTrafficSelectionAlgorithm
23 }
24
25 lldpXdot1dcbxAdminETSConTSATrafficClass OBJECT-TYPE
26     SYNTAX         LldpXdot1dcbxTrafficClassValue
27     MAX-ACCESS     not-accessible
28     STATUS         current
29     DESCRIPTION
30          "Indicates the traffic class that is assigned
31          to a traffic selection algorithm."
32     REFERENCE
33          "D.2.8.8"
34     ::= { lldpXdot1dcbxAdminETSConTrafficSelectionAlgorithmEntry 1 }
35
36 lldpXdot1dcbxAdminETSConTrafficSelectionAlgorithm OBJECT-TYPE
37     SYNTAX         LldpXdot1dcbxTrafficSelectionAlgorithm
38     MAX-ACCESS     read-write
39     STATUS         current
40     DESCRIPTION
41          "Indicates the Traffic Selection Algorithm to which this
42          traffic class is to be assigned."
43     REFERENCE
44          "D.2.8.8"
45     ::= { lldpXdot1dcbxAdminETSConTrafficSelectionAlgorithmEntry 2 }
46
47
48 --
49 -- lldpXdot1dcbxAdminETSRecommendationTable - Contains the information
50 -- for the ETS Recommendation TLV.
51 --
52 lldpXdot1dcbxAdminETSReco OBJECT IDENTIFIER ::=
53   { lldpXdot1dcbxAdminData 2 }
54
55 lldpXdot1dcbxAdminETSRecoTrafficClassBandwidthTable OBJECT-TYPE
56     SYNTAX         SEQUENCE OF
57          LldpXdot1dcbxAdminETSRecoTrafficClassBandwidthEntry
58     MAX-ACCESS     not-accessible
59     STATUS         current
60     DESCRIPTION
61          "This table contains one row per traffic class.  The
62          entry in each row indicates the traffic class to
63          which the bandwidth is assigned."
64     ::= { lldpXdot1dcbxAdminETSReco 1 }
65
66 lldpXdot1dcbxAdminETSRecoTrafficClassBandwidthEntry OBJECT-TYPE
67     SYNTAX         LldpXdot1dcbxAdminETSRecoTrafficClassBandwidthEntry
68     MAX-ACCESS     not-accessible
69     STATUS         current
70     DESCRIPTION
71          "Indicates a traffic class to Bandwidth assignment."
72     INDEX          {
```

```
 1                    lldpV2LocPortIfIndex,
 2                    lldpXdot1dcbxAdminETSRecoTrafficClass
 3        }
 4      ::= { lldpXdot1dcbxAdminETSRecoTrafficClassBandwidthTable 1 }
 5
 6 LldpXdot1dcbxAdminETSRecoTrafficClassBandwidthEntry ::= SEQUENCE {
 7      lldpXdot1dcbxAdminETSRecoTrafficClass
 8          LldpXdot1dcbxTrafficClassValue,
 9      lldpXdot1dcbxAdminETSRecoTrafficClassBandwidth
10          LldpXdot1dcbxTrafficClassBandwidthValue
11 }
12
13 lldpXdot1dcbxAdminETSRecoTrafficClass OBJECT-TYPE
14      SYNTAX        LldpXdot1dcbxTrafficClassValue
15      MAX-ACCESS    not-accessible
16      STATUS        current
17      DESCRIPTION
18          "Indicates the traffic class to
19          which this bandwidth applies"
20      REFERENCE
21          "D.2.9.4"
22      ::= { lldpXdot1dcbxAdminETSRecoTrafficClassBandwidthEntry 1 }
23
24 lldpXdot1dcbxAdminETSRecoTrafficClassBandwidth OBJECT-TYPE
25      SYNTAX        LldpXdot1dcbxTrafficClassBandwidthValue
26      MAX-ACCESS    read-write
27      STATUS        current
28      DESCRIPTION
29          "Indicates the bandwidth assigned to this traffic class.
30          The sum of the bandwidths assigned to a given port is
31          required at all times to eqaul 100.  An operation that
32          attempts to change this table such that the bandwidth
33          entires do not total 100 shall be rejected. An implication
34          of this is that modification of this table requires that
35          multiple set operations be included in a single SNMP PDU,
36          commonly referred to as an MSET operation, to perform
37          simultaneous set operations to keep the sum at 100.  Any
38          attempt to change a single entry in this table will result
39          in the operation being rejected since entries in the
40          table referring to the given port will no longer
41          sum to 100."
42
43      REFERENCE
44          "D.2.9.4"
45      ::= { lldpXdot1dcbxAdminETSRecoTrafficClassBandwidthEntry 2 }
46
47 lldpXdot1dcbxAdminETSRecoTrafficSelectionAlgorithmTable OBJECT-TYPE
48      SYNTAX        SEQUENCE OF
49          LldpXdot1dcbxAdminETSRecoTrafficSelectionAlgorithmEntry
50      MAX-ACCESS    not-accessible
51      STATUS        current
52      DESCRIPTION
53          "This table contains one row per traffic class.  The entry
54          in each row indicates the traffic selction algorithm to
55          be used by the traffic class."
56      ::= { lldpXdot1dcbxAdminETSReco 2 }
57
58 lldpXdot1dcbxAdminETSRecoTrafficSelectionAlgorithmEntry OBJECT-TYPE
59      SYNTAX    LldpXdot1dcbxAdminETSRecoTrafficSelectionAlgorithmEntry
60      MAX-ACCESS    not-accessible
61      STATUS        current
62      DESCRIPTION
63          "Indicates a traffic class to traffic selection
64          algorithm assignment."
65      INDEX         {
66                    lldpV2LocPortIfIndex,
67                    lldpXdot1dcbxAdminETSRecoTSATrafficClass
68        }
69      ::= { lldpXdot1dcbxAdminETSRecoTrafficSelectionAlgorithmTable 1 }
70
71 LldpXdot1dcbxAdminETSRecoTrafficSelectionAlgorithmEntry ::= SEQUENCE {
72      lldpXdot1dcbxAdminETSRecoTSATrafficClass
```

```
 1        LldpXdot1dcbxTrafficClassValue,
 2    lldpXdot1dcbxAdminETSRecoTrafficSelectionAlgorithm
 3        LldpXdot1dcbxTrafficSelectionAlgorithm
 4 }
 5
 6 lldpXdot1dcbxAdminETSRecoTSATrafficClass 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.2.9.5"
15     ::= { lldpXdot1dcbxAdminETSRecoTrafficSelectionAlgorithmEntry 1 }
16
17 lldpXdot1dcbxAdminETSRecoTrafficSelectionAlgorithm OBJECT-TYPE
18     SYNTAX        LldpXdot1dcbxTrafficSelectionAlgorithm
19     MAX-ACCESS    read-write
20     STATUS        current
21     DESCRIPTION
22         "Indicates the Traffic Selection Algorithm to which this
23         traffic class is to be assigned."
24     REFERENCE
25         "D.2.9.5"
26     ::= { lldpXdot1dcbxAdminETSRecoTrafficSelectionAlgorithmEntry 2 }
27
28 --
29 -- lldpXdot1dcbxAdminPFCTable - Contains the information for the PFC
30 -- Configuration TLV.
31 --
32 lldpXdot1dcbxAdminPFC OBJECT IDENTIFIER ::= { lldpXdot1dcbxAdminData 3 }
33
34 lldpXdot1dcbxAdminPFCBasicTable OBJECT-TYPE
35     SYNTAX        SEQUENCE OF LldpXdot1dcbxAdminPFCBasicEntry
36     MAX-ACCESS    not-accessible
37     STATUS        current
38     DESCRIPTION
39         "This table contains one row per port for the IEEE 802.1
40         organizationally defined LLDP PFC TLV on the local
41         system known to this agent"
42     ::= { lldpXdot1dcbxAdminPFC 1 }
43
44 lldpXdot1dcbxAdminPFCBasicEntry OBJECT-TYPE
45     SYNTAX        LldpXdot1dcbxAdminPFCBasicEntry
46     MAX-ACCESS    not-accessible
47     STATUS        current
48     DESCRIPTION
49         "Information about the IEEE 802.1 organizational defined
50         PFC TLV LLDP extension."
51     INDEX         { lldpV2LocPortIfIndex }
52     ::= { lldpXdot1dcbxAdminPFCBasicTable 1 }
53
54 LldpXdot1dcbxAdminPFCBasicEntry ::= SEQUENCE {
55     lldpXdot1dcbxAdminPFCWilling    TruthValue,
56     lldpXdot1dcbxAdminPFCMBC        TruthValue,
57     lldpXdot1dcbxAdminPFCCap        LldpXdot1dcbxSupportedCapacity
58 }
59
60 lldpXdot1dcbxAdminPFCWilling OBJECT-TYPE
61     SYNTAX        TruthValue
62     MAX-ACCESS    read-write
63     STATUS        current
64     DESCRIPTION
65         "Indicates if the local system is willing to accept the
66         PFC configuration of the remote system."
67     REFERENCE
68         "D.2.10.3"
69     DEFVAL       { false }
70     ::= { lldpXdot1dcbxAdminPFCBasicEntry 1}
71
72 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.2.10.4"
 9    ::= { lldpXdot1dcbxAdminPFCBasicEntry 2}
10
11 lldpXdot1dcbxAdminPFCCap OBJECT-TYPE
12    SYNTAX         LldpXdot1dcbxSupportedCapacity
13    MAX-ACCESS    read-only
14    STATUS    current
15    DESCRIPTION
16        "Indicates the number of traffic classes on the local device
17        that may simultaneously have PFC enabled.
18
19        Note that this typically indicates a physical limitation of the
20        device.  However, some devices may allow this parameter to be
21        administratively configured, in which case the MAX-ACCESS
22        should be changed to read-write with and an appropriate
23        DEFVAL added."
24    REFERENCE
25        "D.2.10.5"
26    ::= { lldpXdot1dcbxAdminPFCBasicEntry 3}
27
28 lldpXdot1dcbxAdminPFCEnableTable OBJECT-TYPE
29    SYNTAX         SEQUENCE OF LldpXdot1dcbxAdminPFCEnableEntry
30    MAX-ACCESS    not-accessible
31    STATUS        current
32    DESCRIPTION
33        "This table contains eight entries, one entry per priority,
34        indicating if PFC is enabled on the corresponding priority."
35    ::= { lldpXdot1dcbxAdminPFC 2 }
36
37 lldpXdot1dcbxAdminPFCEnableEntry OBJECT-TYPE
38    SYNTAX         LldpXdot1dcbxAdminPFCEnableEntry
39    MAX-ACCESS    not-accessible
40    STATUS        current
41    DESCRIPTION
42        "Each entry indicates if PFC is enabled on the
43        correponding priority"
44    INDEX {
45        lldpV2LocPortIfIndex,
46        lldpXdot1dcbxAdminPFCEnablePriority
47    }
48    ::= { lldpXdot1dcbxAdminPFCEnableTable 1 }
49
50 LldpXdot1dcbxAdminPFCEnableEntry ::= SEQUENCE {
51    lldpXdot1dcbxAdminPFCEnablePriority    IEEE8021PriorityValue,
52    lldpXdot1dcbxAdminPFCEnableEnabled    TruthValue
53    }
54
55 lldpXdot1dcbxAdminPFCEnablePriority OBJECT-TYPE
56    SYNTAX         IEEE8021PriorityValue
57    MAX-ACCESS    not-accessible
58    STATUS        current
59    DESCRIPTION
60        "Prioity for which PFC is enabled / disabled"
61    ::= { lldpXdot1dcbxAdminPFCEnableEntry 1 }
62
63 lldpXdot1dcbxAdminPFCEnableEnabled OBJECT-TYPE
64    SYNTAX         TruthValue
65    MAX-ACCESS    read-write
66    STATUS        current
67    DESCRIPTION
68        "Indicates if PFC is enabled on the corresponding priority"
69    REFERENCE
70        "D.2.10.6"
71    DEFVAL        { false }
72    ::= { lldpXdot1dcbxAdminPFCEnableEntry 2 }
```

```
 1
 2 --
 3 -- lldpXdot1dcbxAdminApplicationPriorityTable - Contains the
 4 -- information for the Application Priority TLV.
 5 --
 6
 7 lldpXdot1dcbxAdminApplicationPriorityAppTable OBJECT-TYPE
 8     SYNTAX        SEQUENCE OF
 9         LldpXdot1dcbxAdminApplicationPriorityAppEntry
10     MAX-ACCESS    not-accessible
11     STATUS        current
12     DESCRIPTION
13         "Table containing entries indicating the priorty to be used
14         for a given application"
15     ::= { lldpXdot1dcbxAdminData 4 }
16
17 lldpXdot1dcbxAdminApplicationPriorityAppEntry OBJECT-TYPE
18     SYNTAX        LldpXdot1dcbxAdminApplicationPriorityAppEntry
19     MAX-ACCESS    not-accessible
20     STATUS        current
21     DESCRIPTION
22         "Entry that indicates the priority to be used for a
23         given application."
24     INDEX         {
25                     lldpV2LocPortIfIndex,
26                     lldpXdot1dcbxAdminApplicationPriorityAESelector,
27                     lldpXdot1dcbxAdminApplicationPriorityAEProtocol
28     }
29     ::= { lldpXdot1dcbxAdminApplicationPriorityAppTable 1 }
30
31 LldpXdot1dcbxAdminApplicationPriorityAppEntry ::= SEQUENCE {
32     lldpXdot1dcbxAdminApplicationPriorityAESelector
33         LldpXdot1dcbxAppSelector,
34     lldpXdot1dcbxAdminApplicationPriorityAEProtocol
35         LldpXdot1dcbxAppProtocol,
36     lldpXdot1dcbxAdminApplicationPriorityAEPriority
37         IEEE8021PriorityValue
38 }
39
40 lldpXdot1dcbxAdminApplicationPriorityAESelector OBJECT-TYPE
41     SYNTAX        LldpXdot1dcbxAppSelector
42     MAX-ACCESS    not-accessible
43     STATUS        current
44     DESCRIPTION
45         "Indicates the contents of the protocol object
46         (lldpXdot1dcbxAdminApplicationPriorityAEProtocol)
47         1: EtherType
48         2: Well Known Port number over TCP, or SCTP
49         3: Well Known Port number over UDP, or DCCP
50         4: Well Known Port number over TCP, SCTP, UDP, and DCCP
51         5: Differentiated Services Code Point (DSCP) value. The
52             6 bit DSCP value is stored in the low order 6 bits of the
53             protocol object. The higher order bits are set to zero.
54             (See IETF RFC 2474 for the definition of the DSCP value.)"
55     REFERENCE
56         "D.2.10.6"
57     ::= { lldpXdot1dcbxAdminApplicationPriorityAppEntry 1 }
58
59 lldpXdot1dcbxAdminApplicationPriorityAEProtocol OBJECT-TYPE
60     SYNTAX        LldpXdot1dcbxAppProtocol
61     MAX-ACCESS    not-accessible
62     STATUS        current
63     DESCRIPTION
64         "The protocol indicator of the type indicated by
65         lldpXdot1dcbxAdminApplicationPriorityAESelector."
66     REFERENCE
67         "D.2.10.6"
68     ::= { lldpXdot1dcbxAdminApplicationPriorityAppEntry 2 }
69
70 lldpXdot1dcbxAdminApplicationPriorityAEPriority OBJECT-TYPE
71     SYNTAX        IEEE8021PriorityValue
72     MAX-ACCESS    read-create
```

```
1    STATUS         current
2    DESCRIPTION
3        "The priority code point that should be used in
4        frames transporting the protocol indicated by
5        lldpXdot1dcbxAdminApplicationPriorityAESelector and
6        lldpXdot1dcbxAdminApplicationPriorityAEProtocol"
7    REFERENCE
8        "D.2.10.6"
9    ::= { lldpXdot1dcbxAdminApplicationPriorityAppEntry 3 }
10
11 --
12 -- lldpXdot1dcbxAdminApplicationVlanAppTable - Contains the
13 -- information for the Application VLAN TLV.
14 --
15
16 lldpXdot1dcbxAdminApplicationVlanAppTable OBJECT-TYPE
17    SYNTAX         SEQUENCE OF
18        LldpXdot1dcbxAdminApplicationVlanAppEntry
19    MAX-ACCESS     not-accessible
20    STATUS         current
21    DESCRIPTION
22        "Table containing entries indicating the VLAN to be used
23        for a given application"
24    ::= { lldpXdot1dcbxAdminData 5 }
25
26 lldpXdot1dcbxAdminApplicationVlanAppEntry OBJECT-TYPE
27    SYNTAX         LldpXdot1dcbxAdminApplicationVlanAppEntry
28    MAX-ACCESS     not-accessible
29    STATUS         current
30    DESCRIPTION
31        "Entry that indicates the VLAN to be used for a
32        given application."
33    INDEX          {
34                    lldpV2LocPortIfIndex,
35                    lldpXdot1dcbxAdminApplicationVlanAESelector,
36                    lldpXdot1dcbxAdminApplicationVlanAEProtocol
37    }
38    ::= { lldpXdot1dcbxAdminApplicationVlanAppTable 1 }
39
40 LldpXdot1dcbxAdminApplicationVlanAppEntry ::= SEQUENCE {
41    lldpXdot1dcbxAdminApplicationVlanAESelector
42        LldpXdot1dcbxAppSelector,
43    lldpXdot1dcbxAdminApplicationVlanAEProtocol
44        LldpXdot1dcbxAppProtocol,
45    lldpXdot1dcbxAdminApplicationVlanAEVlanId
46        VlanId
47 }
48
49 lldpXdot1dcbxAdminApplicationVlanAESelector OBJECT-TYPE
50    SYNTAX         LldpXdot1dcbxAppSelector
51    MAX-ACCESS     not-accessible
52    STATUS         current
53    DESCRIPTION
54        "Indicates the contents of the protocol object
55        (lldpXdot1dcbxAdminApplicationVlanAEProtocol)
56        1: EtherType
57        2: Well Known Port number over TCP, or SCTP
58        3: Well Known Port number over UDP, or DCCP
59        4: Well Known Port number over TCP, SCTP, UDP, and DCCP
60        5: Differentiated Services Code Point (DSCP) value. The
61            6 bit DSCP value is stored in the low order 6 bits of the
62            protocol object. The higher order bits are set to zero.
63            (See IETF RFC 2474 for the definition of the DSCP value.)"
64    REFERENCE
65        "D.2.12.3"
66    ::= { lldpXdot1dcbxAdminApplicationVlanAppEntry 1 }
67
68 lldpXdot1dcbxAdminApplicationVlanAEProtocol OBJECT-TYPE
69    SYNTAX         LldpXdot1dcbxAppProtocol
70    MAX-ACCESS     not-accessible
71    STATUS         current
72    DESCRIPTION
```

```
 1          "The protocol indicator of the type indicated by
 2          lldpXdot1dcbxAdminApplicationVlanAESelector."
 3      REFERENCE
 4          "D.2.14.3"
 5      ::= { lldpXdot1dcbxAdminApplicationVlanAppEntry 2 }
 6
 7 lldpXdot1dcbxAdminApplicationVlanAEVlanId OBJECT-TYPE
 8      SYNTAX        VlanId
 9      MAX-ACCESS    read-create
10      STATUS        current
11      DESCRIPTION
12          "The VLAN Identifier that should be used in
13          frames transporting the protocol indicated by
14          lldpXdot1dcbxAdminApplicationVlanAESelector and
15          lldpXdot1dcbxAdminApplicationVlanAEProtocol"
16      REFERENCE
17          "D.2.14.3"
18      ::= { lldpXdot1dcbxAdminApplicationVlanAppEntry 3 }
19
20 ------------------------------------------------------------------------
21 -- IEEE 802.1 - DCBX Conformance Information
22 ------------------------------------------------------------------------
23 lldpXdot1dcbxConformance OBJECT IDENTIFIER ::= { lldpV2Xdot1MIB 6 }
24 lldpXdot1dcbxCompliances
25      OBJECT IDENTIFIER ::= { lldpXdot1dcbxConformance 1 }
26 lldpXdot1dcbxGroups
27      OBJECT IDENTIFIER ::= { lldpXdot1dcbxConformance 2 }
28
29 --
30 -- Compliance Statements
31 --
32
33 lldpXdot1dcbxCompliance MODULE-COMPLIANCE
34      STATUS        current
35      DESCRIPTION
36          "A compliance statement for SNMP entities that implement
37          the IEEE 802.1 organizationally defined DCBX LLDP
38          extension MIB.
39
40          This group is mandatory for agents which implement Enhanced
41          Transmission Selection."
42      MODULE        -- this module
43          MANDATORY-GROUPS  { lldpXdot1dcbxETSGroup,
44                              lldpXdot1dcbxPFCGroup,
45                              lldpXdot1dcbxApplicationPriorityGroup,
46                              lldpXdot1dcbxApplicationVlanGroup,
47                              ifGeneralInformationGroup
48          }
49      ::= { lldpXdot1dcbxCompliances 1 }
50
51 --
52 -- MIB Groupings
53 --
54
55 lldpXdot1dcbxETSGroup  OBJECT-GROUP
56      OBJECTS {
57          lldpXdot1dcbxConfigETSConfigurationTxEnable,
58          lldpXdot1dcbxConfigETSRecommendationTxEnable,
59          lldpXdot1dcbxLocETSConCreditBasedShaperSupport,
60          lldpXdot1dcbxLocETSConTrafficClassesSupported,
61          lldpXdot1dcbxLocETSConWilling,
62          lldpXdot1dcbxLocETSConPriTrafficClass,
63          lldpXdot1dcbxLocETSConTrafficClassBandwidth,
64          lldpXdot1dcbxLocETSConTrafficSelectionAlgorithm,
65          lldpXdot1dcbxLocETSRecoTrafficClassBandwidth,
66          lldpXdot1dcbxLocETSRecoTrafficSelectionAlgorithm,
67          lldpXdot1dcbxRemETSConCreditBasedShaperSupport,
68          lldpXdot1dcbxRemETSConTrafficClassesSupported,
69          lldpXdot1dcbxRemETSConWilling,
70          lldpXdot1dcbxRemETSConPriTrafficClass,
71          lldpXdot1dcbxRemETSConTrafficClassBandwidth,
72          lldpXdot1dcbxRemETSConTrafficSelectionAlgorithm,
```

```
 1          lldpXdot1dcbxRemETSRecoTrafficClassBandwidth,
 2          lldpXdot1dcbxRemETSRecoTrafficSelectionAlgorithm,
 3          lldpXdot1dcbxAdminETSConCreditBasedShaperSupport,
 4          lldpXdot1dcbxAdminETSConTrafficClassesSupported,
 5          lldpXdot1dcbxAdminETSConWilling,
 6          lldpXdot1dcbxAdminETSConPriTrafficClass,
 7          lldpXdot1dcbxAdminETSConTrafficClassBandwidth,
 8          lldpXdot1dcbxAdminETSConTrafficSelectionAlgorithm,
 9          lldpXdot1dcbxAdminETSRecoTrafficClassBandwidth,
10          lldpXdot1dcbxAdminETSRecoTrafficSelectionAlgorithm
11      }
12      STATUS   current
13      DESCRIPTION
14          "The collection of objects used for Enhanced
15          Transmission Selection."
16      ::= { lldpXdot1dcbxGroups 1 }
17
18 lldpXdot1dcbxPFCGroup  OBJECT-GROUP
19      OBJECTS {
20          lldpXdot1dcbxConfigPFCTxEnable,
21          lldpXdot1dcbxLocPFCWilling,
22          lldpXdot1dcbxLocPFCMBC,
23          lldpXdot1dcbxLocPFCCap,
24          lldpXdot1dcbxLocPFCEnableEnabled,
25          lldpXdot1dcbxRemPFCWilling,
26          lldpXdot1dcbxRemPFCMBC,
27          lldpXdot1dcbxRemPFCCap,
28          lldpXdot1dcbxRemPFCEnableEnabled,
29          lldpXdot1dcbxAdminPFCWilling,
30          lldpXdot1dcbxAdminPFCMBC,
31          lldpXdot1dcbxAdminPFCCap,
32          lldpXdot1dcbxAdminPFCEnableEnabled
33      }
34      STATUS   current
35      DESCRIPTION
36          "The collection of objects used for Priority-
37          base Flow Control."
38      ::= { lldpXdot1dcbxGroups 2 }
39
40 lldpXdot1dcbxApplicationPriorityGroup  OBJECT-GROUP
41      OBJECTS {
42          lldpXdot1dcbxConfigApplicationPriorityTxEnable,
43          lldpXdot1dcbxLocApplicationPriorityAEPriority,
44          lldpXdot1dcbxRemApplicationPriorityAEPriority,
45          lldpXdot1dcbxAdminApplicationPriorityAEPriority
46      }
47      STATUS   current
48      DESCRIPTION
49          "The collection of objects used for Application
50          priority."
51      ::= { lldpXdot1dcbxGroups 3 }
52
53 lldpXdot1dcbxApplicationVlanGroup  OBJECT-GROUP
54      OBJECTS {
55          lldpXdot1dcbxConfigApplicationVlanTxEnable,
56          lldpXdot1dcbxLocApplicationVlanAEVlanId,
57          lldpXdot1dcbxRemApplicationVlanAEVlanId,
58          lldpXdot1dcbxAdminApplicationVlanAEVlanId
59      }
60      STATUS   current
61      DESCRIPTION
62          "The collection of objects used for Application
63          VLAN."
64      ::= { lldpXdot1dcbxGroups 4 }
65 END
66
67
```

D.6 IEEE 802.1/LLDP extension YANG

## D.6.2 IEEE 802.1 Organizationally Specific TLV YANG data models

D.6.2.3 IEEE 802.1/LLDP extension dcbxSet YANG model

The attributes for the TLV in the dcbxSet are obtained from per-port managed objects. The model augments the LLDP port model. The UML for the IEEE 802.1/LLDP extension dcbxSet is derived from the UML specified in IEEE Std 802.1AB and is shown in Figure D-20. The highlighted portions of the UML show how the LLDP model has been augmented.

1 *Modify Figure D-20:*

2 <<Editor notes: add parameters MACsecCap, HDRCap, internal delay into figure D-20>>

Figure D-20—dcbxSet TLV model
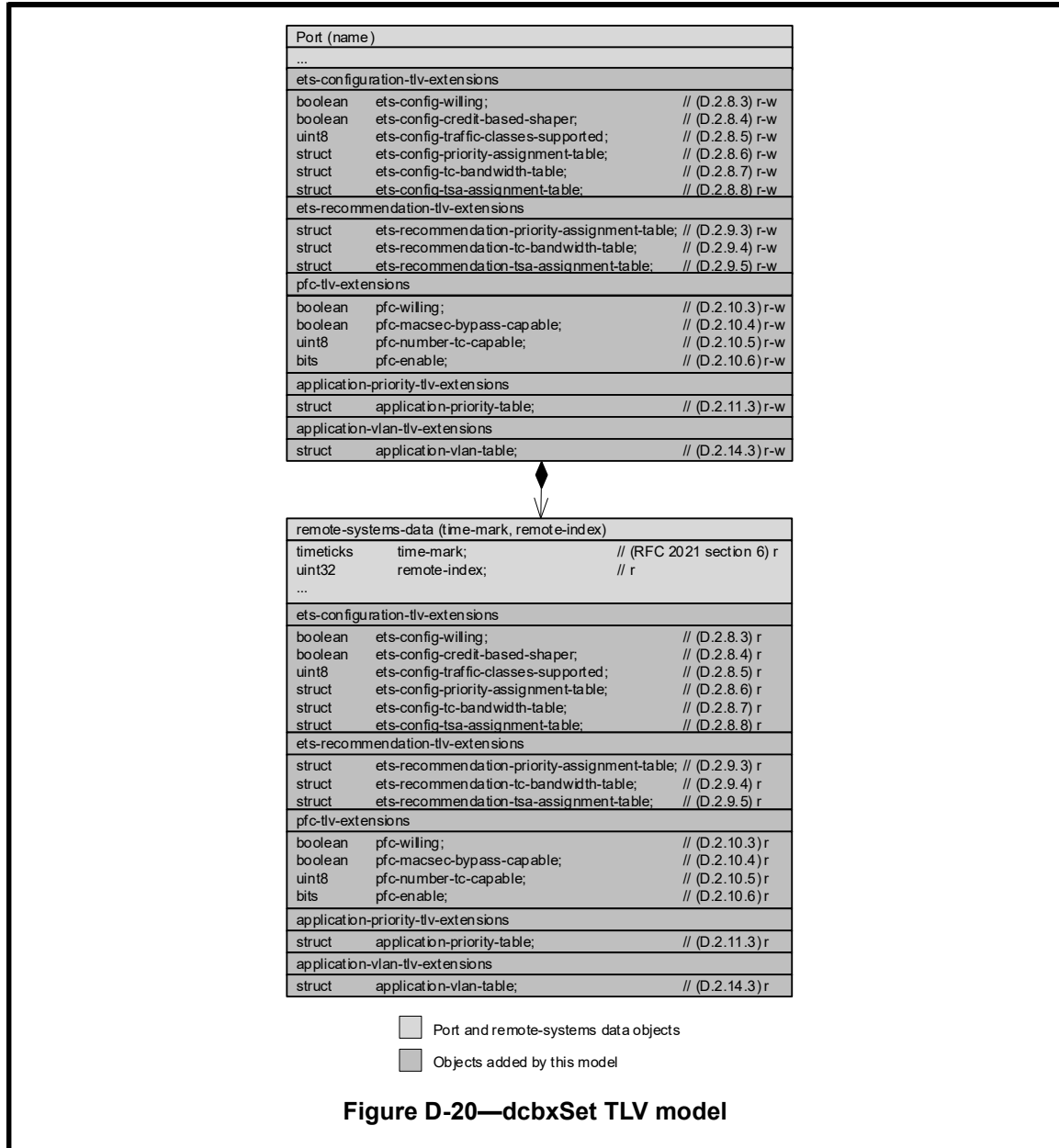
3 **D.6.3 Security considerations**

4

D.6.3.3 Security considerations of the ieee802-dot1q-lldp-dcbx-tlv YANG module

Change the list as follows:

The following objects in the ieee802-dot1q-lldp-dcbx-tlv YANG module could be manipulated to interfere with the operation of IEEE 802.1 organizationally specific functionality using LLDP on a port and, for example, be used to cause network instability:

/lldp/port/ets-configuration-tlv-extension/ets-config-willing

/lldp/port/ets-configuration-tlv-extension/ets-config-credit-based-shaper

/lldp/port/ets-configuration-tlv-extension/ets-config-traffic-classes-supported

/lldp/port/ets-configuration-tlv-extension/ets-config-priority-assignment-table

/lldp/port/ets-configuration-tlv-extension/ets-config-tc-bandwidth-table

/lldp/port/ets-configuration-tlv-extension/ets-config-tsa-assignment-table

/lldp/port/ets-recommendation-tlv-extension/ets-recommend-priority-assignment-table

/lldp/port/ets-recommendation-tlv-extension/ets-recommend-tc-bandwidth-table

/lldp/port/ets-recommendation-tlv-extension/ets-recommend-tsa-assignment-table

/lldp/port/pfc-tlv-extension/pfc-willing

/lldp/port/pfc-tlv-extension/pfc-macsec-bypass-capable

/lldp/port/pfc-tlv-extension/pfc-number-tc-capable

/lldp/port/pfc-tlv-extension/pfc-enable

/lldp/port/pfc-tlv-extension/pfc-macsec-capable

/lldp/port/pfc-tlv-extension/pfc-headroom-capable

/lldp/port/pfc-tlv-extension/pfc-internal-delay

/lldp/port/application-priority-tlv-extension/application-priority-table

/lldp/port/application-vlan-tlv-extension/application-vlan-table

D.6.4 Definition of the IEEE 802.1/LLDP extension YANG modules

D.6.4.1 Data scheme definition for the ieee802-dot1q-lldp-basic-tlv YANG module

D.6.4.2 Data scheme definition for the ieee802-dot1q-lldp-cn-tlv YANG module

D.6.4.3 Data scheme definition for the ieee802-dot1q-lldp-dcbx-tlv YANG module

Change the YANG module:

<<Editor notes: add parameters MACsec Cap, HDR Cap, internal delay, into the YANG module>>

```
module: ieee802-dot1q-lldp-dcbx-tlv

  augment /lldp:lldp/lldp:port:
    +--rw tlvs-tx-org-dcbx-enable?            bits
    +--rw ets-configuration-tlv-extension
    |  +--rw willing?                    boolean
    |  +--rw credit-based-shaper?        boolean
    |  +--rw traffic-classes-supported?
```

```
 1    |  |         dot1q-types:num-traffic-class-type
 2    |  +--rw priority-assignment-table* [priority]
 3    |  |  +--rw priority
 4    |  |  |       dot1q-types:priority-type
 5    |  |  +--rw priority-traffic-class?
 6    |  |  |       dot1q-types:traffic-class-type
 7    |  |  +--rw transmission-selection-algorithm?   identityref
 8    |  +--rw tc-bandwidth-table* [traffic-class]
 9    |  |  +--rw traffic-class          dot1q-types:traffic-class-type
10    |  |  +--rw percentage-bandwidth?   uint8
11    |  +--rw tsa-assignment-table* [tsa-traffic-class]
12    |     +--rw tsa-traffic-class
13    |     |       dot1q-types:traffic-class-type
14    |     +--rw transmission-selection-algorithm?   identityref
15    +--rw ets-recommendation-tlv-extension
16    |  +--rw priority-assignment-table* [priority]
17    |  |  +--rw priority                dot1q-types:priority-type
18    |  |  +--rw priority-traffic-class?   dot1q-types:traffic-class-type
19    |  +--rw tc-bandwidth-table* [traffic-class]
20    |  |  +--rw traffic-class          dot1q-types:traffic-class-type
21    |  |  +--rw percentage-bandwidth?   uint8
22    |  +--rw tsa-assignment-table* [tsa-traffic-class]
23    |     +--rw tsa-traffic-class
24    |     |       dot1q-types:traffic-class-type
25    |     +--rw transmission-selection-algorithm?   identityref
26    +--rw pfc-tlv-extension
27    |  +--rw willing?                 boolean
28    |  +--rw macsec-bypass-capable?   boolean
29    |  +--rw number-tc-capable?       dot1q-types:num-traffic-class-type
30    |  +--rw enable?                  bits
31    +--rw application-priority-tlv-extension
32    |  +--rw application-priority-table* [application-priority]
33    |     +--rw application-priority
34    |     |       dot1q-types:priority-type
35    |     +--rw application-priority-selector?   identityref
36    |     +--rw application-priority-protocol?   uint16
37    +--rw application-vlan-tlv-extension
38       +--rw application-vlan-table* [application-vlan]
39          +--rw application-vlan          dot1q-types:vlanid
40          +--rw application-vlan-selector?   identityref
41          +--rw application-vlan-protocol?   uint16
42  augment /lldp:lldp/lldp:port/lldp:remote-systems-data:
43    +--ro ets-configuration-tlv-extension
44    |  +--ro willing?                    boolean
45    |  +--ro credit-based-shaper?        boolean
46    |  +--ro traffic-classes-supported?
47    |  |       dot1q-types:num-traffic-class-type
48    |  +--ro priority-assignment-table* [priority]
49    |  |  +--ro priority
50    |  |  |       dot1q-types:priority-type
51    |  |  +--ro priority-traffic-class?
52    |  |  |       dot1q-types:traffic-class-type
53    |  |  +--ro transmission-selection-algorithm?   identityref
54    |  +--ro tc-bandwidth-table* [traffic-class]
55    |  |  +--ro traffic-class          dot1q-types:traffic-class-type
56    |  |  +--ro percentage-bandwidth?   uint8
57    |  +--ro tsa-assignment-table* [tsa-traffic-class]
58    |     +--ro tsa-traffic-class
59    |     |       dot1q-types:traffic-class-type
60    |     +--ro transmission-selection-algorithm?   identityref
61    +--ro ets-recommendation-tlv-extension
62    |  +--ro priority-assignment-table* [priority]
63    |  |  +--ro priority                dot1q-types:priority-type
64    |  |  +--ro priority-traffic-class?   dot1q-types:traffic-class-type
65    |  +--ro tc-bandwidth-table* [traffic-class]
66    |  |  +--ro traffic-class          dot1q-types:traffic-class-type
67    |  |  +--ro percentage-bandwidth?   uint8
68    |  +--ro tsa-assignment-table* [tsa-traffic-class]
69    |     +--ro tsa-traffic-class
70    |     |       dot1q-types:traffic-class-type
71    |     +--ro transmission-selection-algorithm?   identityref
72    +--ro pfc-tlv-extension
```

```
1    |  +--ro willing?                boolean
2    |  +--ro macsec-bypass-capable?  boolean
3    |  +--ro number-tc-capable?      dot1q-types:num-traffic-class-type
4    |  +--ro enable?                 bits
5    +--ro application-priority-tlv-extension
6    |  +--ro application-priority-table* [application-priority]
7    |     +--ro application-priority
8    |     |     dot1q-types:priority-type
9    |     +--ro application-priority-selector?  identityref
10   |     +--ro application-priority-protocol?  uint16
11   +--ro application-vlan-tlv-extension
12      +--ro application-vlan-table* [application-vlan]
13         +--ro application-vlan            dot1q-types:vlanid
14         +--ro application-vlan-selector?  identityref
15         +--ro application-vlan-protocol?  uint16
16
```

D.6.5 IEEE 802.1/LLDP extension YANG modules

D.6.5.1 Definition for the ieee802-dot1q-lldp-basic-tlv YANG module

D.6.5.2 Definition for the ieee802-dot1q-lldp-cn-tlv YANG module

D.6.5.3 Definition for the ieee802-dot1q-lldp-dcbx-tlv YANG module

Change the definition of YANG module:

<<Editor notes: update "grouping pfc-tlv" session, including new added paramters MACsec Cap, HDR Cap and internal delay>>

```
26 module ieee802-dot1q-lldp-dcbx-tlv {
27   yang-version "1.1";
28   namespace urn:ieee:std:802.1Q:yang:ieee802-dot1q-lldp-dcbx-tlv;
29   prefix lldp-dcbx-tlv;
30   import ieee802-dot1q-types {
31     prefix dot1q-types;
32   }
33   import ieee802-dot1ab-lldp {
34     prefix lldp;
35   }
36   organization
37     "Institute of Electrical and Electronics Engineers";
38   contact
39     "WG-URL: http://ieee802.org/1/
40     WG-EMail: stds-802-1-l@ieee.org
41     Contact: IEEE 802.1 Working Group Chair
42     Postal: C/O IEEE 802.1 Working Group
43     IEEE Standards Association
44         445 Hoes Lane
45         Piscataway, NJ 08854
46         USA
47
48     E-mail: stds-802-1-chairs@ieee.org";
49   description
50     "IEEE Std 802.1Q extension tlvs for LLDP";
51   revision 2022-03-29 {
52     description
53       "LLDP extension tlvs for DCBX.
54
55       Copyright (C) IEEE (2022).
56
57       This version of this YANG module is part of IEEE Std 802.1Q; see
58       the standard itself for full legal notices.";
```

```
1      reference
2        "Annex D of IEEE Std 802.1Qcz-2022";
3    }
4    identity application-priority-selector {
5      description
6        "Specify the application priority selection of IEEE Std 802.1Q-2022
7        D.11.2.3 and Table D-8";
8    }
9    identity default {
10     base application-priority-selector;
11     description
12       "Indicates the default application selection of the Application
13       Priority Table field of the Application Priority TLV specified in
14       D.2.11 of IEEE Std 802.1Q-2022. Signalled as value 1.";
15   }
16   identity pri-tcp-sctp {
17     base application-priority-selector;
18     description
19       "Indicates TCP or SCTP application selection of the Application
20       Priority Table field of the Application Priority TLV specified in
21       D.2.11 of IEEE Std 802.1Q-2022. Signalled as value 2.";
22   }
23   identity pri-udp-dccp {
24     base application-priority-selector;
25     description
26       "Indicates UDP or DCCP application selection of the Application
27       Priority Table field of the Application Priority TLV specified in
28       D.2.11 of IEEE Std 802.1Q-2022. Signalled as value 3.";
29   }
30   identity pri-tcp-sctp-udp-dccp {
31     base application-priority-selector;
32     description
33       "Indicates TCP, SCTP, UDP or DCCP application selection of the
34       Application Priority Table field of the Application Priority TLV
35       specified in D.2.11 of IEEE Std 802.1Q-2022. Signalled as value 4.";
36   }
37   identity pri-dscp {
38     base application-priority-selector;
39     description
40       "Indicates DSCP application selection of the Application Priority
41       Table field of the Application Priority TLV specified in D.2.11 of
42       IEEE Std 802.1Q-2022. Signalled as value 5.";
43   }
44   identity application-vlan-selector {
45     description
46       "Specify the application vlan selection of D.11.14.3 and Table D-12
47       of IEEE Std 802.1Q-2022";
48   }
49   identity vlan-pvid-ethertype {
50     base application-vlan-selector;
51     description
52       "Indicates the a PVID or and Ethertype selection of the Application
53       VLAN Table field of the Application VLAn TLV specified in D.2.14 of
54       IEEE Std 802.1Q-2022. Signalled as value 1.";
55   }
56   identity vlan-tcp-sctp {
57     base application-vlan-selector;
58     description
59       "Indicates TCP or SCTP application selection of the Application
60       VLAN Table field of the Application VLAN TLV specified in D.2.14 of
61       IEEE Std 802.1Q-2022. Signalled as value 2.";
62   }
63   identity vlan-udp-dccp {
64     base application-vlan-selector;
65     description
66       "Indicates UDP or DCCP application selection of the Application
67       VLAN Table field of the Application VLAN TLV specified in D.2.14 of
68       IEEE Std 802.1Q-2022. Signalled as value 3.";
69   }
70   identity vlan-tcp-sctp-udp-dccp {
71     base application-vlan-selector;
72     description
```

```
1        "Indicates TCP, SCTP, UDP or DCCP application selection of the
2        Application VLAN Table field of the Application VLAN TLV specified
3        in D.2.14 of IEEE Std 802.1Q-2022. Signalled as value 4.";
4    }
5    identity vlan-dscp {
6      base application-vlan-selector;
7      description
8        "Indicates DSCP application selection of the Application VLAN Table
9        field of the Application VLAN TLV specified in D.2.14 of IEEE Std
10       802.1Q-2022. Signalled as value 5.";
11   }
12   grouping ets-configuration-tlv {
13     description
14       "The Enhanced Transmission Selection configuration TLV";
15     reference
16       "D.2.8 of IEEE Std 802.1Q-2022";
17     leaf willing {
18       type boolean;
19       description
20         "True indicates willing to accept configurations from remote
21         station";
22       reference
23         "D.2.8.3 of IEEE Std 802.1Q-2022";
24     }
25     leaf credit-based-shaper {
26       type boolean;
27       description
28         "True indicates station supports the Credit-based Shaper
29         transmission selection algorithm";
30       reference
31         "D.2.8.4 of IEEE Std 802.1Q-2022";
32     }
33     leaf traffic-classes-supported {
34       type dot1q-types:num-traffic-class-type;
35       description
36         "Indicates number of traffic classes supported. The value of 8 is
37         encoded as 0 in the TLV since 3-bits are used to specify the
38         number";
39       reference
40         "D.2.8.5 of IEEE Std 802.1Q-2022";
41     }
42     list priority-assignment-table {
43       key "priority";
44       description
45         "Maps a priority to a traffic class";
46       leaf priority {
47         type dot1q-types:priority-type;
48         description
49           "Indicates priority";
50         reference
51           "D.2.8.6 of IEEE Std 802.1Q-2022";
52       }
53       leaf priority-traffic-class {
54         type dot1q-types:traffic-class-type;
55         description
56           "Indicates mapped traffic class for priority";
57         reference
58           "D.2.8.6 of IEEE Std 802.1Q-2022";
59       }
60       leaf transmission-selection-algorithm {
61         type identityref {
62           base dot1q-types:transmission-selection-algorithm;
63         }
64         description
65           "Transmission selection algorithm";
66         reference
67           "8.6.8 and Table 8-6 of IEEE Std 802.1Q-2022";
68       }
69     }
70     list tc-bandwidth-table {
71       key "traffic-class";
72       description
```

```
 1          "Indicates the current bandwidth percentage for each traffic
 2          class";
 3        leaf traffic-class {
 4          type dot1q-types:traffic-class-type;
 5          description
 6            "Indicates traffic class";
 7          reference
 8            "D.2.8.7 of IEEE Std 802.1Q-2022";
 9        }
10        leaf percentage-bandwidth {
11          type uint8 {
12            range "0..100";
13          }
14          description
15            "Percentage configured for the traffic class";
16          reference
17            "D.2.8.7 of IEEE Std 802.1Q-2022";
18        }
19      }
20      list tsa-assignment-table {
21        key "tsa-traffic-class";
22        description
23          "Indicates the transmission selection algorithm used for a
24          traffic class";
25        leaf tsa-traffic-class {
26          type dot1q-types:traffic-class-type;
27          description
28            "Indicates traffic class";
29          reference
30            "D.2.8.8 of IEEE Std 802.1Q-2022";
31        }
32        leaf transmission-selection-algorithm {
33          type identityref {
34            base dot1q-types:transmission-selection-algorithm;
35          }
36          description
37            "Transmission selection algorithm";
38          reference
39            "8.6.8 and Table 8-6 of IEEE Std 802.1Q-2022";
40        }
41      }
42    }
43    grouping ets-recommendation-tlv {
44      description
45        "Recommendation of Enhanced Transmission Selection configuration
46        TLV";
47      reference
48        "D.2.9 of IEEE Std 802.1Q-2022";
49      list priority-assignment-table {
50        key "priority";
51        description
52          "Maps a priority to a traffic class";
53        leaf priority {
54          type dot1q-types:priority-type;
55          description
56            "Indicates priority";
57          reference
58            "D.2.9.3 of IEEE Std 802.1Q-2022";
59        }
60        leaf priority-traffic-class {
61          type dot1q-types:traffic-class-type;
62          description
63            "Indicates mapped traffic class for priority";
64          reference
65            "D.2.9.3 of IEEE Std 802.1Q-2022";
66        }
67      }
68      list tc-bandwidth-table {
69        key "traffic-class";
70        description
71          "Indicates the current bandwidth percentage for each traffic
72          class";
```

```
1      leaf traffic-class {
2        type dot1q-types:traffic-class-type;
3        description
4          "Indicates traffic class";
5        reference
6          "D.2.9.4 of IEEE Std 802.1Q-2022";
7      }
8      leaf percentage-bandwidth {
9        type uint8 {
10         range "0..100";
11       }
12       description
13         "Percentage configured for the traffic class";
14       reference
15         "D.2.9.4 of IEEE Std 802.1Q-2022";
16     }
17   }
18   list tsa-assignment-table {
19     key "tsa-traffic-class";
20     description
21       "Indicates the transmission selection algorithm used for a
22       traffic class";
23     leaf tsa-traffic-class {
24       type dot1q-types:traffic-class-type;
25       description
26         "Indicates traffic class";
27       reference
28         "D.2.9.5 of IEEE Std 802.1Q-2022";
29     }
30     leaf transmission-selection-algorithm {
31       type identityref {
32         base dot1q-types:transmission-selection-algorithm;
33       }
34       description
35         "Transmission selection algorithm";
36       reference
37         "8.6.8 and Table 8-6 of IEEE Std 802.Q-2022";
38     }
39   }
40 }
41 grouping pfc-tlv {
42   description
43     "The Priority-based flow control configuration TLV";
44   reference
45     "D.2.10 of IEEE Std 802.1Q-2022";
46   leaf willing {
47     type boolean;
48     description
49       "True indicates willing to accept configurations from remote
50       station";
51     reference
52       "D.2.10.3 of IEEE Std 802.1Q-2022";
53   }
54   leaf macsec-bypass-capable {
55     type boolean;
56     description
57       "True indicates sending station is not capable of bypassing
58       MACsec";
59     reference
60       "D.2.10.4 of IEEE Std 802.1Q-2022";
61   }
62   leaf number-tc-capable {
63     type dot1q-types:num-traffic-class-type;
64     description
65       "Indicates how many traffic classes may simultaneously support
66       PFC.";
67     reference
68       "D.2.10.5 of IEEE Std 802.1Q-2022";
69   }
70   leaf enable {
71     type bits {
72       bit p0 {
```

```
 1              position 0;
 2            description
 3              "1 indicates PFC is enabled on the priority";
 4          }
 5          bit p1 {
 6            position 1;
 7            description
 8              "1 indicates PFC is enabled on the priority";
 9          }
10          bit p2 {
11            position 2;
12            description
13              "1 indicates PFC is enabled on the priority";
14          }
15          bit p3 {
16            position 3;
17            description
18              "1 indicates PFC is enabled on the priority";
19          }
20          bit p4 {
21            position 4;
22            description
23              "1 indicates PFC is enabled on the priority";
24          }
25          bit p5 {
26            position 5;
27            description
28              "1 indicates PFC is enabled on the priority";
29          }
30          bit p6 {
31            position 6;
32            description
33              "1 indicates PFC is enabled on the priority";
34          }
35          bit p7 {
36            position 7;
37            description
38              "1 indicates PFC is enabled on the priority";
39          }
40        }
41        description
42          "PFC enabled per priority";
43        reference
44          "D.2.10.6 of IEEE Std 802.1Q-2022";
45      }
46    }
47  grouping application-priority-tlv {
48    description
49      "The application priority table TLV";
50    reference
51      "D.2.11 of IEEE Std 802.1Q-2022";
52    list application-priority-table {
53      key "application-priority";
54      description
55        "Specifies a 3-bit priority for a Protocol ID";
56      leaf application-priority {
57        type dot1q-types:priority-type;
58        description
59          "Priority for which the Protocol ID is being used";
60        reference
61          "D.2.11.3 of IEEE Std 802.1Q-2022";
62      }
63      leaf application-priority-selector {
64        type identityref {
65          base application-priority-selector;
66        }
67        description
68          "Selector to determine what the Protocol ID means.";
69        reference
70          "D.2.11.3 of IEEE Std 802.1Q-2022";
71      }
72      leaf application-priority-protocol {
```

```
1         type uint16 {
2           range "0..65535";
3         }
4         description
5           "Protocol ID of the type indicated by the selector";
6         reference
7           "D.2.11.3 of IEEE Std 802.1Q-2022";
8       }
9     }
10  }
11  grouping application-vlan-tlv {
12    description
13      "The Application VLAN table TLV";
14    reference
15      "D.2.14 of IEEE Std 802.1Q-2022";
16    list application-vlan-table {
17      key "application-vlan";
18      description
19        "Specifies a VLAN ID priority for a Protocol ID";
20      leaf application-vlan {
21        type dot1q-types:vlanid;
22        description
23          "Vlan for which the Protocol ID is being used";
24        reference
25          "D.2.14.3 of IEEE Std 802.1Q-2022";
26      }
27      leaf application-vlan-selector {
28        type identityref {
29          base application-vlan-selector;
30        }
31        description
32          "Selector to determine what the Protocol ID means.";
33        reference
34          "D.2.14.3 of IEEE Std 802.1Q-2022";
35      }
36      leaf application-vlan-protocol {
37        type uint16 {
38          range "0..65535";
39        }
40        description
41          "Protocol ID of the type indicated by the selector";
42        reference
43          "D.2.14.3 of IEEE Std 802.1Q-2022";
44      }
45    }
46  }
47  augment "/lldp:lldp/lldp:port" {
48    description
49      "Augments port with the dcbx extension tlv";
50    leaf tlvs-tx-org-dcbx-enable {
51      type bits {
52        bit ets-configuration {
53          position 0;
54          description
55            "D.2.8 of IEEE Std 802.1Q-2022";
56        }
57        bit ets-recommendation {
58          position 1;
59          description
60            "D.2.9 of IEEE Std 802.1Q-2022";
61        }
62        bit pfc {
63          position 2;
64          description
65            "D.2.10 of IEEE Std 802.1Q-2022";
66        }
67        bit application-priority {
68          position 3;
69          description
70            "D.2.11 of IEEE Std 802.1Q-2022";
71        }
72        bit application-vlan {
```

```
 1          position 4;
 2          description
 3            "D.2.14 of IEEE Std 802.1Q-2022";
 4        }
 5      }
 6      description
 7        "Bitmap including the dcbxSet of tlvs from Table D.1 of IEEE Std
 8        802.1Q-2022";
 9      reference
10        "D.1 of IEEE Std 802.1Q-2022";
11    }
12    container ets-configuration-tlv-extension {
13      description
14        "The ETS Configuration TLV";
15      uses ets-configuration-tlv;
16    }
17    container ets-recommendation-tlv-extension {
18      description
19        "The ETS Recommendation TLV";
20      uses ets-recommendation-tlv;
21    }
22    container pfc-tlv-extension {
23      description
24        "The Prioity-based Flow Control Configuration TLV";
25      uses pfc-tlv;
26    }
27    container application-priority-tlv-extension {
28      description
29        "The Application Priority TLV";
30      uses application-priority-tlv;
31    }
32    container application-vlan-tlv-extension {
33      description
34        "The Application VLAN TLV";
35      uses application-vlan-tlv;
36    }
37  }
38  augment "/lldp:lldp/lldp:port/lldp:remote-systems-data" {
39    description
40      "Augments port remote-systems-data with received dcbx extension
41      tlvs";
42    container ets-configuration-tlv-extension {
43      description
44        "Holds a received ETS Configuration TLV";
45      uses ets-configuration-tlv;
46    }
47    container ets-recommendation-tlv-extension {
48      description
49        "Holds a received ETS Recommendation TLV";
50      uses ets-recommendation-tlv;
51    }
52    container pfc-tlv-extension {
53      description
54        "Holds a received Proirity-based Flow Control Configuration TLV";
55      uses pfc-tlv;
56    }
57    container application-priority-tlv-extension {
58      description
59        "Holds a received Application Priority TLV";
60      uses application-priority-tlv;
61    }
62    container application-vlan-tlv-extension {
63      description
64        "Holds a received Application VLAN TLV";
65      uses application-vlan-tlv;
66    }
67  }
68 }
69
70
```