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Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering and Virtual LAN Extensions

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Abstract

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in TCP/IP based internets. In particular, it defines two MIB modules for managing the capabilities of MAC bridges defined by the IEEE 802.1D-1998 (TM) MAC Bridges and the IEEE 802.1Q-2003 (TM) Virtual LAN (VLAN) standards

for bridging between Local Area Network (LAN) segments. One MIB module defines objects for managing the 'Traffic Classes' and 'Enhanced Multicast Filtering' components of IEEE 802.1D-1998 and P802.1t-2001 (TM). The other MIB module defines objects for managing VLANs, as specified in IEEE 802.1Q-2003, P802.1u (TM) and P802.1v (TM).

Provisions are made for support of transparent bridging. Provisions are also made so that these objects apply to bridges connected by subnetworks other than LAN segments.

This memo supplements RFC 1493bis, and obsoletes [RFC 2674](#).
(NOTE for RFC Ed.: all instances of 'RFC 1493bis' will need to be updated to reflect the new RFC number for [draft-ietf-bridge-bridgemib-smiv2-10.txt](#))

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1. The Internet-Standard Management Framework

For a detailed overview of the documents that describe the current Internet-Standard Management Framework, please refer to [section 7 of RFC 3410](#) [[RFC3410](#)].

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. MIB objects are generally accessed through the Simple Network Management Protocol (SNMP). Objects in the MIB are defined using the mechanisms defined in the Structure of Management Information (SMI). This memo specifies a MIB module that is compliant to the SMIV2, which is described in STD 58, [RFC 2578](#) [[RFC2578](#)], STD 58, [RFC 2579](#) [[RFC2579](#)] and STD 58, [RFC 2580](#) [[RFC2580](#)].

2. Overview

A common device present in many networks is the Bridge. This device is used to connect Local Area Network segments below the network layer. These devices are often known as 'layer 2 switches'.

The transparent method of bridging is defined by IEEE 802.1D-1998 [[802.1D](#)]. Managed objects for transparent bridging are defined in the BRIDGE-MIB [[BRIDGE-MIB](#)].

The original IEEE 802.1D is augmented by IEEE 802.1Q-2003 [[802.1Q](#)] to provide support for 'virtual bridged LANs' where a single bridged physical LAN network may be used to support multiple logical bridged LANs, each of which offers a service approximately the same as that defined by IEEE 802.1D. Such virtual LANs (VLANs) are an integral feature of switched LAN networks. A VLAN can be viewed as a group of end-stations on multiple LAN segments and can communicate as if they were on a single LAN. IEEE 802.1Q defines port-based Virtual LANs where membership is determined by the bridge port on which data frames are received, and port-and-protocol-based Virtual LANs where membership is determined by the bridge port on which frames are received and the protocol identifier of the frame. This memo defines the objects needed for the management of port-based VLANs in bridge entities.

2.1. Scope

The MIB modules defined in this document include a comprehensive set of managed objects which attempts to match the set defined in IEEE 802.1D and IEEE 802.1Q. However, to be consistent with the spirit of the SNMP Framework, a subjective judgement was made to omit the objects from those standards most 'costly' to implement in an agent and least 'essential' for fault and configuration management. The omissions are described in [section 3](#) below.

Historical note:

The original BRIDGE-MIB [[RFC1493](#)] used the following principles for determining inclusion of an object in the BRIDGE-MIB module:

- (1) Start with a small set of essential objects and add only as further objects are needed.
- (2) Require objects be essential for either fault or configuration management.
- (3) Consider evidence of current use and/or utility.
- (4) Limit the total number of objects.
- (5) Exclude objects which are simply derivable from others in this or other MIBs.
- (6) Avoid causing critical sections to be heavily instrumented. The guideline that was followed is one counter per critical section per layer.

3. Structure of MIBs

This document defines objects which supplement those in the BRIDGE-MIB module [[BRIDGE-MIB](#)]. [Section 3.4.3](#) of the present document contains some recommendations regarding usage of objects in the BRIDGE-MIB by devices implementing the enhancements defined here.

An extended bridge MIB module P-BRIDGE-MIB defines managed objects for the traffic class and multicast filtering enhancements defined by IEEE 802.1D-1998 [[802.1D](#)], including the Restricted Group Registration control defined by IEEE P802.1t [[802.1t](#)].

A virtual bridge MIB module Q-BRIDGE-MIB defines managed objects for the Virtual LAN bridging enhancements defined by IEEE 802.1Q-2003 [[802.1Q](#)], including the Restricted VLAN Registration control defined by IEEE P802.1u [[802.1u](#)] and the VLAN Classification by Protocol and Port enhancement defined by IEEE P802.1v [[802.1v](#)].

3.1. Structure of Extended Bridge MIB module

Objects in this MIB are arranged into subtrees. Each subtree is organized as a set of related objects. The overall structure and assignment of objects to their subtrees is shown below.

3.1.1. Relationship to IEEE 802.1D-1998 Manageable Objects

This section contains a cross-reference to the objects defined in IEEE 802.1D-1998 [[802.1D](#)]. It also details those objects that are not considered necessary in this MIB module.

Some objects defined by IEEE 802.1D-1998 have been included in the virtual bridge MIB module rather than this one: entries in dot1qTpGroupTable, dot1qForwardAllTable and dot1qForwardUnregisteredTable are required for virtual bridged LANs with additional indexing (e.g. per-VLAN, per-FDB) and so are not defined here. Instead, devices which do not implement virtual bridged LANs but do implement the Extended Forwarding Services defined by IEEE 802.1D (i.e. dynamic learning of multicast group addresses and group service requirements in the filtering database) should implement these tables with a fixed value for dot1qFdbId (the value 1 is recommended) or dot1qVlanIndex (the value 1 is recommended). Devices which support Extended Filtering Services should support dot1qTpGroupTable, dot1qForwardAllTable and dot1qForwardUnregisteredTable.

Extended Bridge MIB Name	IEEE 802.1D-1998 Name
dot1dExtBase	Bridge
dot1dDeviceCapabilities	
dot1dExtendedFilteringServices	
dot1dTrafficClasses	
dot1dTrafficClassesEnabled	
dot1dGmrpStatus	.ApplicantAdministrativeControl
dot1dPriority	
dot1dPortPriorityTable	

dot1dPortDefaultUserPriority	.UserPriority
dot1dPortNumTrafficClasses	
dot1dUserPriorityRegenTable	.UserPriorityRegenerationTable
dot1dUserPriority	
dot1dRegenUserPriority	
dot1dTraficClassTable	.TrafficClassTable
dot1dTraficClassPriority	
dot1dTraficClass	
dot1dPortOutboundAccessPriorityTable	
	.OutboundAccessPriorityTable
dot1dPortOutboundAccessPriority	
dot1dGarp	
dot1dPortGarpTable	
dot1dPortGarpJoinTime	.JoinTime
dot1dPortGarpLeaveTime	.LeaveTime
dot1dPortGarpLeaveAllTime	.LeaveAllTime
dot1dGmrp	
dot1dPortGmrpTable	
dot1dPortGmrpStatus	.ApplicantAdministrativeControl
dot1dPortGmrpFailedRegistrations	.FailedRegistrations
dot1dPortGmrpLastPduOrigin	.OriginatorOfLastPDU
dot1dPortRestrictedGroupRegistration	
	Restricted Group Registration (Ref. IEEE 802.1t 10.3.2.3)
dot1dTp	
dot1dTpHCPortTable	
dot1dTpHCPortInFrames	.BridgePort.FramesReceived
dot1dTpHCPortOutFrames	.ForwardOutBound
dot1dTpHCPortInDiscards	.DiscardInbound
dot1dTpPortOverflowTable	
dot1dTpPortInOverflowFrames	.BridgePort.FramesReceived
dot1dTpPortOutOverflowFrames	.ForwardOutBound
dot1dTpPortInOverflowDiscards	.DiscardInbound

The following IEEE 802.1D-1998 management objects have not been included in the Bridge MIB for the indicated reasons.

IEEE 802.1D-1998 Object	Disposition
Bridge.StateValue	not considered useful
Bridge.ApplicantAdministrativeControl	not provided per-attribute (e.g. per-VLAN, per-Group). Only per-{device,port,application} control is provided in this MIB.

notify group registration failure not considered useful
 (IEEE 802.1t 14.10.1.2)

3.1.2. Relationship to IEEE 802.1Q Manageable Objects

This section contains section number cross-references to manageable objects defined in IEEE 802.1Q-2003 [[802.1Q](#)]. These objects have been included in this MIB as they provide a natural fit with the IEEE 802.1D objects with which they are co-located.

Extended Bridge MIB Name	IEEE 802.1Q-2003 Section and Name
dot1dExtBase	Bridge
dot1dDeviceCapabilities	
dot1qStaticEntryIndividualPort	5.2 implementation options
dot1qIVLCapable	
dot1qSVLCapable	
dot1qHybridCapable	
dot1qConfigurablePvidTagging	12.10.1.1 read bridge vlan config
dot1dLocalVlanCapable	
dot1dPortCapabilitiesTable	
dot1dPortCapabilities	
dot1qDot1qTagging	5.2 implementation options
dot1qConfigurableAcceptableFrameTypes	5.2 implementation options
dot1qIngressFiltering	5.2 implementation options

3.1.3. The dot1dExtBase Subtree

This subtree contains the objects which are applicable to all bridges implementing the traffic class and multicast filtering features of IEEE 802.1D-1998 [[802.1D](#)]. It includes per-device configuration of GARP and GMRP protocols.

3.1.4. The dot1dPriority Subtree

This subtree contains the objects for configuring and reporting status of priority-based queuing mechanisms in a bridge. This includes per-port user_priority treatment, mapping of user_priority in frames into internal traffic classes and outbound user_priority and access_priority.

3.1.5. The dot1dGarp Subtree

This subtree contains the objects for configuring and reporting on operation of the Generic Attribute Registration Protocol (GARP).

3.1.6. The dot1dGmrp Subtree

This subtree contains the objects for configuring and reporting on operation of the GARP Multicast Registration Protocol (GMRP).

3.1.7. The dot1dTpHCPortTable

This table extends the dot1dTp subtree from the BRIDGE-MIB [[BRIDGE-MIB](#)] and contains the objects for reporting port bridging statistics for high capacity network interfaces.

3.1.8. The dot1dTpPortOverflowTable

This table extends the dot1dTp subtree from the BRIDGE-MIB [[BRIDGE-MIB](#)] and contains the objects for reporting the upper bits of port bridging statistics for high capacity network interfaces for when 32-bit counters are inadequate.

3.2. Structure of Virtual Bridge MIB module

Objects in this MIB are arranged into subtrees. Each subtree is organized as a set of related objects. The overall structure and assignment of objects to their subtrees is shown below. Some manageable objects defined in the BRIDGE-MIB [[BRIDGE-MIB](#)] need to be indexed differently when they are used in a VLAN bridging environment: these objects are, therefore, effectively duplicated by new objects with different indexing which are defined in the Virtual Bridge MIB.

3.2.1. Relationship to IEEE 802.1Q Manageable Objects

This section contains section-number cross-references to manageable objects defined in clause 12 of IEEE 802.1Q-2003 [[802.1Q](#)]. It also details those objects that are not considered necessary in this MIB module.

Note: unlike IEEE 802.1D-1998, IEEE 802.1Q-2003 [[802.1Q](#)] did not define exact syntax for a set of managed objects: the following cross-references indicate the section numbering of the descriptions of management operations from clause 12 in the latter document.

Virtual Bridge MIB object	IEEE 802.1Q-2003 Reference
dot1qBase	
dot1qVlanVersionNumber	12.10.1.1 read bridge vlan config
dot1qMaxVlanId	12.10.1.1 read bridge vlan config
dot1qMaxSupportedVlans	12.10.1.1 read bridge vlan config
dot1qNumVlans	
dot1qGvrpStatus	12.9.2.1/2 read/set garp applicant controls
dot1qTp	
dot1qFdbTable	
dot1qFdbId	
dot1qFdbDynamicCount	12.7.1.1.3 read filtering d/base
dot1qTpFdbTable	
dot1qTpFdbAddress	
dot1qTpFdbPort	
dot1qTpFdbStatus	
dot1qTpGroupTable	12.7.7.1 read filtering entry
dot1qTpGroupAddress	
dot1qTpGroupEgressPorts	
dot1qTpGroupLearnt	
dot1qForwardAllTable	12.7.7.1 read filtering entry
dot1qForwardAllPorts	
dot1qForwardAllStaticPorts	
dot1qForwardAllForbiddenPorts	
dot1qForwardUnregisteredTable	12.7.7.1 read filtering entry
dot1qForwardUnregisteredPorts	
dot1qForwardUnregisteredStaticPorts	
dot1qForwardUnregisteredForbiddenPorts	
dot1qStatic	
dot1qStaticUnicastTable	12.7.7.1 create/delete/read filtering entry 12.7.6.1 read permanent database
dot1qStaticUnicastAddress	
dot1qStaticUnicastReceivePort	
dot1qStaticUnicastAllowedToGoTo	
dot1qStaticUnicastStatus	
dot1qStaticMulticastTable	12.7.7.1 create/delete/read filtering entry 12.7.6.1 read permanent database
dot1qStaticMulticastAddress	


```

dot1qStaticMulticastReceivePort
dot1qStaticMulticastStaticEgressPorts
dot1qStaticMulticastForbiddenEgressPorts
dot1qStaticMulticastStatus
dot1qVlan
dot1qVlanNumDeletes
dot1qVlanCurrentTable          12.10.2.1 read vlan configuration
                                12.10.3.5 read VID to FID
                                    allocations
                                12.10.3.6 read FID allocated to
                                    VID
                                12.10.3.7 read VIDs allocated to
                                    FID

dot1qVlanTimeMark
dot1qVlanIndex
dot1qVlanFdbId
dot1qVlanCurrentEgressPorts
dot1qVlanCurrentUntaggedPorts
dot1qVlanStatus
dot1qVlanCreationTime
dot1qVlanStaticTable          12.7.7.1/2/3 create/delete/read
                                    filtering entry
                                12.7.6.1 read permanent database
                                12.10.2.2 create vlan config
                                12.10.2.3 delete vlan config

dot1qVlanStaticName          12.4.1.3 set bridge name
dot1qVlanStaticEgressPorts
dot1qVlanForbiddenEgressPorts
dot1qVlanStaticUntaggedPorts
dot1qVlanStaticRowStatus
dot1qNextFreeLocalVlanIndex
dot1qPortVlanTable          12.10.1.1 read bridge vlan
                                    configuration

dot1qPvid                    12.10.1.2 configure PVID values
dot1qPortAcceptableFrameTypes 12.10.1.3 configure acceptable
                                    frame types parameter

dot1qPortIngressFiltering    12.10.1.4 configure ingress
                                    filtering parameters

dot1qPortGvrpStatus          12.9.2.2 read/set garp applicant
                                    controls

dot1qPortGvrpFailedRegistrations
dot1qPortGvrpLastPduOrigin
dot1qPortRestrictedVlanRegistration
                                IEEE 802.1u 11.2.3.2.3
                                Restricted VLAN Registration
dot1qPortVlanStatisticsTable 12.6.1.1 read forwarding port

```


	counters
dot1qTpVlanPortInFrames	
dot1qTpVlanPortOutFrames	
dot1qTpVlanPortInDiscards	
dot1qTpVlanPortInOverflowFrames	
dot1qTpVlanPortOutOverflowFrames	
dot1qTpVlanPortInOverflowDiscards	
dot1qPortVlanHCStatisticsTable	12.6.1.1 read forwarding port counters
dot1qTpVlanPortHCInFrames	
dot1qTpVlanPortHCOutFrames	
dot1qTpVlanPortHCInDiscards	
dot1qLearningConstraintsTable	12.10.3.1/3/4 read/set/delete vlan learning constraints 12.10.3.2 read vlan learning constraints for VID
dot1qConstraintVlan	
dot1qConstraintSet	
dot1qConstraintType	
dot1qConstraintStatus	
dot1qConstraintSetDefault	
dot1qConstraintTypeDefault	
dot1vProtocol	IEEE 802.1v Reference:
dot1vProtocolGroupTable	8.6.4 Protocol Group Database, 8.6.2 Protocol Template
dot1vProtocolTemplateFrameType	
dot1vProtocolTemplateProtocolValue	
dot1vProtocolGroupId	8.6.3 Protocol Group Identifier
dot1vProtocolGroupRowStatus	
dot1vProtocolPortTable	8.4.4 VID Set for each Port
dot1vProtocolPortGroupId	
dot1vProtocolGroupVid	
dot1vProtocolPortRowStatus	

The following IEEE 802.1Q management objects have not been included in the Bridge MIB for the indicated reasons.

IEEE 802.1Q-2003 Operation	Disposition
reset bridge (12.4.1.4)	not considered useful
reset vlan bridge (12.10.1.5)	not considered useful
read forwarding port counters (12.6.1.1)	

discard on error details	not considered useful
read permanent database (12.7.6.1)	
permanent database size	not considered useful
number of static filtering entries	count rows in dot1qStaticUnicastTable + dot1qStaticMulticastTable
number of static VLAN registration entries	count rows in dot1qVlanStaticTable
read filtering entry range (12.7.7.4)	use GetNext operation.
read filtering database (12.7.1.1)	
filtering database size	not considered useful
number of dynamic group address entries (12.7.1.3)	count rows applicable to each FDB in dot1dTpGroupTable
read garp state (12.9.3.1)	not considered useful
notify vlan registration failure (12.10.1.6)	not considered useful
notify learning constraint violation (12.10.3.10)	not considered useful

3.2.2. The dot1qBase Subtree

This subtree contains the objects which are applicable to all bridges implementing IEEE 802.1Q virtual LANs.

3.2.3. The dot1qTp Subtree

This subtree contains objects that control the operation and report the status of transparent bridging. This includes management of the dynamic Filtering Databases for both unicast and multicast forwarding. This subtree will be implemented by all bridges that perform destination-address filtering.

3.2.4. The dot1qStatic Subtree

This subtree contains objects that control static configuration information for transparent bridging. This includes management of the static entries in the Filtering Databases for both unicast and

multicast forwarding.

3.2.5. The dot1qVlan Subtree

This subtree contains objects that control configuration and report status of the Virtual LANs known to a bridge. This includes management of the statically configured VLANs as well as reporting VLANs discovered by other means e.g. GVRP. It also controls configuration and reports status of per-port objects relating to VLANs and reports traffic statistics. It also provides for management of the VLAN Learning Constraints.

3.3. Textual Conventions

Various Working Groups have defined standards-track MIB documents (for example [[RFC2613](#)] and [[RFC3318](#)]), that contain objects and Textual Conventions to represent a Virtual Local Area Network Identifier (VLAN-ID) [[802.1Q](#)]. New definitions are showing up in various Internet-Drafts (for example [[I-D.ietf-ipcdn-qos-mib](#)], [[I-D.ietf-rmonmib-sspm-mib](#)]). Unfortunately the result is a set of different definitions for the same piece of management information. This may lead to confusion and unnecessary complexity. In order to address this situation, three new textual conventions are defined in the Q-BRIDGE-MIB, called VlanIdOrAny, VlanIdOrNone, and VlanIdOrAnyOrNone. These new textual conventions should be (re-)used in MIB modules, so that they all represent a VLAN-ID in the same way.

These textual conventions provide a means to specify MIB objects that refer to either a specific VLAN, to any VLAN, or to no VLAN. For an example of how these textual conventions might be used, consider a MIB object, with SYNTAX of VlanIdOrAnyOrNone, that specifies the VLAN on which to accept incoming packets of a particular protocol. Such an object would allow the device to be configured to accept packets of this protocol received with a specific 802.1q tag value, with any 802.1q tag value, or with no 802.1q tag. Note that a MIB object that is defined using one of these textual conventions should clarify the meaning of 'any VLAN' and/or 'no VLAN' in its DESCRIPTION clause.

3.4. Relationship to Other MIBs

As described above, some IEEE 802.1D management objects have not been included in this MIB because they overlap with objects in other MIBs applicable to a bridge implementing this MIB module.

3.4.1. Relationship to the SNMPv2-MIB

The SNMPv2-MIB [[RFC3418](#)] defines objects that are generally applicable to managed devices. These objects apply to the device as a whole irrespective of whether the device's sole functionality is bridging, or whether bridging is only a subset of the device's functionality.

Full support for the 802.1D management objects requires that the SNMPv2-MIB objects sysDescr and sysUpTime are implemented. Note that compliance to the current SNMPv2-MIB module requires additional objects and notifications to be implemented as specified in [RFC 3418](#) [[RFC3418](#)].

3.4.2. Relationship to the IF-MIB

The IF-MIB, [[RFC2863](#)], requires that any MIB which is an adjunct of the IF-MIB clarify specific areas within the IF-MIB. These areas were intentionally left vague in the IF-MIB in order to avoid over-constraining the MIB, thereby precluding management of certain media-types.

The IF-MIB enumerates several areas which a media-specific MIB must clarify. Each of these areas is addressed in a following subsection. The implementor is referred to the IF-MIB in order to understand the general intent of these areas.

The IF-MIB [[RFC2863](#)] defines managed objects for managing network interfaces. A network interface is thought of as being attached to a 'subnetwork'. (Note that this term is not to be confused with 'subnet' which refers to an addressing partitioning scheme used in the Internet suite of protocols.) The term 'segment' is used in this memo to refer to such a subnetwork, whether it be an Ethernet segment, a 'ring', a WAN link, or even an X.25 virtual circuit.

Full support for the 802.1D management objects requires that the IF-MIB objects ifIndex, ifType, ifDescr, ifPhysAddress, and ifLastChange are implemented. Note that compliance to the current IF-MIB module requires additional objects and notifications to be implemented as specified in [RFC 2863](#) [[RFC2863](#)].

Implicit in this Extended Bridge MIB is the notion of ports on a bridge. Each of these ports is associated with one interface of the 'interfaces' subtree (one row in ifTable) and, in most situations,

each port is associated with a different interface. However, there are situations in which multiple ports are associated with the same interface. An example of such a situation would be several ports each corresponding one-to-one with several X.25 virtual circuits but all on the same interface.

Each port is uniquely identified by a port number. A port number has no mandatory relationship to an interface number, but in the simple case a port number will have the same value as the corresponding interface's interface number. Port numbers are in the range (1..dot1dBaseNumPorts).

Some entities perform other functionality as well as bridging through the sending and receiving of data on their interfaces. In such situations, only a subset of the data sent/received on an interface is within the domain of the entity's bridging functionality. This subset is considered to be delineated according to a set of protocols, with some protocols being bridged, and other protocols not being bridged. For example, in an entity which exclusively performed bridging, all protocols would be considered as being bridged, whereas in an entity which performed IP routing on IP datagrams and only bridged other protocols, only the non-IP data would be considered as being bridged.

Thus, this Extended Bridge MIB (and in particular, its counters) is applicable only to that subset of the data on an entity's interfaces which is sent/received for a protocol being bridged. All such data is sent/received via the ports of the bridge.

3.4.2.1. Layering Model

This memo assumes the interpretation of the Interfaces Subtree to be in accordance with the IF-MIB [[RFC2863](#)] which states that the interfaces table (ifTable) contains information on the managed resource's interfaces and that each sub-layer below the internetwork layer of a network interface is considered an interface.

This document does not make any assumption that within an entity, VLANs which are instantiated as an entry in dot1qVlanCurrentTable by either management configuration through dot1qVlanStaticTable or by dynamic means (e.g. through GVRP), are also represented by an entry in ifTable.

Where an entity contains higher-layer protocol entities e.g. IP-layer interfaces that transmit and receive traffic to/from a VLAN, these

should be represented in the ifTable as interfaces of type propVirtual(53). Protocol-specific types such as l3ipxvlan(137) should not be used here since there is no implication that the bridge will perform any protocol filtering before delivering up to these virtual interfaces.

3.4.2.2. ifStackTable

In addition, the IF-MIB [[RFC2863](#)] defines a table 'ifStackTable' for describing the relationship between logical interfaces within an entity. It is anticipated that implementors will use this table to describe the binding of e.g. IP interfaces to physical ports, although the presence of VLANs makes the representation less than perfect for showing connectivity: the ifStackTable cannot represent the full capability of the IEEE 802.1Q VLAN bridging standard since that makes a distinction between VLAN bindings on 'ingress' to and 'egress' from a port: these relationships may or may not be symmetrical whereas Interface MIB Evolution assumes a symmetrical binding for transmit and receive. This makes it necessary to define other manageable objects for configuring which ports are members of which VLANs.

3.4.2.3. ifRcvAddressTable

This table contains all MAC addresses, unicast, multicast, and broadcast, for which an interface will receive packets and forward them up to a higher layer entity for local consumption. Note that this does not include addresses for data-link layer control protocols such as Spanning-Tree, GMRP or GVRP. The format of the address, contained in ifRcvAddressAddress, is the same as for ifPhysAddress.

This table does not include unicast or multicast addresses which are accepted for possible forwarding out some other port. This table is explicitly not intended to provide a bridge address filtering mechanism.

3.4.3. Relationship to the BRIDGE-MIB

This section defines how objects in the BRIDGE-MIB module [[BRIDGE-MIB](#)] should be represented for devices which implement the extensions: some of the old objects are less useful in such devices but must still be implemented for reasons of backwards compatibility.

3.4.3.1. The dot1dBase Subtree

This subtree contains objects which are applicable to all types of bridges. Interpretation of this subtree is unchanged.

3.4.3.2. The dot1dStp Subtree

This subtree contains the objects that denote the bridge's state with respect to the Spanning Tree Protocol. Interpretation of this subtree is unchanged.

3.4.3.3. The dot1dTp Subtree

This subtree contains objects that describe the entity's state with respect to transparent bridging.

In a device operating with a single Filtering Database, interpretation of this subtree is unchanged.

In a device supporting multiple Filtering Databases, this subtree is interpreted as follows:

dot1dTpLearnedEntryDiscards

The number of times that *any* of the FDBs became full.

dot1dTpAgingTime

This applies to all Filtering Databases.

dot1dTpFdbTable

Report MAC addresses learned on each port, regardless of which Filtering Database they have been learnt in. If an address has been learnt in multiple databases on a single port, report it only once. If an address has been learnt in multiple databases on more than one port, report the entry on any one of the valid ports.

dot1dTpPortTable

This table is port-based and is not affected by multiple Filtering Databases or multiple VLANs. The counters should include frames received or transmitted for all VLANs. Note that equivalent 64-bit port statistics counters, as well as other

objects to represent the upper 32 bits of these counters, are defined in this document for high capacity network interfaces. These have conformance statements to indicate for which speeds of interface they are required.

3.4.3.4. The dot1dStatic Subtree

This optional subtree contains objects that describe the configuration of destination-address filtering.

In a device operating with a single Filtering Database, interpretation of this subtree is unchanged.

In a device supporting multiple Filtering Databases, this subtree is interpreted as follows:

dot1dStaticTable

Entries read from this table include all static entries from all of the Filtering Databases. Entries for the same MAC address and receive port in more than one Filtering Database must appear only once since these are the indices of this table. This table should be implemented as read-only in devices that support multiple Forwarding Databases - instead, write access should be provided through dot1qStaticUnicastTable and dot1qStaticMulticastTable, as defined in this document.

3.4.3.5. Additions to the BRIDGE-MIB

To supplement the BRIDGE-MIB [[BRIDGE-MIB](#)], this module contains:

- (1) support for multiple traffic classes and dynamic multicast filtering as per IEEE 802.1D-1998 [[802.1D](#)].
- (2) support for bridged Virtual LANs as per IEEE 802.1Q-2003 [[802.1Q](#)].
- (3) support for 64-bit versions of BRIDGE-MIB [[BRIDGE-MIB](#)] port counters.

4. Definitions for Extended Bridge MIB

P-BRIDGE-MIB DEFINITIONS ::= BEGIN

-- MIB for IEEE 802.1p devices

IMPORTS

MODULE-IDENTITY, OBJECT-TYPE, Counter32, Integer32, Counter64
FROM SNMPv2-SMI
TruthValue, TimeInterval, MacAddress, TEXTUAL-CONVENTION
FROM SNMPv2-TC
MODULE-COMPLIANCE, OBJECT-GROUP
FROM SNMPv2-CONF
dot1dTp, dot1dTpPort, dot1dBridge,
dot1dBasePortEntry, dot1dBasePort
FROM BRIDGE-MIB;

pBridgeMIB MODULE-IDENTITY

LAST-UPDATED "200507290000Z"
ORGANIZATION "IETF Bridge MIB Working Group"
CONTACT-INFO

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170 West Tasman Drive
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USA

Phone: +1 408 526 5260

Email: kzm@cisco.com"

DESCRIPTION

"The Bridge MIB Extension module for managing Priority and Multicast Filtering, defined by IEEE 802.1D-1998, including Restricted Group Registration defined by IEEE 802.1t-2001.

Copyright (C) The Internet Society (2005). This version of this MIB module is part of RFC XXXX; See the RFC itself for full legal notices."

-- NOTE to RFC editor: replace XXXX with actual RFC number
-- for this document and remove this note

REVISION "200507290000Z"

DESCRIPTION

"Added dot1dPortRestrictedGroupRegistration.
Deprecated pBridgePortGmrpGroup and pBridgeCompliance
and added pBridgePortGmrpGroup2 and pBridgeCompliance2."

REVISION "199908250000Z"

DESCRIPTION

"The Bridge MIB Extension module for managing Priority
and Multicast Filtering, defined by IEEE 802.1D-1998.

Initial version, published as [RFC 2674](#)."

::= { dot1dBridge 6 }

pBridgeMIBObjects OBJECT IDENTIFIER ::= { pBridgeMIB 1 }

-- Textual Conventions

EnabledStatus ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"A simple status value for the object."

SYNTAX INTEGER { enabled(1), disabled(2) }

-- subtrees in the P-BRIDGE MIB

dot1dExtBase OBJECT IDENTIFIER ::= { pBridgeMIBObjects 1 }

dot1dPriority OBJECT IDENTIFIER ::= { pBridgeMIBObjects 2 }

dot1dGarp OBJECT IDENTIFIER ::= { pBridgeMIBObjects 3 }

dot1dGmrp OBJECT IDENTIFIER ::= { pBridgeMIBObjects 4 }

-- the dot1dExtBase subtree

dot1dDeviceCapabilities OBJECT-TYPE

SYNTAX BITS {

dot1dExtendedFilteringServices(0),

dot1dTrafficClasses(1),

dot1qStaticEntryIndividualPort(2),

dot1qIVLCapable(3),


```

    dot1qSVLCapable(4),
    dot1qHybridCapable(5),
    dot1qConfigurablePvidTagging(6),
    dot1dLocalVlanCapable(7)
}
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION
    "Indicates the optional parts of IEEE 802.1D and 802.1Q
    that are implemented by this device and are manageable
    through this MIB. Capabilities that are allowed on a
    per-port basis are indicated in dot1dPortCapabilities.

    dot1dExtendedFilteringServices(0),
        -- can perform filtering of
        -- individual multicast addresses
        -- controlled by GMRP.
    dot1dTrafficClasses(1),
        -- can map user priority to
        -- multiple traffic classes.
    dot1qStaticEntryIndividualPort(2),
        -- dot1qStaticUnicastReceivePort &
        -- dot1qStaticMulticastReceivePort
        -- can represent non-zero entries.
    dot1qIVLCapable(3),    -- Independent VLAN Learning.
    dot1qSVLCapable(4),   -- Shared VLAN Learning.
    dot1qHybridCapable(5),
        -- both IVL & SVL simultaneously.
    dot1qConfigurablePvidTagging(6),
        -- whether the implementation
        -- supports the ability to
        -- override the default PVID
        -- setting and its egress status
        -- (VLAN-Tagged or Untagged) on
        -- each port.
    dot1dLocalVlanCapable(7)
        -- can support multiple local
        -- bridges, outside of the scope
        -- of 802.1Q defined VLANs."

REFERENCE
    "ISO/IEC 15802-3 Section 5.2,
    IEEE 802.1Q/D11 Section 5.2, 12.10.1.1.3/b/2"
 ::= { dot1dExtBase 1 }

```

```

dot1dTrafficClassesEnabled OBJECT-TYPE
    SYNTAX      TruthValue

```



```

MAX-ACCESS read-write
STATUS      current
DESCRIPTION

```

"The value true(1) indicates that Traffic Classes are enabled on this bridge. When false(2), the bridge operates with a single priority level for all traffic.

The value of this object MUST be retained across reinitializations of the management system."

```

DEFVAL      { true }
 ::= { dot1dExtBase 2 }

```

```

dot1dGmrpStatus OBJECT-TYPE

```

```

SYNTAX      EnabledStatus
MAX-ACCESS read-write
STATUS      current
DESCRIPTION

```

"The administrative status requested by management for GMRP. The value enabled(1) indicates that GMRP should be enabled on this device, in all VLANs, on all ports for which it has not been specifically disabled. When disabled(2), GMRP is disabled, in all VLANs, on all ports and all GMRP packets will be forwarded transparently. This object affects both Applicant and Registrar state machines. A transition from disabled(2) to enabled(1) will cause a reset of all GMRP state machines on all ports.

The value of this object MUST be retained across reinitializations of the management system."

```

DEFVAL      { enabled }
 ::= { dot1dExtBase 3 }

```

```

-----
-- Port Capabilities Table
-----

```

```

dot1dPortCapabilitiesTable OBJECT-TYPE

```

```

SYNTAX      SEQUENCE OF Dot1dPortCapabilitiesEntry
MAX-ACCESS not-accessible
STATUS      current
DESCRIPTION

```

"A table that contains capabilities information about every port that is associated with this bridge."

```

 ::= { dot1dExtBase 4 }

```


dot1dPortCapabilitiesEntry OBJECT-TYPE

SYNTAX Dot1dPortCapabilitiesEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A set of capabilities information about this port indexed by dot1dBasePort."

AUGMENTS { dot1dBasePortEntry }

::= { dot1dPortCapabilitiesTable 1 }

Dot1dPortCapabilitiesEntry ::=

SEQUENCE {

dot1dPortCapabilities

BITS

}

dot1dPortCapabilities OBJECT-TYPE

SYNTAX BITS {

dot1qDot1qTagging(0),

dot1qConfigurableAcceptableFrameTypes(1),

dot1qIngressFiltering(2)

}

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Indicates the parts of IEEE 802.1D and 802.1Q that are optional on a per-port basis that are implemented by this device and are manageable through this MIB.

dot1qDot1qTagging(0), -- supports 802.1Q VLAN tagging of
-- frames and GVRP.

dot1qConfigurableAcceptableFrameTypes(1),
-- allows modified values of
-- dot1qPortAcceptableFrameTypes.

dot1qIngressFiltering(2)
-- supports the discarding of any
-- frame received on a Port whose
-- VLAN classification does not
-- include that Port in its Member
-- set."

REFERENCE

"ISO/IEC 15802-3 [Section 5.2](#),

IEEE 802.1Q/D11 [Section 5.2](#)"

::= { dot1dPortCapabilitiesEntry 1 }

```
-- the dot1dPriority subtree
```

```
-----
```

```
-----
```

```
-- Port Priority Table
```

```
-----
```

```
dot1dPortPriorityTable OBJECT-TYPE
```

```
    SYNTAX      SEQUENCE OF Dot1dPortPriorityEntry
```

```
    MAX-ACCESS  not-accessible
```

```
    STATUS      current
```

```
    DESCRIPTION
```

```
        "A table that contains information about every port that  
        is associated with this transparent bridge."
```

```
    ::= { dot1dPriority 1 }
```

```
dot1dPortPriorityEntry OBJECT-TYPE
```

```
    SYNTAX      Dot1dPortPriorityEntry
```

```
    MAX-ACCESS  not-accessible
```

```
    STATUS      current
```

```
    DESCRIPTION
```

```
        "A list of Default User Priorities for each port of a  
        transparent bridge. This is indexed by dot1dBasePort."
```

```
    AUGMENTS { dot1dBasePortEntry }
```

```
    ::= { dot1dPortPriorityTable 1 }
```

```
Dot1dPortPriorityEntry ::=
```

```
    SEQUENCE {
```

```
        dot1dPortDefaultUserPriority
```

```
        Integer32,
```

```
        dot1dPortNumTrafficClasses
```

```
        Integer32
```

```
    }
```

```
dot1dPortDefaultUserPriority OBJECT-TYPE
```

```
    SYNTAX      Integer32 (0..7)
```

```
    MAX-ACCESS  read-write
```

```
    STATUS      current
```

```
    DESCRIPTION
```

```
        "The default ingress User Priority for this port. This  
        only has effect on media, such as Ethernet, that do not  
        support native User Priority.
```

```
        The value of this object MUST be retained across  
        reinitializations of the management system."
```

```
    ::= { dot1dPortPriorityEntry 1 }
```


dot1dPortNumTrafficClasses OBJECT-TYPE

SYNTAX Integer32 (1..8)

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The number of egress traffic classes supported on this port. This object may optionally be read-only.

The value of this object MUST be retained across reinitializations of the management system."

::= { dot1dPortPriorityEntry 2 }

-- User Priority Regeneration Table

dot1dUserPriorityRegenTable OBJECT-TYPE

SYNTAX SEQUENCE OF Dot1dUserPriorityRegenEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A list of Regenerated User Priorities for each received User Priority on each port of a bridge. The Regenerated User Priority value may be used to index the Traffic Class Table for each input port. This only has effect on media that support native User Priority. The default values for Regenerated User Priorities are the same as the User Priorities."

REFERENCE

"ISO/IEC 15802-3 [Section 6.4](#)"

::= { dot1dPriority 2 }

dot1dUserPriorityRegenEntry OBJECT-TYPE

SYNTAX Dot1dUserPriorityRegenEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A mapping of incoming User Priority to a Regenerated User Priority."

INDEX { dot1dBasePort, dot1dUserPriority }

::= { dot1dUserPriorityRegenTable 1 }

Dot1dUserPriorityRegenEntry ::=

SEQUENCE {

dot1dUserPriority

Integer32,


```

    dot1dRegenUserPriority
        Integer32
    }

```

```

dot1dUserPriority OBJECT-TYPE
    SYNTAX      Integer32 (0..7)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The User Priority for a frame received on this port."
    ::= { dot1dUserPriorityRegenEntry 1 }

```

```

dot1dRegenUserPriority OBJECT-TYPE
    SYNTAX      Integer32 (0..7)
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "The Regenerated User Priority that the incoming User
        Priority is mapped to for this port.

        The value of this object MUST be retained across
        reinitializations of the management system."
    ::= { dot1dUserPriorityRegenEntry 2 }

```

```

-----
-- Traffic Class Table
-----

```

```

dot1dTrafficClassTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF Dot1dTrafficClassEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A table mapping evaluated User Priority to Traffic
        Class, for forwarding by the bridge. Traffic class is a
        number in the range (0..(dot1dPortNumTrafficClasses-1))."
    REFERENCE
        "ISO/IEC 15802-3 Table 7-2"
    ::= { dot1dPriority 3 }

```

```

dot1dTrafficClassEntry OBJECT-TYPE
    SYNTAX      Dot1dTrafficClassEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "User Priority to Traffic Class mapping."

```



```

INDEX { dot1dBasePort, dot1dTrafficClassPriority }
 ::= { dot1dTrafficClassTable 1 }

```

```

Dot1dTrafficClassEntry ::=
  SEQUENCE {
    dot1dTrafficClassPriority
      Integer32,
    dot1dTrafficClass
      Integer32
  }

```

dot1dTrafficClassPriority OBJECT-TYPE

```

SYNTAX      Integer32 (0..7)
MAX-ACCESS  not-accessible
STATUS      current

```

DESCRIPTION

"The Priority value determined for the received frame. This value is equivalent to the priority indicated in the tagged frame received, or one of the evaluated priorities, determined according to the media-type.

For untagged frames received from Ethernet media, this value is equal to the dot1dPortDefaultUserPriority value for the ingress port.

For untagged frames received from non-Ethernet media, this value is equal to the dot1dRegenUserPriority value for the ingress port and media-specific user priority."

```
 ::= { dot1dTrafficClassEntry 1 }

```

dot1dTrafficClass OBJECT-TYPE

```

SYNTAX      Integer32 (0..7)
MAX-ACCESS  read-write
STATUS      current

```

DESCRIPTION

"The Traffic Class the received frame is mapped to.

The value of this object MUST be retained across reinitializations of the management system."

```
 ::= { dot1dTrafficClassEntry 2 }

```

```

-----
-- Outbound Access Priority Table
-----

```

dot1dPortOutboundAccessPriorityTable OBJECT-TYPE


```

SYNTAX      SEQUENCE OF Dot1dPortOutboundAccessPriorityEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "A table mapping Regenerated User Priority to Outbound
    Access Priority. This is a fixed mapping for all port
    types, with two options for 802.5 Token Ring."
REFERENCE
    "ISO/IEC 15802-3 Table 7-3"
 ::= { dot1dPriority 4 }

```

```

dot1dPortOutboundAccessPriorityEntry OBJECT-TYPE
SYNTAX      Dot1dPortOutboundAccessPriorityEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "Regenerated User Priority to Outbound Access Priority
    mapping."
INDEX       { dot1dBasePort, dot1dRegenUserPriority }
 ::= { dot1dPortOutboundAccessPriorityTable 1 }

```

```

Dot1dPortOutboundAccessPriorityEntry ::=
SEQUENCE {
    dot1dPortOutboundAccessPriority
        Integer32
}

```

```

dot1dPortOutboundAccessPriority OBJECT-TYPE
SYNTAX      Integer32 (0..7)
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "The Outbound Access Priority the received frame is
    mapped to."
 ::= { dot1dPortOutboundAccessPriorityEntry 1 }

```

```

-----
-- the dot1dGarp subtree
-----

-----
-- The GARP Port Table
-----

```

```

dot1dPortGarpTable OBJECT-TYPE
SYNTAX      SEQUENCE OF Dot1dPortGarpEntry

```


MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
 "A table of GARP control information about every bridge
 port. This is indexed by dot1dBasePort."
 ::= { dot1dGarp 1 }

dot1dPortGarpEntry OBJECT-TYPE
SYNTAX Dot1dPortGarpEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
 "GARP control information for a bridge port."
AUGMENTS { dot1dBasePortEntry }
 ::= { dot1dPortGarpTable 1 }

Dot1dPortGarpEntry ::=
SEQUENCE {
 dot1dPortGarpJoinTime
 TimeInterval,
 dot1dPortGarpLeaveTime
 TimeInterval,
 dot1dPortGarpLeaveAllTime
 TimeInterval
}

dot1dPortGarpJoinTime OBJECT-TYPE
SYNTAX TimeInterval
MAX-ACCESS read-write
STATUS current
DESCRIPTION
 "The GARP Join time, in centiseconds.

 The value of this object MUST be retained across
 reinitializations of the management system."
DEFVAL { 20 }
 ::= { dot1dPortGarpEntry 1 }

dot1dPortGarpLeaveTime OBJECT-TYPE
SYNTAX TimeInterval
MAX-ACCESS read-write
STATUS current
DESCRIPTION
 "The GARP Leave time, in centiseconds.

 The value of this object MUST be retained across


```

    reinitializations of the management system."
  DEFVAL      { 60 }
  ::= { dot1dPortGarpEntry 2 }

```

```

dot1dPortGarpLeaveAllTime OBJECT-TYPE

```

```

  SYNTAX      TimeInterval
  MAX-ACCESS  read-write
  STATUS      current
  DESCRIPTION

```

```

    "The GARP LeaveAll time, in centiseconds.
```

```

    The value of this object MUST be retained across
    reinitializations of the management system."
```

```

  DEFVAL      { 1000 }
  ::= { dot1dPortGarpEntry 3 }

```

```

-----
-- The GMRP Port Configuration and Status Table
-----

```

```

dot1dPortGmrpTable OBJECT-TYPE

```

```

  SYNTAX      SEQUENCE OF Dot1dPortGmrpEntry
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION

```

```

    "A table of GMRP control and status information about
    every bridge port. Augments the dot1dBasePortTable."
```

```

  ::= { dot1dGmrp 1 }

```

```

dot1dPortGmrpEntry OBJECT-TYPE

```

```

  SYNTAX      Dot1dPortGmrpEntry
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION

```

```

    "GMRP control and status information for a bridge port."
```

```

  AUGMENTS { dot1dBasePortEntry }
  ::= { dot1dPortGmrpTable 1 }

```

```

Dot1dPortGmrpEntry ::=

```

```

  SEQUENCE {
    dot1dPortGmrpStatus
      EnabledStatus,
    dot1dPortGmrpFailedRegistrations
      Counter32,
    dot1dPortGmrpLastPduOrigin
      MacAddress,

```



```
        dot1dPortRestrictedGroupRegistration
            TruthValue
    }
```

dot1dPortGmrpStatus OBJECT-TYPE

SYNTAX EnabledStatus

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The administrative state of GMRP operation on this port. The value enabled(1) indicates that GMRP is enabled on this port in all VLANs as long as dot1dGmrpStatus is also enabled(1). A value of disabled(2) indicates that GMRP is disabled on this port in all VLANs: any GMRP packets received will be silently discarded and no GMRP registrations will be propagated from other ports. Setting this to a value of enabled(1) will be stored by the agent but will only take effect on the GMRP protocol operation if dot1dGmrpStatus also indicates the value enabled(1). This object affects all GMRP Applicant and Registrar state machines on this port. A transition from disabled(2) to enabled(1) will cause a reset of all GMRP state machines on this port.

The value of this object MUST be retained across reinitializations of the management system."

DEFVAL { enabled }

::= { dot1dPortGmrpEntry 1 }

dot1dPortGmrpFailedRegistrations OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The total number of failed GMRP registrations, for any reason, in all VLANs, on this port."

::= { dot1dPortGmrpEntry 2 }

dot1dPortGmrpLastPduOrigin OBJECT-TYPE

SYNTAX MacAddress

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The Source MAC Address of the last GMRP message received on this port."

::= { dot1dPortGmrpEntry 3 }

dot1dPortRestrictedGroupRegistration OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The state of Restricted Group Registration on this port.
If the value of this control is true(1), then creation
of a new dynamic entry is permitted only if there is a
Static Filtering Entry for the VLAN concerned, in which
the Registrar Administrative Control value is Normal
Registration.

The value of this object MUST be retained across
reinitializations of the management system."

REFERENCE

"IEEE 802.1t clause 10.3.2.3, 14.10.1.3."

DEFVAL { false }

::= { dot1dPortGmrpEntry 4 }

-- High Capacity Port Table for Transparent Bridges

dot1dTpHCPortTable OBJECT-TYPE

SYNTAX SEQUENCE OF Dot1dTpHCPortEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A table that contains information about every high
capacity port that is associated with this transparent
bridge."

::= { dot1dTp 5 }

dot1dTpHCPortEntry OBJECT-TYPE

SYNTAX Dot1dTpHCPortEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Statistics information for each high capacity port of a
transparent bridge."

INDEX { dot1dTpPort }

::= { dot1dTpHCPortTable 1 }

Dot1dTpHCPortEntry ::=

SEQUENCE {
dot1dTpHCPortInFrames


```
        Counter64,  
dot1dTpHCPortOutFrames  
        Counter64,  
dot1dTpHCPortInDiscards  
        Counter64  
}
```

dot1dTpHCPortInFrames OBJECT-TYPE

SYNTAX Counter64

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of frames that have been received by this port from its segment. Note that a frame received on the interface corresponding to this port is only counted by this object if and only if it is for a protocol being processed by the local bridging function, including bridge management frames."

REFERENCE

"ISO/IEC 15802-3 [Section 14.6.1.1.3](#)"

::= { dot1dTpHCPortEntry 1 }

dot1dTpHCPortOutFrames OBJECT-TYPE

SYNTAX Counter64

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of frames that have been transmitted by this port to its segment. Note that a frame transmitted on the interface corresponding to this port is only counted by this object if and only if it is for a protocol being processed by the local bridging function, including bridge management frames."

REFERENCE

"ISO/IEC 15802-3 [Section 14.6.1.1.3](#)"

::= { dot1dTpHCPortEntry 2 }

dot1dTpHCPortInDiscards OBJECT-TYPE

SYNTAX Counter64

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Count of valid frames that have been received by this port from its segment which were discarded (i.e., filtered) by the Forwarding Process."

REFERENCE

"ISO/IEC 15802-3 [Section 14.6.1.1.3](#)"
 ::= { dot1dTpHCPortEntry 3 }

 -- Upper part of High Capacity Port Table for Transparent Bridges

dot1dTpPortOverflowTable OBJECT-TYPE

SYNTAX SEQUENCE OF Dot1dTpPortOverflowEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A table that contains the most-significant bits of statistics counters for ports that are associated with this transparent bridge that are on high capacity interfaces, as defined in the conformance clauses for this table. This table is provided as a way to read 64-bit counters for agents which support only SNMPv1.

Note that the reporting of most-significant and least-significant counter bits separately runs the risk of missing an overflow of the lower bits in the interval between sampling. The manager must be aware of this possibility, even within the same varbindlist, when interpreting the results of a request or asynchronous notification."

::= { dot1dTp 6 }

dot1dTpPortOverflowEntry OBJECT-TYPE

SYNTAX Dot1dTpPortOverflowEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The most significant bits of statistics counters for a high capacity interface of a transparent bridge. Each object is associated with a corresponding object in dot1dTpPortTable which indicates the least significant bits of the counter."

INDEX { dot1dTpPort }

::= { dot1dTpPortOverflowTable 1 }

Dot1dTpPortOverflowEntry ::=

SEQUENCE {

dot1dTpPortInOverflowFrames

Counter32,

dot1dTpPortOutOverflowFrames

Counter32,

dot1dTpPortInOverflowDiscards

Counter32
}

dot1dTpPortInOverflowFrames OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"The number of times the associated dot1dTpPortInFrames counter has overflowed."

REFERENCE

"ISO/IEC 15802-3 [Section 14.6.1.1.3](#)"

::= { dot1dTpPortOverflowEntry 1 }

dot1dTpPortOutOverflowFrames OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"The number of times the associated dot1dTpPortOutFrames counter has overflowed."

REFERENCE

"ISO/IEC 15802-3 [Section 14.6.1.1.3](#)"

::= { dot1dTpPortOverflowEntry 2 }

dot1dTpPortInOverflowDiscards OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"The number of times the associated dot1dTpPortInDiscards counter has overflowed."

REFERENCE

"ISO/IEC 15802-3 [Section 14.6.1.1.3](#)"

::= { dot1dTpPortOverflowEntry 3 }

-- IEEE 802.1p MIB - Conformance Information

pBridgeConformance OBJECT IDENTIFIER ::= { pBridgeMIB 2 }

pBridgeGroups OBJECT IDENTIFIER ::= { pBridgeConformance 1 }

pBridgeCompliances OBJECT IDENTIFIER
::= { pBridgeConformance 2 }

-- units of conformance

pBridgeExtCapGroup OBJECT-GROUP
 OBJECTS {
 dot1dDeviceCapabilities,
 dot1dPortCapabilities
 }
 STATUS current
 DESCRIPTION
 "A collection of objects indicating the optional
 capabilities of the device."
 ::= { pBridgeGroups 1 }

pBridgeDeviceGmrpGroup OBJECT-GROUP
 OBJECTS {
 dot1dGmrpStatus
 }
 STATUS current
 DESCRIPTION
 "A collection of objects providing device-level control
 for the Multicast Filtering extended bridge services."
 ::= { pBridgeGroups 2 }

pBridgeDevicePriorityGroup OBJECT-GROUP
 OBJECTS {
 dot1dTrafficClassesEnabled
 }
 STATUS current
 DESCRIPTION
 "A collection of objects providing device-level control
 for the Priority services."
 ::= { pBridgeGroups 3 }

pBridgeDefaultPriorityGroup OBJECT-GROUP
 OBJECTS {
 dot1dPortDefaultUserPriority
 }
 STATUS current
 DESCRIPTION
 "A collection of objects defining the User Priority
 applicable to each port for media which do not support
 native User Priority."
 ::= { pBridgeGroups 4 }

pBridgeRegenPriorityGroup OBJECT-GROUP

```
OBJECTS {
    dot1dRegenUserPriority
}
STATUS      current
DESCRIPTION
    "A collection of objects defining the User Priorities
    applicable to each port for media which support native
    User Priority."
 ::= { pBridgeGroups 5 }
```

pBridgePriorityGroup OBJECT-GROUP

```
OBJECTS {
    dot1dPortNumTrafficClasses,
    dot1dTrafficClass
}
STATUS      current
DESCRIPTION
    "A collection of objects defining the traffic classes
    within a bridge for each evaluated User Priority."
 ::= { pBridgeGroups 6 }
```

pBridgeAccessPriorityGroup OBJECT-GROUP

```
OBJECTS {
    dot1dPortOutboundAccessPriority
}
STATUS      current
DESCRIPTION
    "A collection of objects defining the media dependent
    outbound access level for each priority."
 ::= { pBridgeGroups 7 }
```

pBridgePortGarpGroup OBJECT-GROUP

```
OBJECTS {
    dot1dPortGarpJoinTime,
    dot1dPortGarpLeaveTime,
    dot1dPortGarpLeaveAllTime
}
STATUS      current
DESCRIPTION
    "A collection of objects providing port level control
    and status information for GARP operation."
 ::= { pBridgeGroups 8 }
```

pBridgePortGmrpGroup OBJECT-GROUP

```
OBJECTS {
```



```
    dot1dPortGmrpStatus,
    dot1dPortGmrpFailedRegistrations,
    dot1dPortGmrpLastPduOrigin
}
STATUS      deprecated
DESCRIPTION
    "A collection of objects providing port level control
    and status information for GMRP operation."
::= { pBridgeGroups 9 }
```

```
pBridgeHCPortGroup OBJECT-GROUP
OBJECTS {
    dot1dTpHCPortInFrames,
    dot1dTpHCPortOutFrames,
    dot1dTpHCPortInDiscards
}
STATUS      current
DESCRIPTION
    "A collection of objects providing 64-bit statistics
    counters for high capacity bridge ports."
::= { pBridgeGroups 10 }
```

```
pBridgePortOverflowGroup OBJECT-GROUP
OBJECTS {
    dot1dTpPortInOverflowFrames,
    dot1dTpPortOutOverflowFrames,
    dot1dTpPortInOverflowDiscards
}
STATUS      current
DESCRIPTION
    "A collection of objects providing overflow statistics
    counters for high capacity bridge ports."
::= { pBridgeGroups 11 }
```

```
pBridgePortGmrpGroup2 OBJECT-GROUP
OBJECTS {
    dot1dPortGmrpStatus,
    dot1dPortGmrpFailedRegistrations,
    dot1dPortGmrpLastPduOrigin,
    dot1dPortRestrictedGroupRegistration
}
STATUS      current
DESCRIPTION
    "A collection of objects providing port level control
    and status information for GMRP operation."
::= { pBridgeGroups 12 }
```

-- compliance statements

pBridgeCompliance MODULE-COMPLIANCE

STATUS deprecated

DESCRIPTION

"The compliance statement for device support of Priority and Multicast Filtering extended bridging services."

MODULE

MANDATORY-GROUPS { pBridgeExtCapGroup }

GROUP pBridgeDeviceGmrpGroup

DESCRIPTION

"This group is mandatory for devices supporting the GMRP application, defined by IEEE 802.1D Extended Filtering Services."

GROUP pBridgeDevicePriorityGroup

DESCRIPTION

"This group is mandatory only for devices supporting the priority forwarding operations defined by IEEE 802.1D."

GROUP pBridgeDefaultPriorityGroup

DESCRIPTION

"This group is mandatory only for devices supporting the priority forwarding operations defined by the extended bridge services with media types, such as Ethernet, that do not support native User Priority."

GROUP pBridgeRegenPriorityGroup

DESCRIPTION

"This group is mandatory only for devices supporting the priority forwarding operations defined by IEEE 802.1D and which have interface media types that support native User Priority e.g. IEEE 802.5."

GROUP pBridgePriorityGroup

DESCRIPTION

"This group is mandatory only for devices supporting the priority forwarding operations defined by IEEE 802.1D."

GROUP pBridgeAccessPriorityGroup

DESCRIPTION

"This group is optional and is relevant only for devices supporting the priority forwarding operations defined by IEEE 802.1D and which have interface media types that support native Access Priority e.g. IEEE 802.5."

GROUP pBridgePortGarpGroup

DESCRIPTION

"This group is mandatory for devices supporting any of the GARP applications: e.g. GMRP, defined by the extended filtering services of 802.1D; or GVRP, defined by 802.1Q (refer to the Q-BRIDGE-MIB for conformance statements for GVRP)."

GROUP pBridgePortGmrpGroup

DESCRIPTION

"This group is mandatory for devices supporting the GMRP application, as defined by IEEE 802.1D Extended Filtering Services."

GROUP pBridgeHCPortGroup

DESCRIPTION

"Support for this group in a device is mandatory for those bridge ports which map to network interfaces that have the value of the corresponding instance of ifSpeed greater than 650,000,000 bits/second."

GROUP pBridgePortOverflowGroup

DESCRIPTION

"Support for this group in a device is mandatory for those bridge ports which map to network interfaces that have the value of the corresponding instance of ifSpeed greater than 650,000,000 bits/second."

OBJECT dot1dPortNumTrafficClasses

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT dot1dTrafficClass

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT dot1dRegenUserPriority

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

::= { pBridgeCompliances 1 }

pBridgeCompliance2 MODULE-COMPLIANCE

STATUS current

DESCRIPTION

"The compliance statement for device support of Priority and Multicast Filtering extended bridging services."

MODULE

MANDATORY-GROUPS { pBridgeExtCapGroup }

GROUP pBridgeDeviceGmrpGroup

DESCRIPTION

"This group is mandatory for devices supporting the GMRP application, defined by IEEE 802.1D Extended Filtering Services."

GROUP pBridgeDevicePriorityGroup

DESCRIPTION

"This group is mandatory only for devices supporting the priority forwarding operations defined by IEEE 802.1D."

GROUP pBridgeDefaultPriorityGroup

DESCRIPTION

"This group is mandatory only for devices supporting the priority forwarding operations defined by the extended bridge services with media types, such as Ethernet, that do not support native User Priority."

GROUP pBridgeRegenPriorityGroup

DESCRIPTION

"This group is mandatory only for devices supporting the priority forwarding operations defined by IEEE 802.1D and which have interface media types that support native User Priority e.g. IEEE 802.5."

GROUP pBridgePriorityGroup

DESCRIPTION

"This group is mandatory only for devices supporting the priority forwarding operations defined by IEEE 802.1D."

GROUP pBridgeAccessPriorityGroup

DESCRIPTION

"This group is optional and is relevant only for devices supporting the priority forwarding operations defined by IEEE 802.1D and which have interface media types that support native Access Priority e.g. IEEE 802.5."

GROUP pBridgePortGarpGroup

DESCRIPTION

"This group is mandatory for devices supporting any of the GARP applications: e.g. GMRP, defined by the extended filtering services of 802.1D; or GVRP, defined by 802.1Q (refer to the Q-BRIDGE-MIB for conformance statements for GVRP)."

GROUP pBridgePortGmrpGroup2

DESCRIPTION

"This group is mandatory for devices supporting the GMRP application, as defined by IEEE 802.1D Extended Filtering Services."

GROUP pBridgeHCPortGroup

DESCRIPTION

"Support for this group in a device is mandatory for those bridge ports which map to network interfaces that have the value of the corresponding instance of ifSpeed greater than 650,000,000 bits/second."

GROUP pBridgePortOverflowGroup

DESCRIPTION

"Support for this group in a device is mandatory for those bridge ports which map to network interfaces that have the value of the corresponding instance of ifSpeed greater than 650,000,000 bits/second."

OBJECT dot1dPortNumTrafficClasses

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT dot1dTrafficClass

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

OBJECT dot1dRegenUserPriority

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required."

::= { pBridgeCompliances 2 }

END

5. Definitions for Virtual Bridge MIB

Q-BRIDGE-MIB DEFINITIONS ::= BEGIN

-- MIB for IEEE 802.1Q Devices

IMPORTS

MODULE-IDENTITY, OBJECT-TYPE,
Counter32, Counter64, Unsigned32, TimeTicks, Integer32
FROM SNMPv2-SMI
RowStatus, TruthValue, TEXTUAL-CONVENTION, MacAddress
FROM SNMPv2-TC
SnmpAdminString
FROM SNMP-FRAMEWORK-MIB
MODULE-COMPLIANCE, OBJECT-GROUP
FROM SNMPv2-CONF
dot1dBridge, dot1dBasePortEntry, dot1dBasePort
FROM BRIDGE-MIB
EnabledStatus
FROM P-BRIDGE-MIB
TimeFilter
FROM RMON2-MIB;

qBridgeMIB MODULE-IDENTITY

LAST-UPDATED "200507290000Z"
ORGANIZATION "IETF Bridge MIB Working Group"
CONTACT-INFO
"Email: Bridge-mib@ietf.org
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Email: kzm@cisco.com"

DESCRIPTION

"The VLAN Bridge MIB module for managing Virtual Bridged Local Area Networks, as defined by IEEE 802.1Q-2003, including Restricted Vlan Registration defined by IEEE 802.1u-2001 and Vlan Classification defined by IEEE 802.1v-2001.

Copyright (C) The Internet Society (2005). This version of this MIB module is part of RFC XXXX; See the RFC itself for full legal notices."

-- NOTE to RFC editor: replace XXXX with actual RFC number
-- for this document and remove this note

REVISION "200507290000Z"

DESCRIPTION

"Added Vlan TEXTUAL-CONVENTIONS, dot1qPortRestrictedVlanRegistration, dot1vProtocol subtree, qBridgeClassificationDeviceGroup, qBridgePortGroup2, qBridgeClassificationPortGroup, and qBridgeCompliance2. Clarified dot1qForwardAllStaticPorts, qPortAcceptableFrameTypes, and qBridgeCompliance. Deprecated qBridgePortGroup and qBridgeCompliance. "

REVISION "199908250000Z"

DESCRIPTION

"The VLAN Bridge MIB module for managing Virtual Bridged Local Area Networks, as defined by IEEE 802.1Q-1998.

Initial version, published as RFC 2674."

::= { dot1dBridge 7 }

qBridgeMIBObjects OBJECT IDENTIFIER ::= { qBridgeMIB 1 }

-- Textual Conventions

PortList ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"Each octet within this value specifies a set of eight ports, with the first octet specifying ports 1 through 8, the second octet specifying ports 9 through 16, etc. Within each octet, the most significant bit represents

the lowest numbered port, and the least significant bit represents the highest numbered port. Thus, each port of the bridge is represented by a single bit within the value of this object. If that bit has a value of '1' then that port is included in the set of ports; the port is not included if its bit has a value of '0'."

SYNTAX OCTET STRING

VlanIndex ::= TEXTUAL-CONVENTION

DISPLAY-HINT "d"

STATUS current

DESCRIPTION

"A value used to index per-VLAN tables: values of 0 and 4095 are not permitted; if the value is between 1 and 4094 inclusive, it represents an IEEE 802.1Q VLAN-ID with global scope within a given bridged domain (see VlanId textual convention). If the value is greater than 4095 then it represents a VLAN with scope local to the particular agent, i.e. one without a global VLAN-ID assigned to it. Such VLANs are outside the scope of IEEE 802.1Q but it is convenient to be able to manage them in the same way using this MIB."

SYNTAX Unsigned32

VlanId ::= TEXTUAL-CONVENTION

DISPLAY-HINT "d"

STATUS current

DESCRIPTION

"The VLAN ID that uniquely identifies a VLAN. This is the 12-bit VLAN ID used in the VLAN Tag header. The range is defined by the REFERENCED specification."

REFERENCE

"IEEE Std 802.1Q 2003 Edition, Virtual Bridged Local Area Networks."

SYNTAX Integer32 (1..4094)

VlanIdOrAny ::= TEXTUAL-CONVENTION

DISPLAY-HINT "d"

STATUS current

DESCRIPTION

"The VLAN ID that uniquely identifies a specific VLAN, or any VLAN. The special value of 4095 is used to indicate a wildcard, i.e. any VLAN. This can be used in any situation where an object or table entry must refer either to a specific VLAN or to any VLAN."

Note that a MIB object that is defined using this TEXTUAL-CONVENTION should clarify the meaning of 'any VLAN' (i.e., the special value 4095)."

SYNTAX Integer32 (1..4094 | 4095)

VlanIdOrNone ::= TEXTUAL-CONVENTION

DISPLAY-HINT "d"

STATUS current

DESCRIPTION

"The VLAN ID that uniquely identifies a specific VLAN, or no VLAN. The special value of zero is used to indicate that no VLAN ID is present or used. This can be used in any situation where an object or a table entry must refer either to a specific VLAN, or to no VLAN.

Note that a MIB object that is defined using this TEXTUAL-CONVENTION should clarify the meaning of 'no VLAN' (i.e., the special value 0)."

SYNTAX Integer32 (0 | 1..4094)

VlanIdOrAnyOrNone ::= TEXTUAL-CONVENTION

DISPLAY-HINT "d"

STATUS current

DESCRIPTION

"The VLAN ID that uniquely identifies a specific VLAN, any VLAN, or no VLAN. The special values 0 and 4095 have the same meaning as described in the VlanIdOrAny and VlanIdOrNone TEXTUAL-CONVENTIONS.

Note that a MIB object that is defined using this TEXTUAL-CONVENTION should clarify the meaning of 'any VLAN' and 'no VLAN' (i.e., the special values 0 and 4095)."

SYNTAX Integer32 (0 | 1..4094 | 4095)

-- -----
-- subtrees in the Q-BRIDGE MIB
-- -----

- dot1qBase OBJECT IDENTIFIER ::= { qBridgeMIBObjects 1 }
- dot1qTp OBJECT IDENTIFIER ::= { qBridgeMIBObjects 2 }
- dot1qStatic OBJECT IDENTIFIER ::= { qBridgeMIBObjects 3 }
- dot1qVlan OBJECT IDENTIFIER ::= { qBridgeMIBObjects 4 }
- dot1vProtocol OBJECT IDENTIFIER ::= { qBridgeMIBObjects 5 }

-- -----


```
-- dot1qBase subtree
```

```
-----  
dot1qVlanVersionNumber OBJECT-TYPE  
    SYNTAX      INTEGER {  
                version1(1)  
                }  
    MAX-ACCESS  read-only  
    STATUS      current  
    DESCRIPTION  
        "The version number of IEEE 802.1Q that this device  
        supports."  
    REFERENCE  
        "IEEE 802.1Q/D11 Section 12.10.1.1"  
    ::= { dot1qBase 1 }
```

```
dot1qMaxVlanId OBJECT-TYPE  
    SYNTAX      VlanId  
    MAX-ACCESS  read-only  
    STATUS      current  
    DESCRIPTION  
        "The maximum IEEE 802.1Q VLAN ID that this device  
        supports."  
    REFERENCE  
        "IEEE 802.1Q/D11 Section 9.3.2.3"  
    ::= { dot1qBase 2 }
```

```
dot1qMaxSupportedVlans OBJECT-TYPE  
    SYNTAX      Unsigned32  
    MAX-ACCESS  read-only  
    STATUS      current  
    DESCRIPTION  
        "The maximum number of IEEE 802.1Q VLANs that this  
        device supports."  
    REFERENCE  
        "IEEE 802.1Q/D11 Section 12.10.1.1"  
    ::= { dot1qBase 3 }
```

```
dot1qNumVlans OBJECT-TYPE  
    SYNTAX      Unsigned32  
    MAX-ACCESS  read-only  
    STATUS      current  
    DESCRIPTION  
        "The current number of IEEE 802.1Q VLANs that are  
        configured in this device."  
    REFERENCE
```



```

    "IEEE 802.1Q/D11 Section 12.7.1.1"
    ::= { dot1qBase 4 }

```

```

dot1qGvrpStatus OBJECT-TYPE

```

```

    SYNTAX      EnabledStatus

```

```

    MAX-ACCESS  read-write

```

```

    STATUS      current

```

```

    DESCRIPTION

```

```

        "The administrative status requested by management for
        GVRP.  The value enabled(1) indicates that GVRP should
        be enabled on this device, on all ports for which it has
        not been specifically disabled.  When disabled(2), GVRP
        is disabled on all ports and all GVRP packets will be
        forwarded transparently.  This object affects all GVRP
        Applicant and Registrar state machines.  A transition
        from disabled(2) to enabled(1) will cause a reset of all
        GVRP state machines on all ports."

```

```

        The value of this object MUST be retained across
        reinitializations of the management system."

```

```

    DEFVAL      { enabled }

```

```

    ::= { dot1qBase 5 }

```

```

-----
-- the dot1qTp subtree
-----

```

```

-----
-- the current Filtering Database Table
-----

```

```

dot1qFdbTable OBJECT-TYPE

```

```

    SYNTAX      SEQUENCE OF Dot1qFdbEntry

```

```

    MAX-ACCESS  not-accessible

```

```

    STATUS      current

```

```

    DESCRIPTION

```

```

        "A table that contains configuration and control
        information for each Filtering Database currently
        operating on this device.  Entries in this table appear
        automatically when VLANs are assigned FDB IDs in the
        dot1qVlanCurrentTable."

```

```

    ::= { dot1qTp 1 }

```

```

dot1qFdbEntry OBJECT-TYPE

```

```

    SYNTAX      Dot1qFdbEntry

```

```

    MAX-ACCESS  not-accessible

```



```
STATUS      current
DESCRIPTION
    "Information about a specific Filtering Database."
INDEX      { dot1qFdbId }
 ::= { dot1qFdbTable 1 }
```

```
Dot1qFdbEntry ::=
SEQUENCE {
    dot1qFdbId
        Unsigned32,
    dot1qFdbDynamicCount
        Counter32
}
```

```
dot1qFdbId OBJECT-TYPE
SYNTAX      Unsigned32
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "The identity of this Filtering Database."
 ::= { dot1qFdbEntry 1 }
```

```
dot1qFdbDynamicCount OBJECT-TYPE
SYNTAX      Counter32
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "The current number of dynamic entries in this
    Filtering Database."
REFERENCE
    "IEEE 802.1Q/D11 Section 12.7.1.1.3"
 ::= { dot1qFdbEntry 2 }
```

```
-----
-- Multiple Forwarding Databases for 802.1Q Transparent devices
-- This table is an alternative to the dot1dTpFdbTable,
-- previously defined for 802.1D devices which only support a
-- single Forwarding Database.
-----
```

```
dot1qTpFdbTable OBJECT-TYPE
SYNTAX      SEQUENCE OF Dot1qTpFdbEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "A table that contains information about unicast entries
```


for which the device has forwarding and/or filtering information. This information is used by the transparent bridging function in determining how to propagate a received frame."

REFERENCE

"IEEE 802.1Q/D11 [Section 12.7.7](#)"

::= { dot1qTp 2 }

dot1qTpFdbEntry OBJECT-TYPE

SYNTAX Dot1qTpFdbEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Information about a specific unicast MAC address for which the device has some forwarding and/or filtering information."

INDEX { dot1qFdbId, dot1qTpFdbAddress }

::= { dot1qTpFdbTable 1 }

Dot1qTpFdbEntry ::=

SEQUENCE {

dot1qTpFdbAddress

MacAddress,

dot1qTpFdbPort

Integer32,

dot1qTpFdbStatus

INTEGER

}

dot1qTpFdbAddress OBJECT-TYPE

SYNTAX MacAddress

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A unicast MAC address for which the device has forwarding and/or filtering information."

::= { dot1qTpFdbEntry 1 }

dot1qTpFdbPort OBJECT-TYPE

SYNTAX Integer32 (0..65535)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Either the value '0', or the port number of the port on which a frame having a source address equal to the value of the corresponding instance of dot1qTpFdbAddress has

been seen. A value of '0' indicates that the port number has not been learned but that the device does have some forwarding/filtering information about this address (e.g. in the dot1qStaticUnicastTable). Implementors are encouraged to assign the port value to this object whenever it is learned even for addresses for which the corresponding value of dot1qTpFdbStatus is not learned(3)."

```
::= { dot1qTpFdbEntry 2 }
```

dot1qTpFdbStatus OBJECT-TYPE

```
SYNTAX      INTEGER {
                other(1),
                invalid(2),
                learned(3),
                self(4),
                mgmt(5)
            }
```

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The status of this entry. The meanings of the values are:

- other(1) - none of the following. This may include the case where some other MIB object (not the corresponding instance of dot1qTpFdbPort, nor an entry in the dot1qStaticUnicastTable) is being used to determine if and how frames addressed to the value of the corresponding instance of dot1qTpFdbAddress are being forwarded.
- invalid(2) - this entry is no longer valid (e.g., it was learned but has since aged out), but has not yet been flushed from the table.
- learned(3) - the value of the corresponding instance of dot1qTpFdbPort was learned and is being used.
- self(4) - the value of the corresponding instance of dot1qTpFdbAddress represents one of the device's addresses. The corresponding instance of dot1qTpFdbPort indicates which of the device's ports has this address.
- mgmt(5) - the value of the corresponding instance of dot1qTpFdbAddress is also the value of an existing instance of dot1qStaticAddress."

```
::= { dot1qTpFdbEntry 3 }
```

-- Dynamic Group Registration Table

dot1qTpGroupTable OBJECT-TYPE

SYNTAX SEQUENCE OF Dot1qTpGroupEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A table containing filtering information for VLANs configured into the bridge by (local or network) management, or learnt dynamically, specifying the set of ports to which frames received on a VLAN for this FDB and containing a specific Group destination address are allowed to be forwarded."

::= { dot1qTp 3 }

dot1qTpGroupEntry OBJECT-TYPE

SYNTAX Dot1qTpGroupEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Filtering information configured into the bridge by management, or learnt dynamically, specifying the set of ports to which frames received on a VLAN and containing a specific Group destination address, are allowed to be forwarded. The subset of these ports learnt dynamically is also provided."

INDEX { dot1qVlanIndex, dot1qTpGroupAddress }

::= { dot1qTpGroupTable 1 }

Dot1qTpGroupEntry ::=

SEQUENCE {

dot1qTpGroupAddress

MacAddress,

dot1qTpGroupEgressPorts

PortList,

dot1qTpGroupLearnt

PortList

}

dot1qTpGroupAddress OBJECT-TYPE

SYNTAX MacAddress

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The destination Group MAC address in a frame to which

this entry's filtering information applies."
 ::= { dot1qTpGroupEntry 1 }

dot1qTpGroupEgressPorts OBJECT-TYPE

SYNTAX PortList
MAX-ACCESS read-only
STATUS current
DESCRIPTION

 "The complete set of ports, in this VLAN, to which frames destined for this Group MAC address are currently being explicitly forwarded. This does not include ports for which this address is only implicitly forwarded, in the dot1qForwardAllPorts list."

::= { dot1qTpGroupEntry 2 }

dot1qTpGroupLearnt OBJECT-TYPE

SYNTAX PortList
MAX-ACCESS read-only
STATUS current
DESCRIPTION

 "The subset of ports in dot1qTpGroupEgressPorts which were learnt by GMRP or some other dynamic mechanism, in this Filtering database."

::= { dot1qTpGroupEntry 3 }

-- Service Requirements subtree

dot1qForwardAllTable OBJECT-TYPE

SYNTAX SEQUENCE OF Dot1qForwardAllEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION

 "A table containing forwarding information for each VLAN, specifying the set of ports to which forwarding of all multicasts applies, configured statically by management or dynamically by GMRP. An entry appears in this table for all VLANs that are currently instantiated."

REFERENCE

 "IEEE 802.1Q/D11 [Section 12.7.2](#), 12.7.7"

::= { dot1qTp 4 }

dot1qForwardAllEntry OBJECT-TYPE

SYNTAX Dot1qForwardAllEntry


```
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
    "Forwarding information for a VLAN, specifying the set
    of ports to which all multicasts should be forwarded,
    configured statically by management or dynamically by
    GMRP."
INDEX { dot1qVlanIndex }
 ::= { dot1qForwardAllTable 1 }
```

```
Dot1qForwardAllEntry ::=
SEQUENCE {
    dot1qForwardAllPorts
        PortList,
    dot1qForwardAllStaticPorts
        PortList,
    dot1qForwardAllForbiddenPorts
        PortList
}
```

```
dot1qForwardAllPorts OBJECT-TYPE
SYNTAX PortList
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "The complete set of ports in this VLAN to which all
    multicast group-addressed frames are to be forwarded.
    This includes ports for which this need has been
    determined dynamically by GMRP, or configured statically
    by management."
 ::= { dot1qForwardAllEntry 1 }
```

```
dot1qForwardAllStaticPorts OBJECT-TYPE
SYNTAX PortList
MAX-ACCESS read-write
STATUS current
DESCRIPTION
    "The set of ports configured by management in this VLAN
    to which all multicast group-addressed frames are to be
    forwarded. Ports entered in this list will also appear
    in the complete set shown by dot1qForwardAllPorts. This
    value will be restored after the device is reset. This
    only applies to ports that are members of the VLAN,
    defined by dot1qVlanCurrentEgressPorts. A port may not
    be added in this set if it is already a member of the
    set of ports in dot1qForwardAllForbiddenPorts. The
```


default value is a string of ones of appropriate length, to indicate the standard behaviour of using basic filtering services, i.e. forward all multicasts to all ports.

The value of this object MUST be retained across reinitializations of the management system."

::= { dot1qForwardAllEntry 2 }

dot1qForwardAllForbiddenPorts OBJECT-TYPE

SYNTAX PortList
MAX-ACCESS read-write
STATUS current
DESCRIPTION

"The set of ports configured by management in this VLAN for which the Service Requirement attribute Forward All Multicast Groups may not be dynamically registered by GMRP. This value will be restored after the device is reset. A port may not be added in this set if it is already a member of the set of ports in dot1qForwardAllStaticPorts. The default value is a string of zeros of appropriate length.

The value of this object MUST be retained across reinitializations of the management system."

::= { dot1qForwardAllEntry 3 }

dot1qForwardUnregisteredTable OBJECT-TYPE

SYNTAX SEQUENCE OF Dot1qForwardUnregisteredEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION

"A table containing forwarding information for each VLAN, specifying the set of ports to which forwarding of multicast group-addressed frames for which there is no more specific forwarding information applies. This is configured statically by management and determined dynamically by GMRP. An entry appears in this table for all VLANs that are currently instantiated."

REFERENCE

"IEEE 802.1Q/D11 [Section 12.7.2](#), 12.7.7"

::= { dot1qTp 5 }

dot1qForwardUnregisteredEntry OBJECT-TYPE

SYNTAX Dot1qForwardUnregisteredEntry
MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Forwarding information for a VLAN, specifying the set of ports to which all multicasts for which there is no more specific forwarding information shall be forwarded. This is configured statically by management or dynamically by GMRP."

INDEX { dot1qVlanIndex }

::= { dot1qForwardUnregisteredTable 1 }

Dot1qForwardUnregisteredEntry ::=

SEQUENCE {

dot1qForwardUnregisteredPorts

PortList,

dot1qForwardUnregisteredStaticPorts

PortList,

dot1qForwardUnregisteredForbiddenPorts

PortList

}

dot1qForwardUnregisteredPorts OBJECT-TYPE

SYNTAX PortList

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The complete set of ports in this VLAN to which multicast group-addressed frames for which there is no more specific forwarding information will be forwarded. This includes ports for which this need has been determined dynamically by GMRP, or configured statically by management."

::= { dot1qForwardUnregisteredEntry 1 }

dot1qForwardUnregisteredStaticPorts OBJECT-TYPE

SYNTAX PortList

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The set of ports configured by management, in this VLAN, to which multicast group-addressed frames for which there is no more specific forwarding information are to be forwarded. Ports entered in this list will also appear in the complete set shown by dot1qForwardUnregisteredPorts. This value will be restored after the device is reset. A port may not be added in this set if it is already a member of the set

of ports in dot1qForwardUnregisteredForbiddenPorts. The default value is a string of zeros of appropriate length, although this has no effect with the default value of dot1qForwardAllStaticPorts.

The value of this object MUST be retained across reinitializations of the management system."

::= { dot1qForwardUnregisteredEntry 2 }

dot1qForwardUnregisteredForbiddenPorts OBJECT-TYPE

SYNTAX PortList
MAX-ACCESS read-write
STATUS current
DESCRIPTION

"The set of ports configured by management in this VLAN for which the Service Requirement attribute Forward Unregistered Multicast Groups may not be dynamically registered by GMRP. This value will be restored after the device is reset. A port may not be added in this set if it is already a member of the set of ports in dot1qForwardUnregisteredStaticPorts. The default value is a string of zeros of appropriate length.

The value of this object MUST be retained across reinitializations of the management system."

::= { dot1qForwardUnregisteredEntry 3 }

-- -----
-- The Static (Destination-Address Filtering) Database
-- -----

dot1qStaticUnicastTable OBJECT-TYPE

SYNTAX SEQUENCE OF Dot1qStaticUnicastEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION

"A table containing filtering information for Unicast MAC addresses for each Filtering Database, configured into the device by (local or network) management specifying the set of ports to which frames received from specific ports and containing specific unicast destination addresses are allowed to be forwarded. A value of zero in this table as the port number from which frames with a specific destination address are received, is used to specify all ports for which there is no specific entry in this table for that particular

destination address. Entries are valid for unicast addresses only."

REFERENCE

"IEEE 802.1Q/D11 [Section 12.7.7](#),
ISO/IEC 15802-3 [Section 7.9.1](#)"

::= { dot1qStatic 1 }

dot1qStaticUnicastEntry OBJECT-TYPE

SYNTAX Dot1qStaticUnicastEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Filtering information configured into the device by (local or network) management specifying the set of ports to which frames received from a specific port and containing a specific unicast destination address are allowed to be forwarded."

INDEX {

dot1qFdbId,

dot1qStaticUnicastAddress,

dot1qStaticUnicastReceivePort

}

::= { dot1qStaticUnicastTable 1 }

Dot1qStaticUnicastEntry ::=

SEQUENCE {

dot1qStaticUnicastAddress

MacAddress,

dot1qStaticUnicastReceivePort

Integer32,

dot1qStaticUnicastAllowedToGoTo

PortList,

dot1qStaticUnicastStatus

INTEGER

}

dot1qStaticUnicastAddress OBJECT-TYPE

SYNTAX MacAddress

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The destination MAC address in a frame to which this entry's filtering information applies. This object must take the value of a unicast address."

::= { dot1qStaticUnicastEntry 1 }

dot1qStaticUnicastReceivePort OBJECT-TYPE

SYNTAX Integer32 (0..65535)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Either the value '0', or the port number of the port from which a frame must be received in order for this entry's filtering information to apply. A value of zero indicates that this entry applies on all ports of the device for which there is no other applicable entry."

::= { dot1qStaticUnicastEntry 2 }

dot1qStaticUnicastAllowedToGoTo OBJECT-TYPE

SYNTAX PortList

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The set of ports for which a frame with a specific unicast address will be flooded in the event that it has not been learned. It also specifies the set of ports a specific unicast address may be dynamically learnt on. The dot1qTpFdbTable will have an equivalent entry with a dot1qTpFdbPort value of '0' until this address has been learnt, when it will be updated with the port the address has been seen on. This only applies to ports that are members of the VLAN, defined by dot1qVlanCurrentEgressPorts. The default value of this object is a string of ones of appropriate length.

The value of this object MUST be retained across reinitializations of the management system."

REFERENCE

"IEEE 802.1Q/D11 Table 8-5, ISO/IEC 15802-3 Table 7-5"

::= { dot1qStaticUnicastEntry 3 }

dot1qStaticUnicastStatus OBJECT-TYPE

SYNTAX INTEGER {
 other(1),
 invalid(2),
 permanent(3),
 deleteOnReset(4),
 deleteOnTimeout(5)
}

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"This object indicates the status of this entry.
other(1) - this entry is currently in use but the conditions under which it will remain so differ from the following values.
invalid(2) - writing this value to the object removes the corresponding entry.
permanent(3) - this entry is currently in use and will remain so after the next reset of the bridge.
deleteOnReset(4) - this entry is currently in use and will remain so until the next reset of the bridge.
deleteOnTimeout(5) - this entry is currently in use and will remain so until it is aged out.

The value of this object MUST be retained across reinitializations of the management system."

DEFVAL { permanent }
 ::= { dot1qStaticUnicastEntry 4 }

dot1qStaticMulticastTable OBJECT-TYPE

SYNTAX SEQUENCE OF Dot1qStaticMulticastEntry
MAX-ACCESS not-accessible
STATUS current

DESCRIPTION

"A table containing filtering information for Multicast and Broadcast MAC addresses for each VLAN, configured into the device by (local or network) management specifying the set of ports to which frames received from specific ports and containing specific Multicast and Broadcast destination addresses are allowed to be forwarded. A value of zero in this table as the port number from which frames with a specific destination address are received, is used to specify all ports for which there is no specific entry in this table for that particular destination address. Entries are valid for Multicast and Broadcast addresses only."

REFERENCE

"IEEE 802.1Q/D11 [Section 12.7.7](#),
ISO/IEC 15802-3 [Section 7.9.1](#)"

::= { dot1qStatic 2 }

dot1qStaticMulticastEntry OBJECT-TYPE

SYNTAX Dot1qStaticMulticastEntry
MAX-ACCESS not-accessible
STATUS current

DESCRIPTION

"Filtering information configured into the device by (local or network) management specifying the set of ports to which frames received from this specific port for this VLAN and containing this Multicast or Broadcast destination address are allowed to be forwarded."

```
INDEX {
    dot1qVlanIndex,
    dot1qStaticMulticastAddress,
    dot1qStaticMulticastReceivePort
}
 ::= { dot1qStaticMulticastTable 1 }
```

Dot1qStaticMulticastEntry ::=

```
SEQUENCE {
    dot1qStaticMulticastAddress
        MacAddress,
    dot1qStaticMulticastReceivePort
        Integer32,
    dot1qStaticMulticastStaticEgressPorts
        PortList,
    dot1qStaticMulticastForbiddenEgressPorts
        PortList,
    dot1qStaticMulticastStatus
        INTEGER
}
```

dot1qStaticMulticastAddress OBJECT-TYPE

```
SYNTAX      MacAddress
MAX-ACCESS  not-accessible
STATUS      current
```

DESCRIPTION

"The destination MAC address in a frame to which this entry's filtering information applies. This object must take the value of a Multicast or Broadcast address."

```
::= { dot1qStaticMulticastEntry 1 }
```

dot1qStaticMulticastReceivePort OBJECT-TYPE

```
SYNTAX      Integer32 (0..65535)
MAX-ACCESS  not-accessible
STATUS      current
```

DESCRIPTION

"Either the value '0', or the port number of the port from which a frame must be received in order for this entry's filtering information to apply. A value of zero indicates that this entry applies on all ports of the

device for which there is no other applicable entry."
 ::= { dot1qStaticMulticastEntry 2 }

dot1qStaticMulticastStaticEgressPorts OBJECT-TYPE

SYNTAX PortList
MAX-ACCESS read-write
STATUS current
DESCRIPTION

"The set of ports to which frames received from a specific port and destined for a specific Multicast or Broadcast MAC address must be forwarded, regardless of any dynamic information e.g. from GMRP. A port may not be added in this set if it is already a member of the set of ports in dot1qStaticMulticastForbiddenEgressPorts. The default value of this object is a string of ones of appropriate length.

The value of this object MUST be retained across reinitializations of the management system."

::= { dot1qStaticMulticastEntry 3 }

dot1qStaticMulticastForbiddenEgressPorts OBJECT-TYPE

SYNTAX PortList
MAX-ACCESS read-write
STATUS current
DESCRIPTION

"The set of ports to which frames received from a specific port and destined for a specific Multicast or Broadcast MAC address must not be forwarded, regardless of any dynamic information e.g. from GMRP. A port may not be added in this set if it is already a member of the set of ports in dot1qStaticMulticastStaticEgressPorts. The default value of this object is a string of zeros of appropriate length.

The value of this object MUST be retained across reinitializations of the management system."

::= { dot1qStaticMulticastEntry 4 }

dot1qStaticMulticastStatus OBJECT-TYPE

SYNTAX INTEGER {
 other(1),
 invalid(2),
 permanent(3),
 deleteOnReset(4),
 deleteOnTimeout(5)


```

    }
MAX-ACCESS read-write
STATUS current
DESCRIPTION
    "This object indicates the status of this entry.
    other(1) - this entry is currently in use but
    the conditions under which it will remain
    so differ from the following values.
    invalid(2) - writing this value to the object
    removes the corresponding entry.
    permanent(3) - this entry is currently in use
    and will remain so after the next reset of
    the bridge.
    deleteOnReset(4) - this entry is currently in
    use and will remain so until the next
    reset of the bridge.
    deleteOnTimeout(5) - this entry is currently in
    use and will remain so until it is aged out.

    The value of this object MUST be retained across
    reinitializations of the management system."
DEFVAL { permanent }
 ::= { dot1qStaticMulticastEntry 5 }

```

```

-----
-- The Current VLAN Database
-----

```

```

dot1qVlanNumDeletes OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "The number of times a VLAN entry has been deleted from
    the dot1qVlanCurrentTable (for any reason). If an entry
    is deleted, then inserted, and then deleted, this
    counter will be incremented by 2."
 ::= { dot1qVlan 1 }

```

```

dot1qVlanCurrentTable OBJECT-TYPE
SYNTAX SEQUENCE OF Dot1qVlanCurrentEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
    "A table containing current configuration information
    for each VLAN currently configured into the device by

```


(local or network) management, or dynamically created as a result of GVRP requests received."

::= { dot1qVlan 2 }

dot1qVlanCurrentEntry OBJECT-TYPE

SYNTAX Dot1qVlanCurrentEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Information for a VLAN configured into the device by (local or network) management, or dynamically created as a result of GVRP requests received."

INDEX { dot1qVlanTimeMark, dot1qVlanIndex }

::= { dot1qVlanCurrentTable 1 }

Dot1qVlanCurrentEntry ::=

SEQUENCE {

dot1qVlanTimeMark

TimeFilter,

dot1qVlanIndex

VlanIndex,

dot1qVlanFdbId

Unsigned32,

dot1qVlanCurrentEgressPorts

PortList,

dot1qVlanCurrentUntaggedPorts

PortList,

dot1qVlanStatus

INTEGER,

dot1qVlanCreationTime

TimeTicks

}

dot1qVlanTimeMark OBJECT-TYPE

SYNTAX TimeFilter

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A TimeFilter for this entry. See the TimeFilter textual convention to see how this works."

::= { dot1qVlanCurrentEntry 1 }

dot1qVlanIndex OBJECT-TYPE

SYNTAX VlanIndex

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The VLAN-ID or other identifier referring to this VLAN."
 ::= { dot1qVlanCurrentEntry 2 }

dot1qVlanFdbId OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The Filtering Database used by this VLAN. This is one of the dot1qFdbId values in the dot1qFdbTable. This value is allocated automatically by the device whenever the VLAN is created: either dynamically by GVRP, or by management, in dot1qVlanStaticTable. Allocation of this value follows the learning constraints defined for this VLAN in dot1qLearningConstraintsTable."
 ::= { dot1qVlanCurrentEntry 3 }

dot1qVlanCurrentEgressPorts OBJECT-TYPE

SYNTAX PortList

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The set of ports which are transmitting traffic for this VLAN as either tagged or untagged frames."
 REFERENCE

REFERENCE

"IEEE 802.1Q/D11 [Section 12.10.2.1](#)"
 ::= { dot1qVlanCurrentEntry 4 }

dot1qVlanCurrentUntaggedPorts OBJECT-TYPE

SYNTAX PortList

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The set of ports which are transmitting traffic for this VLAN as untagged frames."
 REFERENCE

REFERENCE

"IEEE 802.1Q/D11 [Section 12.10.2.1](#)"
 ::= { dot1qVlanCurrentEntry 5 }

dot1qVlanStatus OBJECT-TYPE

SYNTAX INTEGER {
 other(1),
 permanent(2),
 dynamicGvrp(3)
 }

MAX-ACCESS read-only
STATUS current
DESCRIPTION

"This object indicates the status of this entry.

other(1) - this entry is currently in use but the conditions under which it will remain so differ from the following values.

permanent(2) - this entry, corresponding to an entry in dot1qVlanStaticTable, is currently in use and will remain so after the next reset of the device. The port lists for this entry include ports from the equivalent dot1qVlanStaticTable entry and ports learnt dynamically.

dynamicGvrp(3) - this entry is currently in use and will remain so until removed by GVRP. There is no static entry for this VLAN and it will be removed when the last port leaves the VLAN."

::= { dot1qVlanCurrentEntry 6 }

dot1qVlanCreationTime OBJECT-TYPE

SYNTAX TimeTicks
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"The value of sysUpTime when this VLAN was created."

::= { dot1qVlanCurrentEntry 7 }

-- The Static VLAN Database

dot1qVlanStaticTable OBJECT-TYPE

SYNTAX SEQUENCE OF Dot1qVlanStaticEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION

"A table containing static configuration information for each VLAN configured into the device by (local or network) management. All entries are permanent and will be restored after the device is reset."

::= { dot1qVlan 3 }

dot1qVlanStaticEntry OBJECT-TYPE

SYNTAX Dot1qVlanStaticEntry
MAX-ACCESS not-accessible
STATUS current

DESCRIPTION

"Static information for a VLAN configured into the device by (local or network) management."

INDEX { dot1qVlanIndex }
 ::= { dot1qVlanStaticTable 1 }

Dot1qVlanStaticEntry ::=

```
SEQUENCE {  
    dot1qVlanStaticName  
        SnmpAdminString,  
    dot1qVlanStaticEgressPorts  
        PortList,  
    dot1qVlanForbiddenEgressPorts  
        PortList,  
    dot1qVlanStaticUntaggedPorts  
        PortList,  
    dot1qVlanStaticRowStatus  
        RowStatus  
}
```

dot1qVlanStaticName OBJECT-TYPE

SYNTAX SnmpAdminString (SIZE (0..32))
MAX-ACCESS read-create
STATUS current

DESCRIPTION

"An administratively assigned string, which may be used to identify the VLAN."

REFERENCE

"IEEE 802.1Q/D11 [Section 12.10.2.1](#)"

::= { dot1qVlanStaticEntry 1 }

dot1qVlanStaticEgressPorts OBJECT-TYPE

SYNTAX PortList
MAX-ACCESS read-create
STATUS current

DESCRIPTION

"The set of ports which are permanently assigned to the egress list for this VLAN by management. Changes to a bit in this object affect the per-port per-VLAN Registrar control for Registration Fixed for the relevant GVRP state machine on each port. A port may not be added in this set if it is already a member of the set of ports in dot1qVlanForbiddenEgressPorts. The default value of this object is a string of zeros of appropriate length, indicating not fixed."

REFERENCE

"IEEE 802.1Q/D11 [Section 12.7.7.3](#), 11.2.3.2.3"
 ::= { dot1qVlanStaticEntry 2 }

dot1qVlanForbiddenEgressPorts OBJECT-TYPE

SYNTAX PortList
MAX-ACCESS read-create
STATUS current

DESCRIPTION

"The set of ports which are prohibited by management from being included in the egress list for this VLAN. Changes to this object that cause a port to be included or excluded affect the per-port per-VLAN Registrar control for Registration Forbidden for the relevant GVRP state machine on each port. A port may not be added in this set if it is already a member of the set of ports in dot1qVlanStaticEgressPorts. The default value of this object is a string of zeros of appropriate length, excluding all ports from the forbidden set."

REFERENCE

"IEEE 802.1Q/D11 [Section 12.7.7.3](#), 11.2.3.2.3"
 ::= { dot1qVlanStaticEntry 3 }

dot1qVlanStaticUntaggedPorts OBJECT-TYPE

SYNTAX PortList
MAX-ACCESS read-create
STATUS current

DESCRIPTION

"The set of ports which should transmit egress packets for this VLAN as untagged. The default value of this object for the default VLAN (dot1qVlanIndex = 1) is a string of appropriate length including all ports. There is no specified default for other VLANs. If a device agent cannot support the set of ports being set then it will reject the set operation with an error. An example might be if a manager attempts to set more than one VLAN to be untagged on egress where the device does not support this IEEE 802.1Q option."

REFERENCE

"IEEE 802.1Q/D11 [Section 12.10.2.1](#)"
 ::= { dot1qVlanStaticEntry 4 }

dot1qVlanStaticRowStatus OBJECT-TYPE

SYNTAX RowStatus
MAX-ACCESS read-create
STATUS current

DESCRIPTION

"This object indicates the status of this entry."
 ::= { dot1qVlanStaticEntry 5 }

dot1qNextFreeLocalVlanIndex OBJECT-TYPE

SYNTAX Integer32 (0|4096..2147483647)
 MAX-ACCESS read-only
 STATUS current

DESCRIPTION

"The next available value for dot1qVlanIndex of a local VLAN entry in dot1qVlanStaticTable. This will report values >=4096 if a new Local VLAN may be created or else the value 0 if this is not possible.

A row creation operation in this table for an entry with a local VlanIndex value may fail if the current value of this object is not used as the index. Even if the value read is used, there is no guarantee that it will still be the valid index when the create operation is attempted - another manager may have already got in during the intervening time interval. In this case, dot1qNextFreeLocalVlanIndex should be re-read and the creation re-tried with the new value.

This value will automatically change when the current value is used to create a new row."

::= { dot1qVlan 4 }

 -- The VLAN Port Configuration Table

dot1qPortVlanTable OBJECT-TYPE

SYNTAX SEQUENCE OF Dot1qPortVlanEntry
 MAX-ACCESS not-accessible
 STATUS current

DESCRIPTION

"A table containing per port control and status information for VLAN configuration in the device."

::= { dot1qVlan 5 }

dot1qPortVlanEntry OBJECT-TYPE

SYNTAX Dot1qPortVlanEntry
 MAX-ACCESS not-accessible
 STATUS current

DESCRIPTION

"Information controlling VLAN configuration for a port on the device. This is indexed by dot1dBasePort."

AUGMENTS { dot1dBasePortEntry }


```
::= { dot1qPortVlanTable 1 }
```

```
Dot1qPortVlanEntry ::=
SEQUENCE {
    dot1qPvid
        VlanIndex,
    dot1qPortAcceptableFrameTypes
        INTEGER,
    dot1qPortIngressFiltering
        TruthValue,
    dot1qPortGvrpStatus
        EnabledStatus,
    dot1qPortGvrpFailedRegistrations
        Counter32,
    dot1qPortGvrpLastPduOrigin
        MacAddress,
    dot1qPortRestrictedVlanRegistration
        TruthValue
}
```

```
dot1qPvid OBJECT-TYPE
SYNTAX      VlanIndex
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
    "The PVID, the VLAN ID assigned to untagged frames or
    Priority-Tagged frames received on this port.

    The value of this object MUST be retained across
    reinitializations of the management system."
REFERENCE
    "IEEE 802.1Q/D11 Section 12.10.1.1"
DEFVAL      { 1 }
::= { dot1qPortVlanEntry 1 }
```

```
dot1qPortAcceptableFrameTypes OBJECT-TYPE
SYNTAX      INTEGER {
                admitAll(1),
                admitOnlyVlanTagged(2)
            }
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
    "When this is admitOnlyVlanTagged(2) the device will
    discard untagged frames or Priority-Tagged frames
    received on this port. When admitAll(1), untagged
```


frames or Priority-Tagged frames received on this port will be accepted and assigned to a VID based on the PVID and VID Set for this port.

This control does not affect VLAN independent BPDU frames, such as GVRP and STP. It does affect VLAN dependent BPDU frames, such as GMRP.

The value of this object MUST be retained across reinitializations of the management system."

REFERENCE

"IEEE 802.1Q/D11 [Section 12.10.1.3](#)"

DEFVAL { admitAll }

::= { dot1qPortVlanEntry 2 }

dot1qPortIngressFiltering OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"When this is true(1) the device will discard incoming frames for VLANs which do not include this Port in its Member set. When false(2), the port will accept all incoming frames.

This control does not affect VLAN independent BPDU frames, such as GVRP and STP. It does affect VLAN dependent BPDU frames, such as GMRP.

The value of this object MUST be retained across reinitializations of the management system."

REFERENCE

"IEEE 802.1Q/D11 [Section 12.10.1.4](#)"

DEFVAL { false }

::= { dot1qPortVlanEntry 3 }

dot1qPortGvrpStatus OBJECT-TYPE

SYNTAX EnabledStatus

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The state of GVRP operation on this port. The value enabled(1) indicates that GVRP is enabled on this port, as long as dot1qGvrpStatus is also enabled for this device. When disabled(2) but dot1qGvrpStatus is still enabled for the device, GVRP is disabled on this port:

any GVRP packets received will be silently discarded and no GVRP registrations will be propagated from other ports. This object affects all GVRP Applicant and Registrar state machines on this port. A transition from disabled(2) to enabled(1) will cause a reset of all GVRP state machines on this port.

The value of this object MUST be retained across reinitializations of the management system."

DEFVAL { enabled }
 ::= { dot1qPortVlanEntry 4 }

dot1qPortGvrpFailedRegistrations OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"The total number of failed GVRP registrations, for any reason, on this port."

::= { dot1qPortVlanEntry 5 }

dot1qPortGvrpLastPduOrigin OBJECT-TYPE

SYNTAX MacAddress
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"The Source MAC Address of the last GVRP message received on this port."

::= { dot1qPortVlanEntry 6 }

dot1qPortRestrictedVlanRegistration OBJECT-TYPE

SYNTAX TruthValue
MAX-ACCESS read-write
STATUS current

DESCRIPTION

"The state of Restricted VLAN Registration on this port. If the value of this control is true(1), then creation of a new dynamic VLAN entry is permitted only if there is a Static VLAN Registration Entry for the VLAN concerned, in which the Registrar Administrative Control value for this port is Normal Registration.

The value of this object MUST be retained across reinitializations of the management system."

REFERENCE

"IEEE 802.1u clause 11.2.3.2.3, 12.10.1.7."


```
DEFVAL      { false }
 ::= { dot1qPortVlanEntry 7 }
```

```
-----
-- Per port VLAN Statistics Table
-----
```

```
dot1qPortVlanStatisticsTable OBJECT-TYPE
```

```
SYNTAX      SEQUENCE OF Dot1qPortVlanStatisticsEntry
```

```
MAX-ACCESS  not-accessible
```

```
STATUS      current
```

```
DESCRIPTION
```

"A table containing per-port, per-VLAN statistics for traffic received. Separate objects are provided for both the most-significant and least-significant bits of statistics counters for ports that are associated with this transparent bridge. The most-significant bit objects are only required on high capacity interfaces, as defined in the conformance clauses for these objects. This mechanism is provided as a way to read 64-bit counters for agents which support only SNMPv1.

Note that the reporting of most-significant and least-significant counter bits separately runs the risk of missing an overflow of the lower bits in the interval between sampling. The manager must be aware of this possibility, even within the same varbindlist, when interpreting the results of a request or asynchronous notification."

```
 ::= { dot1qVlan 6 }
```

```
dot1qPortVlanStatisticsEntry OBJECT-TYPE
```

```
SYNTAX      Dot1qPortVlanStatisticsEntry
```

```
MAX-ACCESS  not-accessible
```

```
STATUS      current
```

```
DESCRIPTION
```

"Traffic statistics for a VLAN on an interface."

```
INDEX      { dot1dBasePort, dot1qVlanIndex }
```

```
 ::= { dot1qPortVlanStatisticsTable 1 }
```

```
Dot1qPortVlanStatisticsEntry ::=
```

```
SEQUENCE {
```

```
    dot1qTpVlanPortInFrames
```

```
        Counter32,
```

```
    dot1qTpVlanPortOutFrames
```

```
        Counter32,
```

```
    dot1qTpVlanPortInDiscards
```

```
        Counter32,
```



```
    dot1qTpVlanPortInOverflowFrames
      Counter32,
    dot1qTpVlanPortOutOverflowFrames
      Counter32,
    dot1qTpVlanPortInOverflowDiscards
      Counter32
  }
```

dot1qTpVlanPortInFrames OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of valid frames received by this port from its segment which were classified as belonging to this VLAN. Note that a frame received on this port is counted by this object if and only if it is for a protocol being processed by the local forwarding process for this VLAN. This object includes received bridge management frames classified as belonging to this VLAN (e.g. GMRP, but not GVRP or STP)."

REFERENCE

"IEEE 802.1Q/D11 [Section 12.6.1.1.3\(a\)](#)"

::= { dot1qPortVlanStatisticsEntry 1 }

dot1qTpVlanPortOutFrames OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of valid frames transmitted by this port to its segment from the local forwarding process for this VLAN. This includes bridge management frames originated by this device which are classified as belonging to this VLAN (e.g. GMRP, but not GVRP or STP)."

REFERENCE

"IEEE 802.1Q/D11 [Section 12.6.1.1.3\(d\)](#)"

::= { dot1qPortVlanStatisticsEntry 2 }

dot1qTpVlanPortInDiscards OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of valid frames received by this port from its segment which were classified as belonging to this

VLAN which were discarded due to VLAN related reasons.
Specifically, the IEEE 802.1Q counters for Discard
Inbound and Discard on Ingress Filtering."

REFERENCE

"IEEE 802.1Q/D11 [Section 12.6.1.1.3](#)"

::= { dot1qPortVlanStatisticsEntry 3 }

dot1qTpVlanPortInOverflowFrames OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of times the associated
dot1qTpVlanPortInFrames counter has overflowed."

REFERENCE

"ISO/IEC 15802-3 [Section 14.6.1.1.3](#)"

::= { dot1qPortVlanStatisticsEntry 4 }

dot1qTpVlanPortOutOverflowFrames OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of times the associated
dot1qTpVlanPortOutFrames counter has overflowed."

REFERENCE

"ISO/IEC 15802-3 [Section 14.6.1.1.3](#)"

::= { dot1qPortVlanStatisticsEntry 5 }

dot1qTpVlanPortInOverflowDiscards OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of times the associated
dot1qTpVlanPortInDiscards counter has overflowed."

REFERENCE

"ISO/IEC 15802-3 [Section 14.6.1.1.3](#)"

::= { dot1qPortVlanStatisticsEntry 6 }

dot1qPortVlanHCStatisticsTable OBJECT-TYPE

SYNTAX SEQUENCE OF Dot1qPortVlanHCStatisticsEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A table containing per port, per VLAN statistics for


```
    traffic on high capacity interfaces."
 ::= { dot1qVlan 7 }
```

```
dot1qPortVlanHCStatisticsEntry OBJECT-TYPE
    SYNTAX      Dot1qPortVlanHCStatisticsEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Traffic statistics for a VLAN on a high capacity
        interface."
    INDEX      { dot1dBasePort, dot1qVlanIndex }
    ::= { dot1qPortVlanHCStatisticsTable 1 }
```

```
Dot1qPortVlanHCStatisticsEntry ::=
    SEQUENCE {
        dot1qTpVlanPortHCInFrames
            Counter64,
        dot1qTpVlanPortHCOutFrames
            Counter64,
        dot1qTpVlanPortHCInDiscards
            Counter64
    }
```

```
dot1qTpVlanPortHCInFrames OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The number of valid frames received by this port from
        its segment which were classified as belonging to this
        VLAN. Note that a frame received on this port is
        counted by this object if and only if it is for a
        protocol being processed by the local forwarding process
        for this VLAN. This object includes received bridge
        management frames classified as belonging to this VLAN
        (e.g. GMRP, but not GVRP or STP)."
```

```
REFERENCE
    "IEEE 802.1Q/D11 Section 12.6.1.1.3\(a\)"
 ::= { dot1qPortVlanHCStatisticsEntry 1 }
```

```
dot1qTpVlanPortHCOutFrames OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The number of valid frames transmitted by this port to
```


its segment from the local forwarding process for this VLAN. This includes bridge management frames originated by this device which are classified as belonging to this VLAN (e.g. GMRP, but not GVRP or STP)."

REFERENCE

"IEEE 802.1Q/D11 [Section 12.6.1.1.3\(d\)](#)"

::= { dot1qPortVlanHCStatisticsEntry 2 }

dot1qTpVlanPortHCInDiscards OBJECT-TYPE

SYNTAX Counter64

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The number of valid frames received by this port from its segment which were classified as belonging to this VLAN which were discarded due to VLAN related reasons. Specifically, the IEEE 802.1Q counters for Discard Inbound and Discard on Ingress Filtering."

REFERENCE

"IEEE 802.1Q/D11 [Section 12.6.1.1.3](#)"

::= { dot1qPortVlanHCStatisticsEntry 3 }

-- The VLAN Learning Constraints Table

dot1qLearningConstraintsTable OBJECT-TYPE

SYNTAX SEQUENCE OF Dot1qLearningConstraintsEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A table containing learning constraints for sets of Shared and Independent VLANs."

REFERENCE

"IEEE 802.1Q/D11 [Section 12.10.3.1](#)"

::= { dot1qVlan 8 }

dot1qLearningConstraintsEntry OBJECT-TYPE

SYNTAX Dot1qLearningConstraintsEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A learning constraint defined for a VLAN."

INDEX { dot1qConstraintVlan, dot1qConstraintSet }

::= { dot1qLearningConstraintsTable 1 }

Dot1qLearningConstraintsEntry ::=

```
SEQUENCE {
    dot1qConstraintVlan
        VlanIndex,
    dot1qConstraintSet
        Integer32,
    dot1qConstraintType
        INTEGER,
    dot1qConstraintStatus
        RowStatus
}
```

dot1qConstraintVlan OBJECT-TYPE

```
SYNTAX      VlanIndex
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "The index of the row in dot1qVlanCurrentTable for the
    VLAN constrained by this entry."
 ::= { dot1qLearningConstraintsEntry 1 }
```

dot1qConstraintSet OBJECT-TYPE

```
SYNTAX      Integer32 (0..65535)
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "The identity of the constraint set to which
    dot1qConstraintVlan belongs.  These values may be chosen
    by the management station."
 ::= { dot1qLearningConstraintsEntry 2 }
```

dot1qConstraintType OBJECT-TYPE

```
SYNTAX      INTEGER {
                independent(1),
                shared(2)
            }
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
    "The type of constraint this entry defines.
    independent(1) - the VLAN, dot1qConstraintVlan,
    uses an independent filtering database from all
    other VLANs in the same set, defined by
    dot1qConstraintSet.
    shared(2) - the VLAN, dot1qConstraintVlan, shares
    the same filtering database as all other VLANs"
```



```
        in the same set, defined by dot1qConstraintSet."  
 ::= { dot1qLearningConstraintsEntry 3 }
```

```
dot1qConstraintStatus OBJECT-TYPE
```

```
SYNTAX      RowStatus  
MAX-ACCESS  read-create  
STATUS      current  
DESCRIPTION
```

```
    "The status of this entry."
```

```
 ::= { dot1qLearningConstraintsEntry 4 }
```

```
dot1qConstraintSetDefault OBJECT-TYPE
```

```
SYNTAX      Integer32 (0..65535)  
MAX-ACCESS  read-write  
STATUS      current  
DESCRIPTION
```

```
    "The identity of the constraint set to which a VLAN  
    belongs, if there is not an explicit entry for that VLAN  
    in dot1qLearningConstraintsTable.
```

```
    The value of this object MUST be retained across  
    reinitializations of the management system."
```

```
 ::= { dot1qVlan 9 }
```

```
dot1qConstraintTypeDefault OBJECT-TYPE
```

```
SYNTAX      INTEGER {  
                independent(1),  
                shared(2)  
            }  
MAX-ACCESS  read-write  
STATUS      current  
DESCRIPTION
```

```
    "The type of constraint set to which a VLAN belongs, if  
    there is not an explicit entry for that VLAN in  
    dot1qLearningConstraintsTable. The types are as defined  
    for dot1qConstraintType.
```

```
    The value of this object MUST be retained across  
    reinitializations of the management system."
```

```
 ::= { dot1qVlan 10 }
```

```
-----  
-- dot1vProtocol subtree  
-----
```

```
dot1vProtocolGroupTable OBJECT-TYPE
```



```
SYNTAX      SEQUENCE OF Dot1vProtocolGroupEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "A table that contains mappings from Protocol
    Templates to Protocol Group Identifiers used for
    Port-and-Protocol-based VLAN Classification."
REFERENCE
    "IEEE 802.1v clause 8.6.4"
 ::= { dot1vProtocol 1 }
```

```
dot1vProtocolGroupEntry OBJECT-TYPE
SYNTAX      Dot1vProtocolGroupEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "A mapping from a Protocol Template to a Protocol
    Group Identifier."
INDEX       { dot1vProtocolTemplateFrameType,
              dot1vProtocolTemplateProtocolValue }
 ::= { dot1vProtocolGroupTable 1 }
```

```
Dot1vProtocolGroupEntry ::=
SEQUENCE {
    dot1vProtocolTemplateFrameType
        INTEGER,
    dot1vProtocolTemplateProtocolValue
        OCTET STRING,
    dot1vProtocolGroupId
        Integer32,
    dot1vProtocolGroupRowStatus
        RowStatus
}
```

```
dot1vProtocolTemplateFrameType OBJECT-TYPE
SYNTAX      INTEGER {
    ethernet (1),
    rfc1042 (2),
    snap8021H (3),
    snapOther (4),
    llcOther (5)
}
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "The data-link encapsulation format or the
```


'detagged_frame_type' in a Protocol Template."

REFERENCE

"IEEE 802.1v clause 8.6.2"

::= { dot1vProtocolGroupEntry 1 }

dot1vProtocolTemplateProtocolValue OBJECT-TYPE

SYNTAX OCTET STRING (SIZE (2 | 5))

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The identification of the protocol above the data-link layer in a Protocol Template. Depending on the frame type, the octet string will have one of the following values:

For 'ethernet', '[rfc1042](#)' and 'snap8021H',
this is the 16-bit (2-octet) IEEE 802.3 Type Field.
For 'snapOther',
this is the 40-bit (5-octet) PID.
For 'llcOther',
this is the 2-octet IEEE 802.2 LSAP pair:
first octet for DSAP and second octet for SSAP."

REFERENCE

"IEEE 802.1v clause 8.6.2"

::= { dot1vProtocolGroupEntry 2 }

dot1vProtocolGroupId OBJECT-TYPE

SYNTAX Integer32 (0..2147483647)

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"Represents a group of protocols that are associated together when assigning a VID to a frame."

REFERENCE

"IEEE 802.1v clause 8.6.3, 12.10.2.1"

::= { dot1vProtocolGroupEntry 3 }

dot1vProtocolGroupRowStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"This object indicates the status of this entry."

::= { dot1vProtocolGroupEntry 4 }

dot1vProtocolPortTable OBJECT-TYPE


```
SYNTAX      SEQUENCE OF Dot1vProtocolPortEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "A table that contains VID sets used for
    Port-and-Protocol-based VLAN Classification."
REFERENCE
    "IEEE 802.1v clause 8.4.4"
 ::= { dot1vProtocol 2 }
```

```
dot1vProtocolPortEntry OBJECT-TYPE
SYNTAX      Dot1vProtocolPortEntry
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "A VID set for a port."
INDEX       { dot1dBasePort,
              dot1vProtocolPortGroupId }
 ::= { dot1vProtocolPortTable 1 }
```

```
Dot1vProtocolPortEntry ::=
SEQUENCE {
    dot1vProtocolPortGroupId
        Integer32,
    dot1vProtocolPortGroupVid
        Integer32,
    dot1vProtocolPortRowStatus
        RowStatus
}
```

```
dot1vProtocolPortGroupId OBJECT-TYPE
SYNTAX      Integer32 (1..2147483647)
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "Designates a group of protocols in the Protocol
    Group Database."
REFERENCE
    "IEEE 802.1v clause 8.6.3, 12.10.1.2"
 ::= { dot1vProtocolPortEntry 1 }
```

```
dot1vProtocolPortGroupVid OBJECT-TYPE
SYNTAX      Integer32 (1..4094)
MAX-ACCESS  read-create
STATUS      current
DESCRIPTION
```


"The VID associated with a group of protocols for each port."

REFERENCE

"IEEE 802.1v clause 8.4.4, 12.10.1.2"

::= { dot1vProtocolPortEntry 2 }

dot1vProtocolPortRowStatus OBJECT-TYPE

SYNTAX RowStatus
MAX-ACCESS read-create
STATUS current

DESCRIPTION

"This object indicates the status of this entry."

::= { dot1vProtocolPortEntry 3 }

-- IEEE 802.1Q MIB - Conformance Information

qBridgeConformance OBJECT IDENTIFIER ::= { qBridgeMIB 2 }

qBridgeGroups OBJECT IDENTIFIER ::= { qBridgeConformance 1 }

qBridgeCompliances OBJECT IDENTIFIER ::= { qBridgeConformance 2 }

-- units of conformance

qBridgeBaseGroup OBJECT-GROUP

OBJECTS {
dot1qVlanVersionNumber,
dot1qMaxVlanId,
dot1qMaxSupportedVlans,
dot1qNumVlans,
dot1qGvrpStatus

}

STATUS current

DESCRIPTION

"A collection of objects providing device level control and status information for the Virtual LAN bridge services."

::= { qBridgeGroups 1 }

qBridgeFdbUnicastGroup OBJECT-GROUP

OBJECTS {
dot1qFdbDynamicCount,


```
    dot1qTpFdbPort,
    dot1qTpFdbStatus
}
STATUS      current
DESCRIPTION
    "A collection of objects providing information about all
    unicast addresses, learnt dynamically or statically
    configured by management, in each Filtering Database."
 ::= { qBridgeGroups 2 }
```

qBridgeFdbMulticastGroup OBJECT-GROUP

```
OBJECTS {
    dot1qTpGroupEgressPorts,
    dot1qTpGroupLearnt
}
STATUS      current
DESCRIPTION
    "A collection of objects providing information about all
    multicast addresses, learnt dynamically or statically
    configured by management, in each Filtering Database."
 ::= { qBridgeGroups 3 }
```

qBridgeServiceRequirementsGroup OBJECT-GROUP

```
OBJECTS {
    dot1qForwardAllPorts,
    dot1qForwardAllStaticPorts,
    dot1qForwardAllForbiddenPorts,
    dot1qForwardUnregisteredPorts,
    dot1qForwardUnregisteredStaticPorts,
    dot1qForwardUnregisteredForbiddenPorts
}
STATUS      current
DESCRIPTION
    "A collection of objects providing information about
    service requirements, learnt dynamically or statically
    configured by management, in each Filtering Database."
 ::= { qBridgeGroups 4 }
```

qBridgeFdbStaticGroup OBJECT-GROUP

```
OBJECTS {
    dot1qStaticUnicastAllowedToGoTo,
    dot1qStaticUnicastStatus,
    dot1qStaticMulticastStaticEgressPorts,
    dot1qStaticMulticastForbiddenEgressPorts,
    dot1qStaticMulticastStatus
}
```


STATUS current

DESCRIPTION

"A collection of objects providing information about unicast and multicast addresses statically configured by management, in each Filtering Database or VLAN."

::= { qBridgeGroups 5 }

qBridgeVlanGroup OBJECT-GROUP

OBJECTS {

dot1qVlanNumDeletes,
dot1qVlanFdbId,
dot1qVlanCurrentEgressPorts,
dot1qVlanCurrentUntaggedPorts,
dot1qVlanStatus,
dot1qVlanCreationTime

}

STATUS current

DESCRIPTION

"A collection of objects providing information about all VLANs currently configured on this device."

::= { qBridgeGroups 6 }

qBridgeVlanStaticGroup OBJECT-GROUP

OBJECTS {

dot1qVlanStaticName,
dot1qVlanStaticEgressPorts,
dot1qVlanForbiddenEgressPorts,
dot1qVlanStaticUntaggedPorts,
dot1qVlanStaticRowStatus,
dot1qNextFreeLocalVlanIndex

}

STATUS current

DESCRIPTION

"A collection of objects providing information about VLANs statically configured by management."

::= { qBridgeGroups 7 }

qBridgePortGroup OBJECT-GROUP

OBJECTS {

dot1qPvid,
dot1qPortAcceptableFrameTypes,
dot1qPortIngressFiltering,
dot1qPortGvrpStatus,
dot1qPortGvrpFailedRegistrations,
dot1qPortGvrpLastPduOrigin

}

STATUS deprecated

DESCRIPTION

"A collection of objects providing port level VLAN control and status information for all ports."

::= { qBridgeGroups 8 }

qBridgeVlanStatisticsGroup OBJECT-GROUP

OBJECTS {

dot1qTpVlanPortInFrames,
dot1qTpVlanPortOutFrames,
dot1qTpVlanPortInDiscards

}

STATUS current

DESCRIPTION

"A collection of objects providing per-port packet statistics for all VLANs currently configured on this device."

::= { qBridgeGroups 9 }

qBridgeVlanStatisticsOverflowGroup OBJECT-GROUP

OBJECTS {

dot1qTpVlanPortInOverflowFrames,
dot1qTpVlanPortOutOverflowFrames,
dot1qTpVlanPortInOverflowDiscards

}

STATUS current

DESCRIPTION

"A collection of objects providing overflow counters for per-port packet statistics for all VLANs currently configured on this device for high capacity interfaces, defined as those that have the value of the corresponding instance of ifSpeed greater than 650,000,000 bits/second."

::= { qBridgeGroups 10 }

qBridgeVlanHCStatisticsGroup OBJECT-GROUP

OBJECTS {

dot1qTpVlanPortHCInFrames,
dot1qTpVlanPortHCOutFrames,
dot1qTpVlanPortHCInDiscards

}

STATUS current

DESCRIPTION

"A collection of objects providing per-port packet statistics for all VLANs currently configured on this device for high capacity interfaces, defined as those that have the value of the corresponding instance of


```
    ifSpeed greater than 650,000,000 bits/second."  
 ::= { qBridgeGroups 11 }
```

qBridgeLearningConstraintsGroup OBJECT-GROUP

```
OBJECTS {  
    dot1qConstraintType,  
    dot1qConstraintStatus  
}  
STATUS      current  
DESCRIPTION  
    "A collection of objects defining the Filtering Database  
    constraints all VLANs have with each other."  
 ::= { qBridgeGroups 12 }
```

qBridgeLearningConstraintDefaultGroup OBJECT-GROUP

```
OBJECTS {  
    dot1qConstraintSetDefault,  
    dot1qConstraintTypeDefault  
}  
STATUS      current  
DESCRIPTION  
    "A collection of objects defining the default Filtering  
    Database constraints for VLANs which have no specific  
    constraints defined."  
 ::= { qBridgeGroups 13 }
```

qBridgeClassificationDeviceGroup OBJECT-GROUP

```
OBJECTS {  
    dot1vProtocolGroupId,  
    dot1vProtocolGroupRowStatus  
}  
STATUS      current  
DESCRIPTION  
    "VLAN classification information for the bridge."  
 ::= { qBridgeGroups 14 }
```

qBridgeClassificationPortGroup OBJECT-GROUP

```
OBJECTS {  
    dot1vProtocolPortGroupVid,  
    dot1vProtocolPortRowStatus  
}  
STATUS      current  
DESCRIPTION  
    "VLAN classification information for individual ports."  
 ::= { qBridgeGroups 15 }
```


qBridgePortGroup2 OBJECT-GROUP

```

OBJECTS {
  dot1qPvid,
  dot1qPortAcceptableFrameTypes,
  dot1qPortIngressFiltering,
  dot1qPortGvrpStatus,
  dot1qPortGvrpFailedRegistrations,
  dot1qPortGvrpLastPduOrigin,
  dot1qPortRestrictedVlanRegistration
}
STATUS      current
DESCRIPTION
  "A collection of objects providing port level VLAN
  control and status information for all ports."
 ::= { qBridgeGroups 16 }

```

```

-----
-- compliance statements
-----

```

qBridgeCompliance MODULE-COMPLIANCE

```

STATUS deprecated
DESCRIPTION
  "The compliance statement for device support of Virtual
  LAN Bridge services.

```

[RFC2674](#) was silent about the expected persistence of the read-write objects in this MIB module. Applications MUST NOT assume that the values of the read-write objects are persistent across reinitializations of the management system, and MUST NOT assume that the values are not persistent across reinitializations of the management system."

MODULE

```

MANDATORY-GROUPS {
  qBridgeBaseGroup,
  qBridgeVlanGroup,
  qBridgeVlanStaticGroup,
  qBridgePortGroup
}

```

```

GROUP      qBridgeFdbUnicastGroup
DESCRIPTION
  "This group is mandatory for bridges that implement
  802.1Q transparent bridging."

```


GROUP qBridgeFdbMulticastGroup
DESCRIPTION
 "This group is mandatory for bridges that implement
 802.1Q transparent bridging."

GROUP qBridgeServiceRequirementsGroup
DESCRIPTION
 "This group is mandatory for bridges that implement
 extended filtering services. All objects must be
 read-write if extended-filtering services are
 enabled."

GROUP qBridgeFdbStaticGroup
DESCRIPTION
 "This group is optional."

GROUP qBridgeVlanStatisticsGroup
DESCRIPTION
 "This group is optional as there may be significant
 implementation cost associated with its support."

GROUP qBridgeVlanStatisticsOverflowGroup
DESCRIPTION
 "This group is optional as there may be significant
 implementation cost associated with its support. It is most
 relevant for high capacity interfaces where the SNMP agent
 supports only SNMPv1."

GROUP qBridgeVlanHCStatisticsGroup
DESCRIPTION
 "This group is optional as there may be significant
 implementation cost associated with its support. It is most
 relevant for high capacity interfaces."

GROUP qBridgeLearningConstraintsGroup
DESCRIPTION
 "This group is mandatory for devices implementing
 both Independent VLAN Learning (IVL) and Shared
 VLAN Learning (SVL) modes of operation of the
 filtering database, as defined by IEEE 802.1Q."

GROUP qBridgeLearningConstraintDefaultGroup
DESCRIPTION
 "This group is mandatory for devices implementing
 both Independent VLAN Learning (IVL) and Shared
 VLAN Learning (SVL) modes of operation of the

filtering database, as defined by IEEE 802.1Q."

OBJECT dot1qPortAcceptableFrameTypes
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required as this is an optional
capability in IEEE 802.1Q."

OBJECT dot1qPortIngressFiltering
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required as this is an optional
capability in IEEE 802.1Q."

OBJECT dot1qConstraintSetDefault
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required as this is an optional
capability in IEEE 802.1Q."

OBJECT dot1qConstraintTypeDefault
MIN-ACCESS read-only
DESCRIPTION
"Write access is not required as this is an optional
capability in IEEE 802.1Q."

::= { qBridgeCompliances 1 }

qBridgeCompliance2 MODULE-COMPLIANCE

STATUS current

DESCRIPTION

"The compliance statement for device support of Virtual
LAN Bridge services.

This document clarifies the persistence requirements for
the read-write objects in this MIB module. All
implementations claiming compliance to qBridgeCompliance2
MUST retain the values of those read-write objects that
specify this requirement."

MODULE

MANDATORY-GROUPS {
qBridgeBaseGroup,
qBridgeVlanGroup,
qBridgeVlanStaticGroup,
qBridgePortGroup2

}

GROUP qBridgeFdbUnicastGroup
DESCRIPTION
 "This group is mandatory for bridges that implement
 802.1Q transparent bridging."

GROUP qBridgeFdbMulticastGroup
DESCRIPTION
 "This group is mandatory for bridges that implement
 802.1Q transparent bridging."

GROUP qBridgeServiceRequirementsGroup
DESCRIPTION
 "This group is mandatory for bridges that implement
 extended filtering services. All objects must be
 read-write if extended-filtering services are
 enabled."

GROUP qBridgeFdbStaticGroup
DESCRIPTION
 "This group is optional."

GROUP qBridgeVlanStatisticsGroup
DESCRIPTION
 "This group is optional as there may be significant
 implementation cost associated with its support."

GROUP qBridgeVlanStatisticsOverflowGroup
DESCRIPTION
 "This group is optional as there may be significant
 implementation cost associated with its support. It is most
 relevant for high capacity interfaces where the SNMP agent
 supports only SNMPv1."

GROUP qBridgeVlanHCStatisticsGroup
DESCRIPTION
 "This group is optional as there may be significant
 implementation cost associated with its support. It is most
 relevant for high capacity interfaces."

GROUP qBridgeLearningConstraintsGroup
DESCRIPTION
 "This group is mandatory for devices implementing
 both Independent VLAN Learning (IVL) and Shared
 VLAN Learning (SVL) modes of operation of the

filtering database, as defined by IEEE 802.1Q."

GROUP qBridgeLearningConstraintDefaultGroup
DESCRIPTION
 "This group is mandatory for devices implementing
 both Independent VLAN Learning (IVL) and Shared
 VLAN Learning (SVL) modes of operation of the
 filtering database, as defined by IEEE 802.1Q."

GROUP qBridgeClassificationDeviceGroup
DESCRIPTION
 "This group is mandatory ONLY for devices implementing
 VLAN Classification as specified in IEEE 802.1v."

GROUP qBridgeClassificationPortGroup
DESCRIPTION
 "This group is mandatory ONLY for devices implementing
 VLAN Classification as specified in IEEE 802.1v."

OBJECT dot1qPortAcceptableFrameTypes
MIN-ACCESS read-only
DESCRIPTION
 "Write access is not required as this is an optional
 capability in IEEE 802.1Q."

OBJECT dot1qPortIngressFiltering
MIN-ACCESS read-only
DESCRIPTION
 "Write access is not required as this is an optional
 capability in IEEE 802.1Q."

OBJECT dot1qConstraintSetDefault
MIN-ACCESS read-only
DESCRIPTION
 "Write access is not required as this is an optional
 capability in IEEE 802.1Q."

OBJECT dot1qConstraintTypeDefault
MIN-ACCESS read-only
DESCRIPTION
 "Write access is not required as this is an optional
 capability in IEEE 802.1Q."

OBJECT dot1vProtocolGroupId
MIN-ACCESS read-only
DESCRIPTION

"Write access is not required as this is an optional capability in IEEE 802.1v."

OBJECT dot1vProtocolGroupRowStatus

MIN-ACCESS read-only

DESCRIPTION

"Write access is not required as this is an optional capability in IEEE 802.1v."

::= { qBridgeCompliances 2 }

END

6. Acknowledgments

Much of the groundwork for this document was performed by the IEEE 802.1 working group during the definition of the IEEE 802.1D updates [[802.1D](#)] and IEEE 802.1Q [[802.1Q](#)].

The authors wish to thank the members of the Bridge Working Group, and David Harrington, Anders SW Christensen, Andrew Smith, Paul Langille, Anil Rijhsinghani, and Keith McCloghrie in particular for their comments and suggestions which improved this effort.

Editing for the final draft was done by David Levi.

The new textual conventions related to VLAN-IDs were produced as a result of a review of the use of VLAN-ID in several MIB modules. Further investigation found that VLAN-ID objects were defined in a few other MIB modules. The editor would like to thank all who contributed to the discussion which resulted in these new textual conventions. Specifically Bert Wijnen, Les Bell, Andrew Smith, Mike Heard, Randy Presuhn, Dan Romascanu, Eduardo Cardona, Tom Petch, Juergen Schoenwaelder, Richard Woundy, Tony Jeffree and William Murwin. We also received input and feedback from IEEE confirming that the values 0 and 4095 are not used for identifying a specific VLAN-ID and so can be used to represent none or a wildcard (see [Appendix A](#)).

7. IANA Considerations

There are no special considerations for IANA related to this draft. The MIB modules in this document are updates to MIB modules with previously assigned IANA identifiers.

8. Security Considerations

There are a number of management objects defined in this MIB module with a MAX-ACCESS clause of read-write and/or read-create. Such objects may be considered sensitive or vulnerable in some network environments. The support for SET operations in a non-secure environment without proper protection can have a negative effect on network operations. These tables and objects and their sensitivity/vulnerability are described below.

The following tables and objects in the P-BRIDGE-MIB can be manipulated to interfere with the operation of priority classes. This could, for example, be used to force a reinitialization of state machines, thus causing network instability. Another possibility would be for an attacker to override established policy on port priorities, thus giving a user (or an attacker) unauthorized preferential treatment.

- dot1dTrafficClassesEnabled
- dot1dGmrpStatus
- dot1dPortPriorityTable
- dot1dUserPriorityRegenTable
- dot1dTrafficClassTable
- dot1dPortGarpTable
- dot1dPortGmrpTable

The following tables and objects in the Q-BRIDGE-MIB could be manipulated to interfere with the operation of virtual LANs. This could, for example, be used to force a reinitialization of state machines to cause network instability, or changing the forwarding and filtering policies.

- dot1qGvrpStatus
- dot1qForwardAllTable
- dot1qStaticUnicastTable
- dot1qStaticMulticastTable
- dot1qVlanStaticTable
- dot1qPortVlanTable
- dot1qLearningConstraintsTable
- dot1vProtocolGroupTable
- dot1vProtocolPortTable

Some of the readable objects in this MIB module (i.e., objects with a MAX-ACCESS other than not-accessible) may be considered sensitive or vulnerable in some network environments. It is thus important to control even GET and/or NOTIFY access to these objects and possibly to even encrypt the values of these objects when sending them over the network via SNMP. These are the tables and objects and their sensitivity/vulnerability.

The objects dot1dDeviceCapabilities and dot1dPortCapabilitiesTable in the P-BRIDGE-MIB could be used by an attacker to determine which attacks might be useful to attempt against a given device.

The following read-only tables and objects in the Q-BRIDGE-MIB could be used by an attacker to determine which attacks might be useful to

attempt against a given device, could be used by an attacker to detect whether their attacks are being blocked or filtered, or could be used to understand the logical topology of the network.

- dot1qMaxVlanID
- dot1qMaxSupportedVlans
- dot1qNumVlans
- dot1qFdbTable
- dot1qTpFdbTable
- dot1qTpGroupTable
- dot1qVlanCurrentTable
- dot1qPortVlanStatisticsTable

SNMP versions prior to SNMPv3 did not include adequate security. Even if the network itself is secure (for example by using IPSec), even then, there is no control as to who on the secure network is allowed to access and GET/SET (read/change/create/delete) the objects in this MIB module.

It is RECOMMENDED that implementers consider the security features as provided by the SNMPv3 framework (see [\[RFC3410\], section 8](#)), including full support for the SNMPv3 cryptographic mechanisms (for authentication and privacy).

Further, deployment of SNMP versions prior to SNMPv3 is NOT RECOMMENDED. Instead, it is RECOMMENDED to deploy SNMPv3 and to enable cryptographic security. It is then a customer/operator responsibility to ensure that the SNMP entity giving access to an instance of this MIB module is properly configured to give access to the objects only to those principals (users) that have legitimate rights to indeed GET or SET (change/create/delete) them.

9. Normative References

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- NOTE to RFC Ed.: please replace 1493bis with actual RFC number, update the reference and remove this note
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[802.1u] IEEE 802.1u-2001, "(Amendment to IEEE Standard 802.1Q) IEEE Standard for Local and metropolitan area networks - Virtual Bridged Local Area Networks - Amendment 1: Technical and Editorial Corrections".

[802.1v] IEEE 802.1v-2001, "(Amendment to IEEE Standard 802.1Q) IEEE Standards for Local and Metropolitan Area Networks: Virtual Bridged Local Area Networks--Amendment 2: VLAN Classification by Protocol and Port".

10. Informative References

[RFC1493] Decker, E., Langille, P., Rijsinghani, A. and K. McCloghrie, "Definitions of Managed Objects for Bridges", [RFC 1493](#), July 1993.

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[I-D.ietf-rmonmib-sspm-mib] Kalbfleisch, C., Cole, R. and D. Romascanu, "Definition of Managed Objects for Synthetic Sources for Performance Monitoring Algorithms.", [draft-ietf-rmonmib-sspm-mib-12](#) (work in progress), June 2004.

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Appendix A. Email from Tony Jeffrey from IEEE

-----Original Message-----

From: Tony Jeffree [mailto:tony@jeffree.co.uk]
Sent: Friday, 6th of June 2003 17:16
To: Wijnen, Bert (Bert) [mailto:bwijnen@lucent.com]
Subject: RE: VLAN ID

Bert et al -

We have concluded that the use of 4095 as a wildcard is acceptable to 802.1, and we will make any necessary changes to 802.1Q in due course to relax the current stated restriction. However, we need to know whether that is all that needs to be done to 802.1Q - i.e., is there any need to change our definitions of the managed objects in the document (Clause 12) to reflect the interpretation of 4095 as a wildcard, or is this simply an issue for the SNMP machinery to handle?

Regards,
Tony

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