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Definitions of Managed Objects for Bridges with Rapid Spanning Tree Protocol and VLAN Classification 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 three MIB modules for managing the new capabilities of MAC bridges defined by the IEEE P802.1t [[802.1t](#)], P802.1u [[802.1u](#)], P802.1v [[802.1v](#)] and P802.1w [[802.1w](#)] amendments to IEEE Std 802.1D-1998 for bridging between Local Area Network (LAN) segments. One MIB module defines objects for managing Rapid Spanning Tree Protocol, one for controlling Restricted VLAN Registration, and one for VLAN Classification.

Provisions are made for support of transparent bridging. Provisions

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are also made so that these objects apply to bridges connected by subnetworks other than LAN segments. This memo also includes several MIB modules in a manner that is compliant to SMIV2 [[RFC2578](#)].

This memo supplements [RFC 1493](#) [[BRIDGEMIB](#)] and [RFC 2674](#) [[Q-BRIDGE-MIB](#)].

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1. The SNMP Management Framework

The SNMP Management Framework presently consists of five major components:

- o An overall architecture, described in [RFC 2571](#) [[RFC2571](#)].
- o Mechanisms for describing and naming objects and events for the purpose of management. The first version of this Structure of Management Information (SMI) is called SMIV1 and described in STD 16, [RFC 1155](#) [[RFC1155](#)], STD 16, [RFC 1212](#) [[RFC1212](#)] and [RFC 1215](#) [[RFC1215](#)]. The second version, called SMIV2, is described in STD 58, [RFC 2578](#) [[RFC2578](#)], STD 58, [RFC 2579](#) [[RFC2579](#)] and STD 58, [RFC 2580](#) [[RFC2580](#)].
- o Message protocols for transferring management information. The first version of the SNMP message protocol is called SNMPv1 and described in STD 15, [RFC 1157](#) [[RFC1157](#)]. A second version of the SNMP message protocol, which is not an Internet standards track protocol, is called SNMPv2c and described in [RFC 1901](#) [[RFC1901](#)] and [RFC 1906](#) [[RFC1906](#)]. The third version of the message protocol is called SNMPv3 and described in [RFC 1906](#) [[RFC1906](#)], [RFC 2572](#) [[RFC2572](#)] and [RFC 2574](#) [[RFC2574](#)].
- o Protocol operations for accessing management information. The first set of protocol operations and associated PDU formats is described in STD 15, [RFC 1157](#) [[RFC1157](#)]. A second set of protocol operations and associated PDU formats is described in [RFC 1905](#) [[RFC1905](#)].
- o A set of fundamental applications described in [RFC 2573](#) [[RFC2573](#)] and the view-based access control mechanism described in [RFC 2575](#) [[RFC2575](#)].

A more detailed introduction to the current SNMP Management Framework can be found in [RFC 2570](#) [[RFC2570](#)].

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. Objects in the MIB are defined using the mechanisms defined in the SMI.

This memo specifies a MIB module that is compliant to the SMIV2. A MIB conforming to the SMIV1 can be produced through the appropriate translations. The resulting translated MIB must be semantically equivalent, except where objects or events are omitted because no translation is possible (use of Counter64). Some machine readable information in SMIV2 will be converted into textual descriptions in SMIV1 during the translation process. However, this loss of machine

readable information is not considered to change the semantics of the MIB.

2. Overview

A common device present in many networks in 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'.

There are two major modes defined for this bridging: Source-Route and transparent. Source-Route bridging is described by IEEE 802.5 [802.5] and is not discussed further in this document.

The transparent method of bridging is defined by IEEE 802.1D-1998 [802.1D]. Managed objects for that original specification of transparent bridging were defined in RFC 1493 [BRIDGEMIB].

2.1. Scope

This MIB includes a comprehensive set of managed objects which attempts to match the set defined in IEEE P802.1t [802.1t], P802.1u [802.1u], P802.1v [802.1v] and P802.1w [802.1w].

3. Structure of MIBs

This document defines additional objects, on top of those existing in the original BRIDGE-MIB module defined in [BRIDGEMIB]: that MIB module is to be maintained unchanged for backwards compatibility. [Section 3.4.3](#) of the present document contains some recommendations

regarding usage of objects in the original bridge MIB by devices implementing the enhancements defined here.

Three MIB modules are defined here:

- (1) Managed objects for an extended bridge MIB module RSTP-MIB for Rapid Spanning Tree Protocol defined by IEEE P802.1t and IEEE P802.1w.
- (2) Managed Objects for an extended virtual bridge MIB module U-BRIDGE-MIB for Restricted VLAN Registration control enhancement defined by IEEE P802.1u.
- (3) Managed Objects for an extended bridge MIB module V-BRIDGE-MIB for VLAN classification by Protocol and Port enhancement defined by IEEE P802.1v.

[3.1.](#) Structure of RSTP-MIB

Objects in this MIB are defined as an addition to the dot1dStp group in the original bridge MIB [BRIDGE-MIB]. The overall structure is shown below:

| Bridge MIB Name | IEEE P802.1t(t) or 802.1w(w) Reference |
|-------------------------------|---|
| dot1dStp | |
| dot1dStpVersion | (w) 17.6.1 ForceVersion |
| dot1dStpPathCostDefault | |
| dot1dStpExtPortTable | |
| dot1dStpPortProtocolMigration | (w) 17.18.10 mcheck |
| dot1dStpPortAdminEdgePort | (t) 18.3.3 adminEdgePort |
| dot1dStpPortOperEdgePort | (t) 18.3.4 operEdgePort |
| dot1dStpPortAdminPointToPoint | (w) 6.4.3 adminPointToPointMAC |
| dot1dStpPortOperPointToPoint | (w) 6.4.3 operPointToPointMAC |

[3.2.](#) Structure of U-BRIDGE-MIB

Objects in this MIB are defined as an addition to the dot1qVlan group

in the Virtual Bridge MIB [Q-BRIDGE-MIB]. The overall structure is shown below:

| Virtual Bridge MIB Name | IEEE P802.1u Reference |
|---------------------------------|--|
| dot1qVlan | |
| dot1qExtPortVlanTable | |
| dot1qPortRestrictedRegistration | 11.2.3.2.3 Restricted VLAN Registration |

3.3. Structure of V-BRIDGE-MIB

Objects in this MIB are arranged in a single group which is organized as a set of related objects. The overall structure and assignment of objects to the group is shown below:

| Bridge MIB Name | IEEE P802.1v Reference |
|------------------------------------|---|
| dot1vProtocol | |
| dot1vProtocolGroupTable | 8.6.4 Protocol Group Database, 8.6.2 Protocol Template |
| dot1vProtocolTemplateFrameType | |
| dot1vProtocolTemplateProtocolValue | |
| dot1vProtocolGroupId | 8.6.3 Protocol Group Identifier |
| dot1vProtocolPortTable | 8.4.4 VID Set for each Port |
| dot1vProtocolPortGroupId | |

dot1vProtocolGroupVid

3.3.1. The dot1vProtocol Group

This group contains objects that describe the bridge's state with respect VLAN classification by Protocol and Port. If VLAN classification is not supported, this group will not be implemented.

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. In particular, it is assumed that a bridge implementing this MIB will implement the original bridge MIB [[BRIDGEMIB](#)]. If the U-BRIDGE-MIB and V-BRIDGE-

MIB modules are implemented, a bridge will also implement the Q-BRIDGE-MIB module defined in [RFC 2674](#) [[QBRIDGEMIB](#)].

[3.4.1.](#) Relation to Original Bridge MIB

This section defines how objects in the original bridge MIB module [[BRIDGEMIB](#)] should be represented for devices which implement all the MIB modules described in this memo. Some of the old objects are less useful in such devices but must still be implemented for reasons of backwards compatibility.

[3.4.1.1.](#) The dot1dBase Group

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

[3.4.1.2.](#) The dot1dStp Group

This group contains the objects that denote the bridge's state with respect to the Spanning Tree Protocol. If a node does not implement the Spanning Tree Protocol, this group will not be implemented.

In a device supporting the Spanning Tree Algorithm and Protocol defined in IEEE 802.1D-1998 Clause 8, interpretation of this group is unchanged.

In a device supporting the Rapid Spanning Tree Algorithm and Protocol defined in IEEE 802.1w Clause 17, the interpretation of objects in this group is unchanged except for those listed below:

dot1dStpPriority

Definition remains unchanged, but the permissible values are changed to 0-61440, in steps of 4096.

dot1dStpPortPriority

Definition remains unchanged, but the permissible values are changed to 0-240, in steps of 16.

dot1dStpTimeSinceTopologyChange

The time since the tcWhile timer for any port on this Bridge was non-zero.

dot1dStpTopChanges

The number of times that there have been at least one non-zero tcWhile timer on this Bridge.

In a device supporting the 32-bit default Path Costs defined in IEEE 802.1t Table 8-5, the interpretation of objects in this group is unchanged except for the following:

dot1dStpPortPathCost

Definition remains unchanged, but the permissible values are extended to 1-200,000,000.

[3.4.1.3](#). The dot1dTp Group

This group contains objects that describe the entity's state with respect to transparent bridging. Interpretation for this group is unchanged.

[3.4.1.4](#). The dot1dStatic Group

This group contains objects that describe the entity's state with respect to destination-address filtering. Interpretation for this group is unchanged.

[3.4.2](#). Relation to the Q-BRIDGE-MIB module defined in [RFC 2674](#)

This section defines how objects in the Q-BRIDGE-MIB module [[QBRIDGEMIB](#)] should be represented for devices which implement the U-BRIDGE-MIB and V-BRIDGE-MIB module described in this memo.

[3.4.2.1](#). The dot1qBase Group

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

[3.4.2.2](#). The dot1qTp Group

This group contains objects that control the operation and report the status of transparent bridging.

[3.4.2.3](#). The dot1qStatic Group

This group contains objects that control static configuration information for transparent bridging.

[3.4.2.4](#). The dot1qVlan Group

This group contains objects that control configuration and report status of the Virtual LANs known to a bridge.

4. Definitions for RSTP-MIB

```
RSTP-MIB DEFINITIONS ::= BEGIN
```

```
-----  
-- MIB for IEEE 802.1w Rapid Spanning Tree Protocol  
-----
```

```
IMPORTS
```

```
    MODULE-IDENTITY, OBJECT-TYPE  
        FROM SNMPv2-SMI  
    TruthValue  
        FROM SNMPv2-TC  
    MODULE-COMPLIANCE, OBJECT-GROUP  
        FROM SNMPv2-CONF  
    dot1dBridge, dot1dStp, dot1dStpPortEntry  
        FROM BRIDGE-MIB;
```

```
rstpMIB MODULE-IDENTITY
```

```
    LAST-UPDATED "200107130000Z"  
    ORGANIZATION "IETF Bridge MIB Working Group"  
    CONTACT-INFO  
        "Email: Bridge-mib@ietf.org"  
    DESCRIPTION  
        "The Bridge MIB Extension module for managing devices  
        that support the Rapid Spanning Tree Protocol defined  
        by IEEE 802.1w."  
    REVISION      "200107130000Z"  
    DESCRIPTION  
        "Draft 0"  
    ::= { dot1dBridge 11 }
```

```
-----  
-- Addition to the dot1dStp group  
-----
```

```
dot1dStpVersion OBJECT-TYPE  
    SYNTAX      INTEGER {
```

```
        stpCompatible(0),
        rstp(2)
    }
MAX-ACCESS read-write
STATUS current
DESCRIPTION
    "The version of Spanning Tree Protocol the bridge is
    currently running. The value 'stpCompatible(0)'
    indicates the Spanning Tree Protocol specified in
    IEEE 802.1D and 'rstp(2)' indicates the Rapid Spanning
    Tree Protocol specified in IEEE 802.1w. New value may
    be defined as future versions of the protocol become
    available."
REFERENCE
    "IEEE 802.1w clause 14.8.1, 17.12, 17.16.1"
DEFVAL { rstp }
 ::= { dot1dStp 16 }
```

```
dot1dStpPathCostDefault OBJECT-TYPE
SYNTAX INTEGER {
    stp8021d1998(1),
    stp8021t2001(2)
}
MAX-ACCESS read-write
STATUS current
DESCRIPTION
    "The version of the Spanning Tree default Path Costs that
    are to be used by this Bridge. A value of 8021d1998(1)
    uses the 16-bit default Path Costs from IEEE Std. 802.1D-1998.
    A value of stp8021t2001(2) uses the 32-bit default Path
    Costs from IEEE Std. 802.1t."
REFERENCE
    "IEEE 802.1D & 802.1t Table 8-5"
 ::= { dot1dStp 17 }
```

```
dot1dStpExtPortTable OBJECT-TYPE
SYNTAX SEQUENCE OF Dot1dStpExtPortEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
    "A table that contains port-specific Rapid Spanning Tree
    information."
 ::= { dot1dStp 18 }
```

```
dot1dStpExtPortEntry OBJECT-TYPE
SYNTAX Dot1dStpExtPortEntry
```

MAX-ACCESS not-accessible
STATUS current

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DESCRIPTION

"A list of Rapid Spanning Tree information maintained by each port."

AUGMENTS { dot1dStpPortEntry }
 ::= { dot1dStpExtPortTable 1 }

Dot1dStpExtPortEntry ::=

```
SEQUENCE {  
    dot1dStpPortProtocolMigration  
        TruthValue,  
    dot1dStpPortAdminEdgePort  
        TruthValue,  
    dot1dStpPortOperEdgePort  
        TruthValue,  
    dot1dStpPortAdminPointToPoint  
        INTEGER,  
    dot1dStpPortOperPointToPoint  
        TruthValue  
}
```

dot1dStpPortProtocolMigration OBJECT-TYPE

SYNTAX TruthValue
MAX-ACCESS read-write
STATUS current

DESCRIPTION

"When operating in RSTP (version 2) mode, writing TRUE(1) to this object forces this port to transmit RSTP BPDUs. Any other operation on this object has no effect and it always returns FALSE(2) when read."

REFERENCE

"IEEE 802.1w clause 14.8.2.4, 17.18.10, 17.26"
 ::= { dot1dStpExtPortEntry 1 }

dot1dStpPortAdminEdgePort OBJECT-TYPE

SYNTAX TruthValue
MAX-ACCESS read-write
STATUS current

DESCRIPTION

"The administrative value of the Edge Port parameter. A

value of TRUE(1) indicates that this port should be assumed as an edge-port and a value of FALSE(2) indicates that this port should be assumed as a non-edge-port."

REFERENCE

"IEEE 802.1t clause 14.8.2, 18.3.3"
 ::= { dot1dStpExtPortEntry 2 }

dot1dStpPortOperEdgePort OBJECT-TYPE
 SYNTAX TruthValue

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MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The operational value of the Edge Port parameter. The object is initialized to the value of dot1dStpPortAdminEdgePort and is set FALSE on reception of a BPDU."

REFERENCE

"IEEE 802.1t clause 14.8.2, 18.3.4"
 ::= { dot1dStpExtPortEntry 3 }

dot1dStpPortAdminPointToPoint OBJECT-TYPE

SYNTAX INTEGER {
 forceTrue(0),
 forceFalse(1),
 auto(2)
 }

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The administrative point-to-point status of the LAN segment attached to this port. A value of forceTrue(0) indicates that this port should always be treated as if it is connected to a point-to-point link. A value of forceFalse(1) indicates that this port should be treated as having a shared media connection. A value of auto(2) indicates that this port is considered to have a point-to-point link if it is an Aggregator and all of its members are aggregatable, or if the MAC entity is configured for full duplex operation, either through auto-negotiation or by management means."

REFERENCE

"IEEE 802.1w clause 6.4.3, 6.5, 14.8.2"

```
::= { dot1dStpExtPortEntry 4 }
```

```
dot1dStpPortOperPointToPoint OBJECT-TYPE
```

```
SYNTAX      TruthValue
```

```
MAX-ACCESS  read-only
```

```
STATUS      current
```

```
DESCRIPTION
```

```
"The operational point-to-point status of the LAN segment
attached to this port.  It indicates whether a port is
considered to have a point-to-point connection or not.
The value is determined by management or by auto-detection,
as described in the dot1dStpPortAdminPointToPoint object."
```

```
REFERENCE
```

```
"IEEE 802.1w clause 6.4.3, 6.5, 14.8.2"
```

```
::= { dot1dStpExtPortEntry 5 }
```

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```
-----
-- rstpMIB - Conformance Information
-----
```

```
rstpConformance OBJECT IDENTIFIER ::= { rstpMIB 1 }
```

```
rstpGroups OBJECT IDENTIFIER ::= { rstpConformance 1 }
```

```
rstpCompliances OBJECT IDENTIFIER ::= { rstpConformance 2 }
```

```
-----
-- Units of conformance
-----
```

```
rstpBridgeGroup OBJECT-GROUP
```

```
  OBJECTS {
    dot1dStpVersion
  }
```

```
  STATUS      current
```

```
  DESCRIPTION
```

```
    "Rapid Spanning Tree information for the bridge."
```

```
  ::= { rstpGroups 1 }
```

```
rstpDefaultPathCostGroup OBJECT-GROUP
```

```
  OBJECTS {
```

```
    dot1dStpPathCostDefault
}
STATUS      current
DESCRIPTION
    "Default Spanning Tree path cost information."
 ::= { rstpGroups 2 }
```

```
rstpPortGroup OBJECT-GROUP
OBJECTS {
    dot1dStpPortProtocolMigration,
    dot1dStpPortAdminEdgePort,
    dot1dStpPortOperEdgePort,
    dot1dStpPortAdminPointToPoint,
    dot1dStpPortOperPointToPoint
}
STATUS      current
DESCRIPTION
    "Rapid Spanning Tree information for individual ports."
 ::= { rstpGroups 3 }
```

```
-----
-- Compliance statements
-----
```

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```
rstpCompliance MODULE-COMPLIANCE
STATUS      current
DESCRIPTION
    "The compliance statement for device support of bridging
    services."

MODULE
    MANDATORY-GROUPS {
        rstpBridgeGroup,
        rstpPortGroup
    }
 ::= { rstpCompliances 1 }
```

END

[5.](#) Definitions for U-BRIDGE-MIB

U-BRIDGE-MIB DEFINITIONS ::= BEGIN

-- MIB for IEEE 802.1u Restricted Group Registration

IMPORTS

MODULE-IDENTITY, OBJECT-TYPE
FROM SNMPv2-SMI
TruthValue
FROM SNMPv2-TC
MODULE-COMPLIANCE, OBJECT-GROUP
FROM SNMPv2-CONF
dot1dBridge, dot1dBasePortEntry
FROM BRIDGE-MIB
dot1qPortVlanEntry
FROM Q-BRIDGE-MIB;

uBridgeMIB MODULE-IDENTITY

LAST-UPDATED "200107130000Z"
ORGANIZATION "IETF Bridge MIB Working Group"
CONTACT-INFO
"Email: Bridge-mib@ietf.org"
DESCRIPTION
"The Bridge MIB Extension module for managing devices
that allow control over dynamic VLAN registration through
Restricted VLAN Registration as defined by IEEE 802.1u."
REVISION "200107130000Z"
DESCRIPTION
"Draft 0"
 ::= { dot1dBridge 12 }

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-- Augmentation to the dot1qPortVlanTable

dot1qExtPortVlanTable OBJECT-TYPE

SYNTAX SEQUENCE OF Dot1qExtPortVlanEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION

"A table containing per port Restricted VLAN Registration
control information."

```
::= { dot1qVlan 11 }
```

```
dot1qExtPortVlanEntry OBJECT-TYPE
```

```
SYNTAX      Dot1qExtPortVlanEntry
```

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

```
STATUS      current
```

```
DESCRIPTION
```

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

```
AUGMENTS { dot1dBasePortEntry }
```

```
::= { dot1qExtPortVlanTable 1 }
```

```
Dot1qExtPortVlanEntry ::=
```

```
SEQUENCE {
```

```
    dot1qPortRestrictedRegistration
```

```
    TruthValue
```

```
}
```

```
dot1qPortRestrictedRegistration OBJECT-TYPE
```

```
SYNTAX      TruthValue
```

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

```
STATUS      current
```

```
DESCRIPTION
```

```
    "The state of Restricted 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."
```

```
REFERENCE
```

```
    "IEEE 802.1u clause 11.2.3.2.3, 12.10.1.7."
```

```
DEFVAL      { false }
```

```
::= { dot1qExtPortVlanEntry 1 }
```

```
-----  
-- uBridgeMIB - Conformance Information  
-----
```

```
uBridgeConformance OBJECT IDENTIFIER ::= { uBridgeMIB 1 }
```

```
uBridgeGroups OBJECT IDENTIFIER ::= { uBridgeConformance 1 }
```



```
uBridgeCompliances OBJECT IDENTIFIER ::= { uBridgeConformance 2 }
```

```
-----  
-- Units of conformance  
-----
```

```
uBridgePortGroup OBJECT-GROUP  
  OBJECTS {  
    dot1qPortRestrictedRegistration  
  }  
  STATUS      current  
  DESCRIPTION  
    "Per-port Restricted VLAN Registration Control parameter"  
  ::= { uBridgeGroups 1 }
```

```
-----  
-- Compliance statements  
-----
```

```
uBridgeCompliance MODULE-COMPLIANCE  
  STATUS      current  
  DESCRIPTION  
    "The compliance statement for device support of bridging  
    services."  
  
  MODULE  
    MANDATORY-GROUPS {  
      uBridgePortGroup  
    }  
  ::= { uBridgeCompliances 1 }
```

```
END
```

[6.](#) Definitions for V-BRIDGE-MIB

```
V-BRIDGE-MIB DEFINITIONS ::= BEGIN
```

```
-----  
-- MIB for IEEE 802.1v VLAN Classification by Protocol and Port  
-----
```

```
IMPORTS  
  MODULE-IDENTITY, OBJECT-TYPE  
  FROM SNMPv2-SMI
```

```
MODULE-COMPLIANCE, OBJECT-GROUP
  FROM SNMPv2-CONF
  dot1dBridge, dot1dBasePort
  FROM BRIDGE-MIB;
```

```
vBridgeMIB MODULE-IDENTITY
  LAST-UPDATED "200107130000Z"
  ORGANIZATION "IETF Bridge MIB Working Group"
  CONTACT-INFO
    "Email: Bridge-mib@ietf.org"
  DESCRIPTION
    "The Bridge MIB Extension module for managing devices
     that support VLAN Classification by Protocol and Port
     defined in IEEE 802.1v."
  REVISION      "200107130000Z"
  DESCRIPTION
    "Draft 0"
  ::= { dot1dBridge 13 }
```

```
vBridgeMIBObjects OBJECT IDENTIFIER ::= { vBridgeMIB 1 }
```

```
-----
-- group in this MIB
-----
```

```
dot1vProtocol OBJECT IDENTIFIER ::= { vBridgeMIBObjects 1 }
```

```
-----
-- dot1vProtocol group
-----
```

```
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

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"A mapping from a Protocol Template to a Protocol Group Identifier."

```
INDEX      { dot1vProtocolTemplateFrameType,
              dot1vProtocolTemplateProtocolValue }
 ::= { dot1vProtocolGroupTable 1 }
```

Dot1vProtocolGroupEntry ::=

```
SEQUENCE {
    dot1vProtocolTemplateFrameType
        INTEGER,
    dot1vProtocolTemplateProtocolValue
        OCTET STRING,
    dot1vProtocolGroupId
        INTEGER
}
```

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 INTEGER (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 }

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
        INTEGER,
    dot1vProtocolPortGroupVid
        INTEGER
}
```

```
dot1vProtocolPortGroupId OBJECT-TYPE
SYNTAX      INTEGER (1..2147483647)
```

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```
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      INTEGER (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 }
```

```
-----
-- vBridgeMIB - Conformance Information
-----
```

```
vBridgeConformance OBJECT IDENTIFIER ::= { vBridgeMIB 2 }
```

```
vBridgeGroups OBJECT IDENTIFIER ::= { vBridgeConformance 1 }
vBridgeCompliances OBJECT IDENTIFIER ::= { vBridgeConformance 2 }
```

```
-----
-- Units of conformance
-----
```

```
vBridgeDeviceGroup OBJECT-GROUP
  OBJECTS {
    dot1vProtocolGroupId
  }
  STATUS      current
  DESCRIPTION
    "VLAN classification information for the bridge."
  ::= { vBridgeGroups 1 }
```

```
vBridgePortGroup OBJECT-GROUP
  OBJECTS {
    dot1vProtocolPortGroupVid
  }
  STATUS      current
```

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```
DESCRIPTION
  "VLAN classification information for individual ports."
  ::= { vBridgeGroups 2 }
```

```
-----
-- Compliance statements
-----
```

```
vBridgeCompliance MODULE-COMPLIANCE
  STATUS      current
  DESCRIPTION
    "The compliance statement for device support of bridging
    services."

  MODULE
    MANDATORY-GROUPS {
      vBridgeDeviceGroup,
      vBridgePortGroup
    }
}
```

```
::= { vBridgeCompliances 1 }
```

END

7. Acknowledgments

This document was produced on behalf of the Bridge MIB Working Group in the Operations and Management area of the Internet Engineering Task Force.

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8. Security Considerations

There are a number of management objects defined in this MIB that have 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.

SNMPv1 by itself is not a secure environment. 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.

It is recommended that the implementers consider the security

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features as provided by the SNMPv3 framework. Specifically, the use of the User-based Security Model [USM] and the View-based Access Control Model [VACM] is recommended.

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