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## Definitions of Managed Objects for Routing Bridges (RBridges)

### Abstract

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols. In particular, it defines objects for managing a Routing Bridge (RBridge), also known as a TRILL Switch, based on the IETF TRILL (Transparent Interconnection of Lots of Links) protocol.

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## 1. Introduction

This document describes a model for managing Routing Bridges (RBridges), also known as TRILL Switches, as defined in [RFC6325]. RBridges provide optimal pair-wise forwarding without configuration using IS-IS routing and encapsulation of traffic. RBridges are compatible with previous IEEE 802.1 customer bridges as well as IPv4 and IPv6 routers and end nodes. They are as invisible to current IP routers as bridges are and, like routers, they terminate the bridge spanning tree protocol. In creating an RBridge management model, the device is viewed primarily as a customer bridge. For a discussion of the problem addressed by TRILL (Transparent Interconnection of Lots of Links), see [RFC5556].

RBridges support features specified for transparent bridges in IEEE 802.1, and the corresponding MIB modules are used to manage those features. For IS-IS purposes, the corresponding MIB module is used to manage the protocol. This MIB module specifies those objects that are TRILL-specific and hence not available in other MIB modules.

## 2. 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].

## 3. Overview

The RBridge MIB module is intended as an overall framework for managing RBridges, also known as TRILL Switches. Where possible, the MIB references existing MIB definitions in order to maximize reuse. This results in a considerable emphasis on the relationship with other MIB modules.

Starting with the physical interfaces, there are requirements for certain elements of the IF-MIB to be implemented. These elements are required in order to connect the per-port parameters to higher-level functions of the physical device.

Transparent bridging, VLANs, traffic classes, and multicast filtering are supported by the TRILL protocol, and the corresponding management is expected to conform to the BRIDGE-MIB module [RFC4188] and to the P-BRIDGE-MIB and Q-BRIDGE-MIB modules [RFC4363].

The IS-IS routing protocol is used in order to determine the optimum pair-wise forwarding path. This protocol is managed using the IS-IS MIB module defined in [RFC4444]. Since the TRILL protocol specifies the use of a single level and a fixed area address of zero, some IS-IS MIB objects are not applicable. Some IS-IS MIB objects are used in the TRILL protocol.

#### 4. Conventions

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119 [RFC2119].

#### 5. Structure of the MIB Module

Objects in this MIB module are arranged into subtrees. Each subtree is organized as a set of related objects. The various subtrees are shown below. These are supplemented with required elements of the IF-MIB, ISIS-MIB, BRIDGE-MIB, P-BRIDGE-MIB, Q-BRIDGE-MIB, and IEEE Bridge MIB modules.

##### 5.1. Textual Conventions

Textual conventions are defined to represent object types relevant to TRILL.

##### 5.2. The rbridgeBase Subtree

This subtree contains system- and port-specific objects applicable to all RBridges.

##### 5.3. The rbridgeFdb Subtree

This subtree contains objects applicable to the forwarding database used by the RBridge in making packet-forwarding decisions. Because it contains additional information used by the TRILL protocol not applicable to 802.1D/Q bridges, it is a superset of the corresponding subtrees defined in the BRIDGE-MIB and Q-BRIDGE-MIB.

##### 5.4. The rbridgeVlan Subtree

This subtree describes objects applicable to VLANs configured on the RBridge.

##### 5.5. The rbridgeEsadi Subtree

This subtree describes objects relevant to RBridges that support the optional End-Station Address Distribution Information (ESADI) protocol.

##### 5.6. The rbridgeCounters Subtree

This subtree contains statistics maintained by RBridges that can aid in monitoring and troubleshooting networks connected by them.

### 5.7. The rbridgeSnooping Subtree

This subtree describes objects applicable to RBridges capable of snooping IPv4 and/or IPv6 multicast control frames and pruning IP multicast traffic based on detection of IP multicast routers and listeners.

### 5.8. The rbridgeDtree Subtree

This subtree contains objects relevant to distribution trees computed by RBridges for the forwarding of multi-destination frames.

### 5.9. The rbridgeTrill Subtree

This subtree contains objects applicable to the TRILL IS-IS protocol, beyond what is available in the ISIS-MIB.

### 5.10. The Notifications Subtree

The defined notifications are focused on the TRILL protocol functionality. Notifications are defined for changes in the Designated RBridge status and the topology.

## 6. Relationship to Other MIB Modules

The IF-MIB, BRIDGE-MIB, P-BRIDGE-MIB, Q-BRIDGE-MIB, IEEE8021-BRIDGE-MIB, IEEE8021-Q-BRIDGE-MIB, and ISIS-MIB modules all contain objects relevant to the RBridge MIB. Management objects contained in these modules are not duplicated here, to reduce overlap to the extent possible.

The Bridge MIB modules were originally written in the IETF and implemented by many vendors. Per [RFC4663], this has recently been transferred to the IEEE 802.1 working group. As vendors may have implemented either the IETF or IEEE Bridge MIB modules, this RBridge MIB module is designed to work with either one.

### 6.1. Relationship to IF-MIB

The port identification elements MUST be implemented in order to allow them to be cross-referenced. The Interfaces MIB [RFC2863] requires that any MIB module that is an adjunct of the Interfaces MIB clarify specific areas within the Interfaces MIB module. These areas were intentionally left vague in the Interfaces MIB module to avoid over-constraining the MIB, thereby precluding management of certain media types. Section 4 of [RFC2863] enumerates several areas that a

media-specific MIB module must clarify. The implementor is referred to [RFC2863] in order to understand the general intent of these areas.

## 6.2. Relationship to BRIDGE-MIB

The following subtrees in the BRIDGE-MIB [RFC4188] contain information relevant to RBridges when the corresponding functionality is implemented.

- o dot1dBase
- o dot1dTp
- o dot1dStatic

## 6.3. Relationship to P-BRIDGE-MIB

The following subtrees in the P-BRIDGE-MIB [RFC4363] contain information relevant to RBridges when the corresponding functionality is implemented.

- o dot1dExtBase
- o dot1dPriority
- o dot1dGarp
- o dot1dGmrp
- o dot1dTpHCPortTable
- o dot1dTpPortOverflowTable

## 6.4. Relationship to Q-BRIDGE-MIB

The following groups in the Q-BRIDGE-MIB [RFC4363] contain information relevant to RBridges when the corresponding functionality is implemented. This functionality is also contained in the IEEE8021-Q-BRIDGE-MIB.

- o dot1qBase
- o dot1qTp
- o dot1qStatic

- o dot1qVlan
- o dot1vProtocol

#### 6.5. Relationship to IEEE8021-BRIDGE-MIB

The following subtrees in the IEEE8021-BRIDGE-MIB contain information relevant to RBridges when the corresponding functionality is implemented.

- o ieee8021BridgeBase
- o ieee8021BridgeTp
- o ieee8021BridgePriority
- o ieee8021BridgeMrp
- o ieee8021BridgeMmrp
- o ieee8021BridgeInternalLan
- o ieee8021BridgeDot1d

#### 6.6. Relationship to IEEE8021-Q-BRIDGE-MIB

The following subtrees in the IEEE8021-Q-BRIDGE-MIB contain information relevant to RBridges when the corresponding functionality is implemented.

- o ieee8021QBridgeBase
- o ieee8021QBridgeTp
- o ieee8021QBridgeStatic
- o ieee8021QBridgeVlan
- o ieee8021QBridgeProtocol

### 6.7. Relationship to ISIS-MIB

"Management Information Base for Intermediate System to Intermediate System (IS-IS)" [RFC4444] defines a MIB module for the IS-IS routing protocol when it is used to construct routing tables for IP networks. While most of these objects are applicable to the TRILL layer 2 implementation, note the IS-IS constraints for the current version of TRILL [RFC6325]:

- o The TRILL IS-IS instance uses a single Level 1 IS-IS area.
- o The TRILL Level 1 IS-IS area uses the fixed area address zero.
- o The TRILL IS-IS instance is not used for IP address advertisement.
- o The TRILL IS-IS instance is used for only a single protocol: TRILL.

Accordingly, tables that report IP address reachability and tables that allow configuration or reporting of multiple IS-IS areas, multiple IS-IS levels, or multiple protocols will be empty in the ISIS-MIB module for the current version of TRILL.

Note also that when more than one instance of the IS-IS protocol is running on a device, as in the case of a device performing both RBridge and IS-IS IP router functions, multiple instances of the ISIS-MIB module can be distinguished by the use of SNMPv3 contexts or SNMPv1 communities.

### 6.8. MIB Modules Required for IMPORTS

The following MIB module imports objects from the SNMPv2-SMI [RFC2578], SNMPv2-TC [RFC2579], SNMPv2-CONF [RFC2580], IF-MIB [RFC2863], INET-ADDRESS-MIB [RFC4001], BRIDGE-MIB [RFC4188], and Q-BRIDGE-MIB [RFC4363]. (The IEEE Bridge MIB modules import similar TCs.)

## 7. Definition of the RBridge MIB Module

```
RBRIDGE-MIB DEFINITIONS ::= BEGIN

-- -----
-- MIB for RBRIDGE devices, also known as TRILL Switches
-- -----

IMPORTS
    MODULE-IDENTITY, OBJECT-TYPE, NOTIFICATION-TYPE,
    Counter32, Counter64, Unsigned32, mib-2
        FROM SNMPv2-SMI                -- RFC2578
    TEXTUAL-CONVENTION, TruthValue, MacAddress, RowStatus
        FROM SNMPv2-TC                -- RFC2579
    MODULE-COMPLIANCE, OBJECT-GROUP, NOTIFICATION-GROUP
        FROM SNMPv2-CONF              -- RFC2580
    VlanId, PortList
        FROM Q-BRIDGE-MIB              -- RFC4363
    InetAddress, InetAddressType
        FROM INET-ADDRESS-MIB          -- RFC4001
    BridgeId
        FROM BRIDGE-MIB                -- RFC4188
    InterfaceIndex
        FROM IF-MIB                    -- RFC2863
    ;

rbridgeMIB MODULE-IDENTITY
    LAST-UPDATED "201301070000Z"
    ORGANIZATION "IETF TRILL Working Group"
    CONTACT-INFO
        "http://datatracker.ietf.org/wg/trill/charter/"
        Email: trill@ietf.org

        Anil Rijhsinghani
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        Kate Zebrose
        HW Embedded
        Tel: +1 617 840 9673
        Email: zebrose@alum.mit.edu"

    DESCRIPTION
        "The RBridge MIB module for managing switches that support
        the TRILL protocol."

    REVISION      "201301070000Z"
```

## DESCRIPTION

"Initial version, published as RFC 6850.

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::= { mib-2 214 }

-- -----  
 -- Subtrees in the RBridge MIB  
 -- -----

rbridgeNotifications	OBJECT IDENTIFIER ::= { rbridgeMIB 0 }
rbridgeObjects	OBJECT IDENTIFIER ::= { rbridgeMIB 1 }
rbridgeConformance	OBJECT IDENTIFIER ::= { rbridgeMIB 2 }
rbridgeBase	OBJECT IDENTIFIER ::= { rbridgeObjects 1 }
rbridgeFdb	OBJECT IDENTIFIER ::= { rbridgeObjects 2 }
rbridgeVlan	OBJECT IDENTIFIER ::= { rbridgeObjects 3 }
rbridgeEsadi	OBJECT IDENTIFIER ::= { rbridgeObjects 4 }
rbridgeCounter	OBJECT IDENTIFIER ::= { rbridgeObjects 5 }
rbridgeSnooping	OBJECT IDENTIFIER ::= { rbridgeObjects 6 }
rbridgeDtree	OBJECT IDENTIFIER ::= { rbridgeObjects 7 }
rbridgeTrill	OBJECT IDENTIFIER ::= { rbridgeObjects 8 }

-- -----  
 -- Type Definitions  
 -- -----

RbridgeAddress ::= TEXTUAL-CONVENTION

DISPLAY-HINT "1x:"

STATUS current

DESCRIPTION

"The Media Access Control (MAC) address used by an RBridge port. This may match the RBridge IS-IS SystemID."

SYNTAX OCTET STRING (SIZE (6))

```
RbridgeNickname ::= TEXTUAL-CONVENTION
    DISPLAY-HINT "d"
    STATUS current
    DESCRIPTION
        "The 16-bit identifier used in TRILL as an
        abbreviation for the RBridge's 48-bit IS-IS System ID.
        The value 0 means a nickname is not specified, the values
        0xFFC0 through 0xFFFFE are reserved for future allocation,
        and the value 0xFFFF is permanently reserved."
    REFERENCE
        "RFC 6325, Section 3.7"
    SYNTAX Unsigned32 (0..65471)

--
-- the rbridgeBase subtree
--
-- Implementation of the rbridgeBase subtree is mandatory for all
-- RBridges.
--

rbridgeBaseTrillVersion OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The maximum TRILL version number that this RBridge
        supports."
    REFERENCE
        "RFC 6325, Section 3.2"
    ::= { rbridgeBase 1 }

rbridgeBaseNumPorts OBJECT-TYPE
    SYNTAX      Unsigned32
    UNITS       "ports"
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The number of ports controlled by this RBridge."
    REFERENCE
        "RFC 6325, Section 2.6.1"
    ::= { rbridgeBase 2 }

rbridgeBaseForwardDelay OBJECT-TYPE
    SYNTAX      Unsigned32 (4..30)
    UNITS       "seconds"
    MAX-ACCESS  read-write
    STATUS      current
```

## DESCRIPTION

"Modified aging time for address entries after an appointed forwarder change.

The value of this object MUST be retained across re-initializations of the management system."

## REFERENCE

"RFC 6325, Section 4.8.3"

::= { rbridgeBase 3 }

## rbridgeBaseUniMultipathEnable OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-write

STATUS current

## DESCRIPTION

"The enabled status of unicast TRILL multipathing. It is enabled when true.

The value of this object MUST be retained across re-initializations of the management system."

## REFERENCE

"RFC 6325, Appendix C"

::= { rbridgeBase 4 }

## rbridgeBaseMultiMultipathEnable OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-write

STATUS current

## DESCRIPTION

"The enabled status of multi-destination TRILL multipathing. It is enabled when true.

The value of this object MUST be retained across re-initializations of the management system."

## REFERENCE

"RFC 6325, Appendix C"

::= { rbridgeBase 5 }

## rbridgeBaseAcceptEncapNonadj OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-write

STATUS current

## DESCRIPTION

"Accept TRILL-encapsulated frames from a neighbor with which this RBridge does not have an IS-IS adjacency, when the value of this object is 'true'.

The value of this object MUST be retained across re-initializations of the management system."

## REFERENCE

"RFC 6325, Section 4.6.2"

::= { rbridgeBase 6 }

## rbridgeBaseNicknameNumber OBJECT-TYPE

SYNTAX Unsigned32 (1..256)

MAX-ACCESS read-write

STATUS current

## DESCRIPTION

"The number of nicknames this RBridge should acquire. These can be acquired dynamically or configured statically. This value represents the maximum number of entries in rbridgeBaseNicknameTable."

The value of this object MUST be retained across re-initializations of the management system."

## REFERENCE

"RFC 6325, Section 3.7.3"

::= { rbridgeBase 7 }

-- -----  
 -- The RBridge Base Nickname Table  
 -- -----

## rbridgeBaseNicknameTable OBJECT-TYPE

SYNTAX SEQUENCE OF RbridgeBaseNicknameEntry

MAX-ACCESS not-accessible

STATUS current

## DESCRIPTION

"A table that contains information about nicknames configured by an operator or learned dynamically by this RBridge."

## REFERENCE

"RFC 6325, Section 3.7"

::= { rbridgeBase 8 }

## rbridgeBaseNicknameEntry OBJECT-TYPE

SYNTAX RbridgeBaseNicknameEntry

MAX-ACCESS not-accessible

STATUS current

## DESCRIPTION

"A list of information for each nickname of the RBridge."

## REFERENCE

"RFC 6325, Section 3.7"

INDEX { rbridgeBaseNicknameName }

::= { rbridgeBaseNicknameTable 1 }

```
RbridgeBaseNicknameEntry ::=
    SEQUENCE {
        rbridgeBaseNicknameName
            RbridgeNickname,
        rbridgeBaseNicknamePriority
            Unsigned32,
        rbridgeBaseNicknameDtrPriority
            Unsigned32,
        rbridgeBaseNicknameType
            INTEGER,
        rbridgeBaseNicknameRowStatus
            RowStatus
    }

rbridgeBaseNicknameName OBJECT-TYPE
    SYNTAX      RbridgeNickname
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "Nicknames are 16-bit quantities that act as
        abbreviations for RBridge's 48-bit IS-IS System ID to
        achieve a more compact encoding."
    REFERENCE
        "RFC 6325, Section 3.7"
    ::= { rbridgeBaseNicknameEntry 1 }

rbridgeBaseNicknamePriority OBJECT-TYPE
    SYNTAX      Unsigned32 (0..255)
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION
        "This RBridge's priority to hold this nickname.  When
        the nickname is configured, the default value of this
        object is 192.  When the nickname is configured, the most
        significant bit (0x80) must be set and the bottom 7 bits
        have the default value of 0x40, so 0x80 + 0x40 == 0xC0,
        which is 192 decimal.  Additionally, the bottom 7 bits
        could be configured to a value other than 0x40.

        The value of this object MUST be retained across
        re-initializations of the management system."
    REFERENCE
        "RFC 6325, Section 3.7"
    DEFVAL      { 192 }
    ::= { rbridgeBaseNicknameEntry 2 }
```

**rbridgeBaseNicknameDtrPriority OBJECT-TYPE**

SYNTAX Unsigned32 (1..65535)

MAX-ACCESS read-create

STATUS current

## DESCRIPTION

"The distribution tree root priority for this nickname.  
The default value of this object is 32768.

The value of this object MUST be retained across  
re-initializations of the management system."

## REFERENCE

"RFC 6325, Section 4.5"

DEFVAL { 32768 }

::= { rbridgeBaseNicknameEntry 3 }

**rbridgeBaseNicknameType OBJECT-TYPE**SYNTAX INTEGER {  
static(1),  
dynamic(2)  
}

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"This object indicates the status of the entry. The  
default value is static(1).

static(1) - this entry has been configured and  
will remain after the next reset of the RBridge.

dynamic(2) - this entry has been acquired by the  
RBridge nickname acquisition protocol."

## REFERENCE

"RFC 6325, Section 3.7"

DEFVAL { static }

::= { rbridgeBaseNicknameEntry 4 }

**rbridgeBaseNicknameRowStatus OBJECT-TYPE**

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

## DESCRIPTION

"This object indicates the status of the entry."

::= { rbridgeBaseNicknameEntry 5 }

```
-- -----
-- The RBridge Port Table
-- -----

rbridgeBasePortTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF RbridgeBasePortEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "A table that contains generic information about every
        port that is associated with this RBridge."
    REFERENCE
        "RFC 6325, Section 5.3"
    ::= { rbridgeBase 9 }

rbridgeBasePortEntry OBJECT-TYPE
    SYNTAX      RbridgeBasePortEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION
        "A list of information for each port of the bridge."
    REFERENCE
        "RFC 6325, Section 5.3"
    INDEX { rbridgeBasePort }
    ::= { rbridgeBasePortTable 1 }

RbridgeBasePortEntry ::=
    SEQUENCE {
        rbridgeBasePort
            Unsigned32,
        rbridgeBasePortIfIndex
            InterfaceIndex,
        rbridgeBasePortDisable
            TruthValue,
        rbridgeBasePortTrunkPort
            TruthValue,
        rbridgeBasePortAccessPort
            TruthValue,
        rbridgeBasePortP2pHellos
            TruthValue,
        rbridgeBasePortState
            INTEGER,
        rbridgeBasePortInhibitionTime
            Unsigned32,
        rbridgeBasePortDisableLearning
            TruthValue,
        rbridgeBasePortDesiredDesigVlan
            VlanId,
```

```
    rbridgeBasePortDesigVlan
        VlanId,
    rbridgeBasePortStpRoot
        BridgeId,
    rbridgeBasePortStpRootChanges
        Counter32,
    rbridgeBasePortStpWiringCloset
        BridgeId
}

rbridgeBasePort OBJECT-TYPE
    SYNTAX      Unsigned32 (1..65535)
    MAX-ACCESS   not-accessible
    STATUS      current
    DESCRIPTION
        "The port number of the port for which this entry
        contains RBridge management information."
    REFERENCE
        "RFC 6325, Section 5.3"
    ::= { rbridgeBasePortEntry 1 }

rbridgeBasePortIfIndex OBJECT-TYPE
    SYNTAX      InterfaceIndex
    MAX-ACCESS   read-only
    STATUS      current
    DESCRIPTION
        "The value of the instance of the ifIndex object,
        defined in the IF-MIB, for the interface corresponding
        to this port. The RBridge port sits on top of
        this interface."
    ::= { rbridgeBasePortEntry 2 }

rbridgeBasePortDisable OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS   read-write
    STATUS      current
    DESCRIPTION
        "Disable port bit. When this bit is set (true), all frames
        received or to be transmitted are discarded, with the
        possible exception of some layer 2 control frames that may
        be generated and transmitted or received and processed
        locally. Default value is 'false'."

        The value of this object MUST be retained across
        re-initializations of the management system."
```

## REFERENCE

"RFC 6325, Section 4.9.1"

DEFVAL { false }

::= { rbridgeBasePortEntry 3 }

## rbridgeBasePortTrunkPort OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-write

STATUS current

## DESCRIPTION

"End-station service disable (trunk port) bit. When this bit is set (true), all native frames received on the port and all native frames that would have been sent on the port are discarded. Default value is 'false'.

The value of this object MUST be retained across re-initializations of the management system."

## REFERENCE

"RFC 6325, Section 4.9.1"

DEFVAL { false }

::= { rbridgeBasePortEntry 4 }

## rbridgeBasePortAccessPort OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-write

STATUS current

## DESCRIPTION

"TRILL traffic disable (access port) bit. If this bit is set, the goal is to avoid sending any TRILL frames, except TRILL-Hello frames, on the port, since it is intended only for native end-station traffic. This ensures that the link is not on the shortest path for any destination. Default value is 'false'.

The value of this object MUST be retained across re-initializations of the management system."

## REFERENCE

"RFC 6325, Section 4.9.1"

DEFVAL { false }

::= { rbridgeBasePortEntry 5 }

## rbridgeBasePortP2pHellos OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-write

STATUS current

## DESCRIPTION

"Use point-to-point (P2P) Hellos bit. If this bit is set, Hellos sent on this port are IS-IS P2P Hellos, not the

default TRILL-Hellos. In addition, the IS-IS P2P three-way handshake is used on P2P RBridge links. Default value is 'false'.

The value of this object MUST be retained across re-initializations of the management system."

REFERENCE

"RFC 6325, Section 4.9.1"

DEFVAL { false }

::= { rbridgeBasePortEntry 6 }

rbridgeBasePortState OBJECT-TYPE

SYNTAX INTEGER {  
    uninhibited(1),  
    portInhibited(2),  
    vlanInhibited(3),  
    disabled(4),  
    broken(5)  
}

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The port's current state. If the entire port is inhibited, its state is portInhibited(2). If specific VLANs are inhibited, the state is vlanInhibited(3), and rbridgeVlanPortTable will tell which VLANs are inhibited. For ports that are disabled (see rbridgeBasePortDisable), this object will have a value of disabled(4). If the RBridge has detected a port that is malfunctioning, it will place that port into the broken(5) state."

REFERENCE

"RFC 6325, Section 4.2.4.3"

::= { rbridgeBasePortEntry 7 }

rbridgeBasePortInhibitionTime OBJECT-TYPE

SYNTAX Unsigned32

UNITS "seconds"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"Time in seconds that this RBridge will inhibit forwarding on this port after it observes a spanning tree root bridge change on a link or receives conflicting VLAN forwarder information. The default value is 30."

The value of this object MUST be retained across re-initializations of the management system."

## REFERENCE

"RFC 6325, Section 4.2.4.3"

DEFVAL { 30 }

::= { rbridgeBasePortEntry 8 }

## rbridgeBasePortDisableLearning OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-write

STATUS current

## DESCRIPTION

"Disable learning of MAC addresses seen on this port. To disable learning, the value of this object must be set to 'true'. The default is 'false'.

The value of this object MUST be retained across re-initializations of the management system."

## REFERENCE

"RFC 6325, Section 4.8"

DEFVAL { false }

::= { rbridgeBasePortEntry 9 }

## rbridgeBasePortDesiredDesigVlan OBJECT-TYPE

SYNTAX VlanId

MAX-ACCESS read-write

STATUS current

## DESCRIPTION

"The VLAN that a Designated RBridge (DRB) will specify in its TRILL-Hellos as the VLAN to be used by all RBridges on the link for TRILL frames. This VLAN must be enabled on this port.

The value of this object MUST be retained across re-initializations of the management system."

## REFERENCE

"RFC 6325, Section 4.4.3"

::= { rbridgeBasePortEntry 10 }

## rbridgeBasePortDesigVlan OBJECT-TYPE

SYNTAX VlanId

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"The VLAN being used on this link for TRILL frames."

## REFERENCE

"RFC 6325, Section 4.4.3"

::= { rbridgeBasePortEntry 11 }

**rbridgeBasePortStpRoot OBJECT-TYPE**

SYNTAX        BridgeId  
MAX-ACCESS    read-only  
STATUS        current

**DESCRIPTION**

"The bridge identifier of the root of the spanning tree, as learned from a Bridge PDU (BPDU) received on this port. For the Multiple Spanning Tree Protocol (MSTP), this is the root bridge of the Common and Internal Spanning Tree (CIST). If no BPDU has been heard, the value returned is a string of zeros."

**REFERENCE**

"RFC 6325, Section 4.2.4.3"

::= { rbridgeBasePortEntry 12 }

**rbridgeBasePortStpRootChanges OBJECT-TYPE**

SYNTAX        Counter32  
UNITS         "changes"  
MAX-ACCESS    read-only  
STATUS        current

**DESCRIPTION**

"The number of times a change in the root bridge is seen from spanning tree BPDUs received on this port, indicating a change in bridged LAN topology. Each such change may cause the port to be inhibited for a period of time. This counter should be synchronized with ifCounterDiscontinuityTime."

Discontinuities in the value of this counter can occur at re-initialization of the management system."

**REFERENCE**

"RFC 6325, Section 4.9.3.2"

::= { rbridgeBasePortEntry 13 }

**rbridgeBasePortStpWiringCloset OBJECT-TYPE**

SYNTAX        BridgeId  
MAX-ACCESS    read-write  
STATUS        current

**DESCRIPTION**

"The Bridge ID to be used as the spanning tree root in BPDUs sent for the Wiring Closet topology solution described in [RFC6325]. Note that the same value of this object must be set on all RBridge ports participating in this solution. The default value is all 0s. A non-zero value configured into this object indicates that this solution is in use."

The value of this object MUST be retained across re-initializations of the management system."

## REFERENCE

"RFC 6325, Appendix A.3.3"  
::= { rbridgeBasePortEntry 14 }

-- -----  
-- RBridge Forwarding Database  
-- -----

## rbridgeConfidenceNative OBJECT-TYPE

SYNTAX Unsigned32 (0..255)

MAX-ACCESS read-write

STATUS current

## DESCRIPTION

"The confidence level associated with MAC addresses learned from native frames. This is applicable to all RBridge ports.

The value of this object MUST be retained across re-initializations of the management system."

## REFERENCE

"RFC 6325, Section 4.8.1"  
::= { rbridgeFdb 1 }

## rbridgeConfidenceDecap OBJECT-TYPE

SYNTAX Unsigned32 (0..255)

MAX-ACCESS read-write

STATUS current

## DESCRIPTION

"The confidence level associated with inner MAC addresses learned after decapsulation of a TRILL data frame. This is applicable to all RBridge ports.

The value of this object MUST be retained across re-initializations of the management system."

## REFERENCE

"RFC 6325, Section 4.8.1"  
::= { rbridgeFdb 2 }

## rbridgeConfidenceStatic OBJECT-TYPE

SYNTAX Unsigned32 (0..255)

MAX-ACCESS read-write

STATUS current

## DESCRIPTION

"The confidence level associated with MAC addresses that are statically configured. The default value is 255.

The value of this object MUST be retained across re-initializations of the management system."

## REFERENCE

"RFC 6325, Section 4.8.2"

DEFVAL { 255 }

::= { rbridgeFdb 3 }

```
-- -----
-- Multiple Forwarding Databases for RBridges
--
-- This allows for an instance per FdbId, as defined in the
-- Bridge MIB.
--
-- Each VLAN may have an independent FDB, or multiple VLANs may
-- share one.
-- -----
```

## rbridgeUniFdbTable OBJECT-TYPE

SYNTAX SEQUENCE OF RbridgeUniFdbEntry

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

"RFC 6325, Section 4.8"

::= { rbridgeFdb 4 }

## rbridgeUniFdbEntry OBJECT-TYPE

SYNTAX RbridgeUniFdbEntry

MAX-ACCESS not-accessible

STATUS current

## DESCRIPTION

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

INDEX { rbridgeFdbId, rbridgeUniFdbAddr }

::= { rbridgeUniFdbTable 1 }

## RbridgeUniFdbEntry ::=

SEQUENCE {

rbridgeFdbId

Unsigned32,

rbridgeUniFdbAddr

MacAddress,

```
    rbridgeUniFdbPort
        Unsigned32,
    rbridgeUniFdbNickname
        RbridgeNickname,
    rbridgeUniFdbConfidence
        Unsigned32,
    rbridgeUniFdbStatus
        INTEGER
}
```

rbridgeFdbId OBJECT-TYPE

```
SYNTAX      Unsigned32 (0..4294967295)
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "The identity of this Filtering Database."
 ::= { rbridgeUniFdbEntry 1 }
```

rbridgeUniFdbAddr OBJECT-TYPE

```
SYNTAX      MacAddress
MAX-ACCESS  not-accessible
STATUS      current
DESCRIPTION
    "A unicast MAC address for which the device has
    forwarding information."
 ::= { rbridgeUniFdbEntry 2 }
```

rbridgeUniFdbPort OBJECT-TYPE

```
SYNTAX      Unsigned32 (0..65535)
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "Either the value '0', or the RBridge port number of the
    port on which a frame having a source address equal to the
    value of the corresponding instance of rbridgeUniFdbAddr
    has been seen.  A value of '0' indicates that the port
    number has not been learned but that the device does have
    some information about this MAC address.

    Implementors are encouraged to assign the port value to
    this object whenever it is available, even for addresses
    for which the corresponding value of rbridgeUniFdbStatus is
    not learned(3)."
 ::= { rbridgeUniFdbEntry 3 }
```

rbridgeUniFdbNickname OBJECT-TYPE

```
SYNTAX      RbridgeNickname
MAX-ACCESS  read-only
```

```

STATUS      current
DESCRIPTION
    "The RBridge nickname that is placed in the egress
    nickname field of a TRILL frame sent to this
    rbridgeFdbAddress in this rbridgeFdbId."
REFERENCE
    "RFC 6325, Section 4.8.1"
::= { rbridgeUniFdbEntry 4 }

```

```

rbridgeUniFdbConfidence OBJECT-TYPE
    SYNTAX      Unsigned32 (0..255)
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The confidence level associated with this entry."
    REFERENCE
        "RFC 6325, Section 4.8.1"
    ::= { rbridgeUniFdbEntry 5 }

```

```

rbridgeUniFdbStatus OBJECT-TYPE
    SYNTAX      INTEGER {
                                other(1),
                                invalid(2),
                                learned(3),
                                self(4),
                                mgmt(5),
                                esadi(6)
                            }
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The status of this entry.  The meanings of the values
        are:
        other(1) - none of the following.
        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 information in this entry was learned
                     and is being used.
        self(4) - the value of the corresponding instance of
                     rbridgeFdbAddress represents one of the device's
                     addresses.  The corresponding instance of
                     rbridgeFdbPort indicates which of the device's
                     ports has this address."

```

mgmt(5) - the value of the corresponding instance of  
 rbridgeFdbAddress was configured by management.  
 esadi(6) - the value of the corresponding instance of  
 rbridgeFdbAddress was learned from ESADI."  
 ::= { rbridgeUniFdbEntry 6 }

-----  
 -- RBridge Forwarding Information Base (FIB)  
 -----

#### rbridgeUniFibTable OBJECT-TYPE

SYNTAX SEQUENCE OF RbridgeUniFibEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A table that contains information about nicknames known by  
 the RBridge. If Equal-Cost Multipath (ECMP) is implemented,  
 there are as many entries for a nickname as there are ECMP  
 paths available for it."

::= { rbridgeFdb 5 }

#### rbridgeUniFibEntry OBJECT-TYPE

SYNTAX RbridgeUniFibEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A list of information about nicknames known by the RBridge.  
 If ECMP is implemented, there are as many entries as there  
 are ECMP paths available for a given nickname."

INDEX { rbridgeUniFibNickname, rbridgeUniFibPort,  
 rbridgeUniFibNextHop }

::= { rbridgeUniFibTable 1 }

RbridgeUniFibEntry ::=

```
SEQUENCE {
    rbridgeUniFibNickname
        RbridgeNickname,
    rbridgeUniFibPort
        Unsigned32,
    rbridgeUniFibNextHop
        RbridgeNickname,
    rbridgeUniFibHopCount
        Unsigned32
}
```

#### rbridgeUniFibNickname OBJECT-TYPE

SYNTAX RbridgeNickname

MAX-ACCESS not-accessible

STATUS current  
DESCRIPTION  
"An RBridge nickname for which this RBridge has forwarding information."  
::= { rbridgeUniFibEntry 1 }

rbridgeUniFibPort OBJECT-TYPE  
SYNTAX Unsigned32 (0..65535)  
MAX-ACCESS not-accessible  
STATUS current  
DESCRIPTION  
"The RBridge port number of the port attached to the next-hop RBridge for the path towards the RBridge whose nickname is specified in this entry."  
::= { rbridgeUniFibEntry 2 }

rbridgeUniFibNextHop OBJECT-TYPE  
SYNTAX RbridgeNickname  
MAX-ACCESS not-accessible  
STATUS current  
DESCRIPTION  
"The nickname of the next-hop RBridge for the path towards the RBridge whose nickname is specified in this entry."  
::= { rbridgeUniFibEntry 3 }

rbridgeUniFibHopCount OBJECT-TYPE  
SYNTAX Unsigned32  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION  
"The hop count from this ingress RBridge to the egress RBridge whose nickname is specified in rbridgeUniFibNickname."  
::= { rbridgeUniFibEntry 4 }

rbridgeMultiFibTable OBJECT-TYPE  
SYNTAX SEQUENCE OF RbridgeMultiFibEntry  
MAX-ACCESS not-accessible  
STATUS current  
DESCRIPTION  
"A table that contains information about egress nicknames used for multi-destination frame forwarding by this RBridge."  
::= { rbridgeFdb 6 }

```
rbridgeMultiFibEntry OBJECT-TYPE
    SYNTAX      RbridgeMultiFibEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A list of information about egress nicknames used for
        multi-destination frame forwarding by this RBridge."
    INDEX       { rbridgeMultiFibNickname }
    ::= { rbridgeMultiFibTable 1 }

RbridgeMultiFibEntry ::=
    SEQUENCE {
        rbridgeMultiFibNickname
            RbridgeNickname,
        rbridgeMultiFibPorts
            PortList
    }

rbridgeMultiFibNickname OBJECT-TYPE
    SYNTAX      RbridgeNickname
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The nickname of the multicast distribution tree."
    ::= { rbridgeMultiFibEntry 1 }

rbridgeMultiFibPorts OBJECT-TYPE
    SYNTAX      PortList
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The list of ports to which a frame destined to this
        multicast distribution tree is flooded. This may be pruned
        further based on other forwarding information."
    ::= { rbridgeMultiFibEntry 2 }
```

```
-- -----
-- The RBridge VLAN Table
-- -----

rbridgeVlanTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF RbridgeVlanEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A table that contains information about VLANs on the
        RBridge."
    ::= { rbridgeVlan 1 }

rbridgeVlanEntry OBJECT-TYPE
    SYNTAX      RbridgeVlanEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A list of information about VLANs on the RBridge."
    INDEX      { rbridgeVlanIndex }
    ::= { rbridgeVlanTable 1 }

RbridgeVlanEntry ::=
    SEQUENCE {
        rbridgeVlanIndex
            Unsigned32,
        rbridgeVlanForwarderLosses
            Counter32,
        rbridgeVlanDisableLearning
            TruthValue,
        rbridgeVlanSnooping
            INTEGER
    }

rbridgeVlanIndex OBJECT-TYPE
    SYNTAX      Unsigned32 (1..4094|4096..4294967295)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The VLAN-ID referring to this VLAN."
    ::= { rbridgeVlanEntry 1 }

rbridgeVlanForwarderLosses OBJECT-TYPE
    SYNTAX      Counter32
    UNITS       "times"
    MAX-ACCESS  read-only
    STATUS      current
```

## DESCRIPTION

"The number of times this RBridge has lost appointed forwarder status for this VLAN on any of its ports.

Discontinuities in the value of this counter can occur at re-initialization of the management system."

## REFERENCE

"RFC 6325, Section 4.8.3"

::= { rbridgeVlanEntry 2 }

## rbridgeVlanDisableLearning OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-write

STATUS current

## DESCRIPTION

"Disable learning of MAC addresses seen in this VLAN. One application of this may be to restrict learning to ESADI. To disable learning, the value of this object should be set to 'true'. The default is 'false'.

The value of this object MUST be retained across re-initializations of the management system."

## REFERENCE

"RFC 6325, Section 4.8"

DEFVAL { false }

::= { rbridgeVlanEntry 3 }

## rbridgeVlanSnooping OBJECT-TYPE

SYNTAX INTEGER {  
notSupported(1),  
ipv4(2),  
ipv6(3),  
ipv4v6(4)  
}

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"IP Multicast Snooping on this VLAN. For RBridges performing both IPv4 and IPv6 IP Multicast Snooping, the value returned is ipv4v6(4)."

## REFERENCE

"RFC 6325, Section 4.7"

::= { rbridgeVlanEntry 4 }

```
-- -----
-- The RBridge VLAN Port Table
-- -----

rbridgeVlanPortTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF RbridgeVlanPortEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A table that contains information about VLANs on an RBridge
        port."
    ::= { rbridgeVlan 2 }

rbridgeVlanPortEntry OBJECT-TYPE
    SYNTAX      RbridgeVlanPortEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A list of information about VLANs on the RBridge port."
    INDEX       { rbridgeBasePort, rbridgeVlanIndex }
    ::= { rbridgeVlanPortTable 1 }

RbridgeVlanPortEntry ::=
    SEQUENCE {
        rbridgeVlanPortInhibited
            TruthValue,
        rbridgeVlanPortForwarder
            TruthValue,
        rbridgeVlanPortAnnouncing
            TruthValue,
        rbridgeVlanPortDetectedVlanMapping
            TruthValue
    }

rbridgeVlanPortInhibited OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "This VLAN has been inhibited by the RBridge due to
        conflicting forwarder information received from another
        RBridge, when the value of this object is 'true'."
    REFERENCE
        "RFC 6325, Section 4.2.4.3"
    ::= { rbridgeVlanPortEntry 1 }

rbridgeVlanPortForwarder OBJECT-TYPE
    SYNTAX      TruthValue
```

```
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION
    "This RBridge is an appointed forwarder for this VLAN
    on this port, when the value of this object is 'true'."
REFERENCE
    "RFC 6325, Section 4.2.4.3"
::= { rbridgeVlanPortEntry 2 }
```

rbridgeVlanPortAnnouncing OBJECT-TYPE

```
SYNTAX        TruthValue
MAX-ACCESS    read-write
STATUS        current
DESCRIPTION
    "TRILL-Hellos tagged with this VLAN can be sent by this
    RBridge on this port, when the value of this object
    is 'true'."

    The value of this object MUST be retained across
    re-initializations of the management system."
REFERENCE
    "RFC 6325, Section 4.4.3"
DEFVAL        { true }
::= { rbridgeVlanPortEntry 3 }
```

rbridgeVlanPortDetectedVlanMapping OBJECT-TYPE

```
SYNTAX        TruthValue
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION
    "VLAN mapping has been detected on the link attached
    to this port, when the value of this object is 'true'."
REFERENCE
    "RFC 6325, Section 4.4.5"
::= { rbridgeVlanPortEntry 4 }
```

```
-- -----
-- The RBridge Port Counter Table
--
-- These counters supplement counters in the Bridge MIB.
--
-- For example, total frames received by a bridge port and total
-- frames transmitted by a bridge port are reported in the
-- Port In Frames and Port Out Frames counters of the Bridge MIB.
-- These total bridge frame counters include native as well as
-- encapsulated frames.
--
```

```

-- As another example, frames discarded due to excessive frame
-- size are reported in the port counter MTU Exceeded Discards
-- in the Bridge MIB.
-- -----

rbridgePortCounterTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF RbridgePortCounterEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A table that contains per-port counters for this RBridge."
    ::= { rbridgeCounter 1 }

rbridgePortCounterEntry OBJECT-TYPE
    SYNTAX      RbridgePortCounterEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Counters for a port on this RBridge."
    INDEX      { rbridgeBasePort }
    ::= { rbridgePortCounterTable 1 }

RbridgePortCounterEntry ::=
    SEQUENCE {
        rbridgePortRpfCheckFails
            Counter32,
        rbridgePortHopCountExceeds
            Counter32,
        rbridgePortOptionDrops
            Counter32,
        rbridgePortTrillInFrames
            Counter64,
        rbridgePortTrillOutFrames
            Counter64
    }

rbridgePortRpfCheckFails OBJECT-TYPE
    SYNTAX      Counter32
    UNITS       "frames"
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The number of times a multi-destination frame was
        dropped on this port because the Reverse Path Forwarding
        (RPF) check failed.

        Discontinuities in the value of this counter can occur
        at re-initialization of the management system, and at

```

other times as indicated by the value of the  
ifCounterDiscontinuityTime object of the associated  
interface."

## REFERENCE

"RFC 6325, Section 4.5.2"

::= { rbridgePortCounterEntry 1 }

## rbridgePortHopCountExceeds OBJECT-TYPE

SYNTAX Counter32

UNITS "frames"

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"The number of times a frame was dropped on this port  
because its hop count was zero.

Discontinuities in the value of this counter can occur  
at re-initialization of the management system, and at  
other times as indicated by the value of the  
ifCounterDiscontinuityTime object of the associated  
interface."

## REFERENCE

"RFC 6325, Section 3.6"

::= { rbridgePortCounterEntry 2 }

## rbridgePortOptionDrops OBJECT-TYPE

SYNTAX Counter32

UNITS "frames"

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"The number of times a frame was dropped on this port  
because it contained unsupported options.

Discontinuities in the value of this counter can occur  
at re-initialization of the management system, and at  
other times as indicated by the value of the  
ifCounterDiscontinuityTime object of the associated  
interface."

## REFERENCE

"RFC 6325, Section 3.5"

::= { rbridgePortCounterEntry 3 }

## rbridgePortTrillInFrames OBJECT-TYPE

SYNTAX Counter64

UNITS "frames"

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"The number of TRILL-encapsulated frames that have been received by this port from its attached link, including management frames.

Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of the ifCounterDiscontinuityTime object of the associated interface."

## REFERENCE

"RFC 6325, Section 2.3"

::= { rbridgePortCounterEntry 4 }

## rbridgePortTrillOutFrames OBJECT-TYPE

SYNTAX Counter64

UNITS "frames"

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"The number of TRILL-encapsulated frames that have been transmitted by this port to its attached link, including management frames.

Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of the ifCounterDiscontinuityTime object of the associated interface."

## REFERENCE

"RFC 6325, Section 2.3"

::= { rbridgePortCounterEntry 5 }

-- -----  
-- The RBridge VLAN ESADI Table  
-- -----

## rbridgeEsadiTable OBJECT-TYPE

SYNTAX SEQUENCE OF RbridgeEsadiEntry

MAX-ACCESS not-accessible

STATUS current

## DESCRIPTION

"A table that contains information about ESADI instances on VLANs, if available."

## REFERENCE

"RFC 6325, Section 4.2.5"

::= { rbridgeEsadi 1 }

```

rbridgeEsadiEntry OBJECT-TYPE
    SYNTAX      RbridgeEsadiEntry
    MAX-ACCESS   not-accessible
    STATUS      current
    DESCRIPTION
        "Information about an ESADI instance on a VLAN."
    INDEX       { rbridgeVlanIndex }
    ::= { rbridgeEsadiTable 1 }

RbridgeEsadiEntry ::=
    SEQUENCE {
        rbridgeEsadiEnable
            TruthValue,
        rbridgeEsadiConfidence
            Unsigned32,
        rbridgeEsadiDrbPriority
            Unsigned32,
        rbridgeEsadiDrb
            RbridgeAddress,
        rbridgeEsadiDrbHoldingTime
            Unsigned32,
        rbridgeEsadiRowStatus
            RowStatus
    }

rbridgeEsadiEnable OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS   read-create
    STATUS      current
    DESCRIPTION
        "If the RBridge is participating in an ESADI instance for
        this VLAN, the value of this object is 'true'. To disable
        participation, set it to 'false'."

        The value of this object MUST be retained across
        re-initializations of the management system."
    REFERENCE
        "RFC 6325, Section 4.2.5"
    DEFVAL      { true }
    ::= { rbridgeEsadiEntry 1 }

rbridgeEsadiConfidence OBJECT-TYPE
    SYNTAX      Unsigned32 (0..255)
    MAX-ACCESS   read-create
    STATUS      current
    DESCRIPTION
        "Confidence level of address entries sent by this
        ESADI instance. The default is 16."

```

The value of this object MUST be retained across re-initializations of the management system."

## REFERENCE

"RFC 6325, Section 4.2.5"

DEFVAL { 16 }

::= { rbridgeEsadiEntry 2 }

## rbridgeEsadiDrbPriority OBJECT-TYPE

SYNTAX Unsigned32 (0..127)

MAX-ACCESS read-create

STATUS current

## DESCRIPTION

"The priority of this RBridge for being selected as the DRB for this ESADI instance.

The value of this object MUST be retained across re-initializations of the management system."

## REFERENCE

"RFC 6325, Section 4.2.5"

::= { rbridgeEsadiEntry 3 }

## rbridgeEsadiDrb OBJECT-TYPE

SYNTAX RbridgeAddress

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"The DRB on this ESADI instance's virtual link."

## REFERENCE

"RFC 6325, Section 4.2.5"

::= { rbridgeEsadiEntry 4 }

## rbridgeEsadiDrbHoldingTime OBJECT-TYPE

SYNTAX Unsigned32 (0..127)

MAX-ACCESS read-create

STATUS current

## DESCRIPTION

"The holding time for this ESADI instance.

The value of this object MUST be retained across re-initializations of the management system."

## REFERENCE

"RFC 6325, Section 4.2.5"

::= { rbridgeEsadiEntry 5 }

## rbridgeEsadiRowStatus OBJECT-TYPE

SYNTAX RowStatus

MAX-ACCESS read-create

STATUS current

## DESCRIPTION

"This object indicates the status of the entry."  
 ::= { rbridgeEsadiEntry 6 }

-----  
 -- The RBridge IP Multicast Snooping Port Table  
 -----

## rbridgeSnoopingPortTable OBJECT-TYPE

SYNTAX SEQUENCE OF RbridgeSnoopingPortEntry

MAX-ACCESS not-accessible

STATUS current

## DESCRIPTION

"For RBridges implementing IP Multicast Snooping,  
 information about ports on which the presence of IPv4  
 or IPv6 multicast routers has been detected."

## REFERENCE

"RFC 6325, Section 4.7"

::= { rbridgeSnooping 1 }

## rbridgeSnoopingPortEntry OBJECT-TYPE

SYNTAX RbridgeSnoopingPortEntry

MAX-ACCESS not-accessible

STATUS current

## DESCRIPTION

"Information about ports on which the presence of IPv4  
 or IPv6 multicast routers has been detected for a  
 VLAN."

INDEX { rbridgeBasePort, rbridgeVlanIndex }

::= { rbridgeSnoopingPortTable 1 }

## RbridgeSnoopingPortEntry ::=

```
SEQUENCE {
    rbridgeSnoopingPortAddrType
    INTEGER
}
```

## rbridgeSnoopingPortAddrType OBJECT-TYPE

```
SYNTAX INTEGER {
    ipv4(1),
    ipv6(2),
    ipv4v6(3)
}
```

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"The IP address type of an IP multicast router detected"

on this port and VLAN. If only IPv4 router(s) are detected, the value returned is 'ipv4'. If only IPv6 routers are detected, the value returned is 'ipv6'. If both IPv4 and IPv6 routers are detected on this port and VLAN, the value returned is 'ipv4v6'."

## REFERENCE

"RFC 6325, Section 4.7"

::= { rbridgeSnoopingPortEntry 1 }

```
-- -----
-- The RBridge IP Multicast Snooping Address Table
-- -----
```

## rbridgeSnoopingAddrTable OBJECT-TYPE

SYNTAX SEQUENCE OF RbridgeSnoopingAddrEntry

MAX-ACCESS not-accessible

STATUS current

## DESCRIPTION

"For RBridges implementing IP Multicast Snooping, information about IP multicast addresses being snooped."

## REFERENCE

"RFC 6325, Section 4.8"

::= { rbridgeSnooping 2 }

## rbridgeSnoopingAddrEntry OBJECT-TYPE

SYNTAX RbridgeSnoopingAddrEntry

MAX-ACCESS not-accessible

STATUS current

## DESCRIPTION

"Information about IP multicast addresses being snooped."

INDEX { rbridgeVlanIndex, rbridgeSnoopingAddrType,  
rbridgeSnoopingAddr }

::= { rbridgeSnoopingAddrTable 1 }

## RbridgeSnoopingAddrEntry ::=

```
SEQUENCE {
    rbridgeSnoopingAddrType
        InetAddressType,
    rbridgeSnoopingAddr
        InetAddress,
    rbridgeSnoopingAddrPorts
        PortList
}
```

## rbridgeSnoopingAddrType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS not-accessible  
STATUS current  
DESCRIPTION  
    "The IP multicast address type for which a listener has been  
    detected by this RBridge. This MIB requires support for only  
    IPv4 and IPv6 address types."  
REFERENCE  
    "RFC 6325, Section 4.7"  
 ::= { rbridgeSnoopingAddrEntry 1 }

rbridgeSnoopingAddr OBJECT-TYPE  
SYNTAX InetAddress  
MAX-ACCESS not-accessible  
STATUS current  
DESCRIPTION  
    "The IP multicast address for which a listener has been  
    detected by this RBridge. The address type of this object  
    is specified in rbridgeSnoopingAddrType. This MIB requires  
    support for only global IPv4 and IPv6 addresses, so the  
    length of the object can be either 4 or 16 bytes. Hence,  
    the index will not exceed the OID size limit."  
REFERENCE  
    "RFC 6325, Section 4.7"  
 ::= { rbridgeSnoopingAddrEntry 2 }

rbridgeSnoopingAddrPorts OBJECT-TYPE  
SYNTAX PortList  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION  
    "The set of ports on which a listener has been detected  
    for this IP multicast address."  
REFERENCE  
    "RFC 6325, Section 4.7"  
 ::= { rbridgeSnoopingAddrEntry 3 }

-- -----  
-- Distribution Trees  
-- -----

rbridgeDtreePriority OBJECT-TYPE  
  
SYNTAX Unsigned32 (1..65535)  
MAX-ACCESS read-write  
STATUS current  
DESCRIPTION  
    "The distribution tree root priority for this RBridge.

The default value of this object is 32768.

The value of this object MUST be retained across re-initializations of the management system."

## REFERENCE

"RFC 6325, Section 4.5"

::= { rbridgeDtree 1 }

## rbridgeDtreeActiveTrees OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"The total number of trees being computed by all RBridges in the campus."

## REFERENCE

"RFC 6325, Section 4.5"

::= { rbridgeDtree 2 }

## rbridgeDtreeMaxTrees OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"The maximum number of trees this RBridge can compute."

## REFERENCE

"RFC 6325, Section 4.5"

::= { rbridgeDtree 3 }

## rbridgeDtreeDesiredUseTrees OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"The maximum number of trees this RBridge would like to use for transmission of ingress multi-destination frames."

## REFERENCE

"RFC 6325, Section 4.5"

::= { rbridgeDtree 4 }

## rbridgeDtreeTable OBJECT-TYPE

SYNTAX SEQUENCE OF RbridgeDtreeEntry

MAX-ACCESS not-accessible

STATUS current

## DESCRIPTION

"Information about distribution trees being computed by this RBridge."

## REFERENCE

"RFC 6325, Section 4.5"

::= { rbridgeDtree 5 }

## rbridgeDtreeEntry OBJECT-TYPE

SYNTAX RbridgeDtreeEntry

MAX-ACCESS not-accessible

STATUS current

## DESCRIPTION

"List of information about distribution trees being computed by this RBridge."

INDEX { rbridgeDtreeNumber }

::= { rbridgeDtreeTable 1 }

RbridgeDtreeEntry ::=

SEQUENCE {

    rbridgeDtreeNumber

        Unsigned32,

    rbridgeDtreeNickname

        RbridgeNickname,

    rbridgeDtreeIngress

        TruthValue

}

## rbridgeDtreeNumber OBJECT-TYPE

SYNTAX Unsigned32 (0..65535)

MAX-ACCESS not-accessible

STATUS current

## DESCRIPTION

"The tree number of a distribution tree being computed by this RBridge."

## REFERENCE

"RFC 6325, Section 4.5"

::= { rbridgeDtreeEntry 1 }

## rbridgeDtreeNickname OBJECT-TYPE

SYNTAX RbridgeNickname

MAX-ACCESS read-only

STATUS current

## DESCRIPTION

"The nickname of the distribution tree."

## REFERENCE

"RFC 6325, Section 4.5"

::= { rbridgeDtreeEntry 2 }

## rbridgeDtreeIngress OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-only

```
STATUS      current
DESCRIPTION
    "Indicates whether this RBridge might choose this
    distribution tree to ingress a multi-destination frame."
REFERENCE
    "RFC 6325, Section 4.5"
::= { rbridgeDtreeEntry 3 }
```

```
-- -----
-- TRILL Neighbor List
-- -----
```

```
rbridgeTrillMinMtuDesired OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "The desired minimum acceptable inter-RBridge link MTU for
        the campus, that is, originatingLSPBufferSize.

        The value of this object MUST be retained across
        re-initializations of the management system."
    REFERENCE
        "RFC 6325, Section 4.3"
    ::= { rbridgeTrill 1 }
```

```
rbridgeTrillSz OBJECT-TYPE
    SYNTAX      Unsigned32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The minimum acceptable inter-RBridge link size for the
        campus for the proper operation of TRILL IS-IS."
    REFERENCE
        "RFC 6325, Section 4.3"
    ::= { rbridgeTrill 2 }
```

```
rbridgeTrillMaxMtuProbes OBJECT-TYPE
    SYNTAX      Unsigned32 (1..255)
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "The number of failed MTU-probes before the RBridge
        concludes that a particular MTU is not supported by
        a neighbor."
```

The value of this object MUST be retained across re-initializations of the management system."

## REFERENCE

"RFC 6325, Section 4.3"

::= { rbridgeTrill 3 }

## rbridgeTrillNbrTable OBJECT-TYPE

SYNTAX SEQUENCE OF RbridgeTrillNbrEntry

MAX-ACCESS not-accessible

STATUS current

## DESCRIPTION

"Information about this RBridge's TRILL neighbors."

## REFERENCE

"RFC 6325, Section 4.4.2.1"

::= { rbridgeTrill 4 }

## rbridgeTrillNbrEntry OBJECT-TYPE

SYNTAX RbridgeTrillNbrEntry

MAX-ACCESS not-accessible

STATUS current

## DESCRIPTION

"List of information about this RBridge's TRILL neighbors."

INDEX { rbridgeTrillNbrMacAddr }

::= { rbridgeTrillNbrTable 1 }

## RbridgeTrillNbrEntry ::=

SEQUENCE {

rbridgeTrillNbrMacAddr

MacAddress,

rbridgeTrillNbrMtu

Unsigned32,

rbridgeTrillNbrFailedMtuTest

TruthValue

}

## rbridgeTrillNbrMacAddr OBJECT-TYPE

SYNTAX MacAddress

MAX-ACCESS not-accessible

STATUS current

## DESCRIPTION

"The MAC address of a neighbor of this RBridge."

## REFERENCE

"RFC 6325, Section 4.4.2.1"

::= { rbridgeTrillNbrEntry 1 }

## rbridgeTrillNbrMtu OBJECT-TYPE

SYNTAX Unsigned32

MAX-ACCESS read-only

```
STATUS      current
DESCRIPTION
    "MTU size for this neighbor for IS-IS communication
    purposes."
REFERENCE
    "RFC 6325, Section 4.3.2"
::= { rbridgeTrillNbrEntry 2 }
```

rbridgeTrillNbrFailedMtuTest OBJECT-TYPE

```
SYNTAX      TruthValue
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "If true, indicates that the neighbor's tested MTU is less
    than the minimum acceptable inter-bridge link MTU for the
    campus (1470)."
REFERENCE
    "RFC 6325, Section 4.3.1"
::= { rbridgeTrillNbrEntry 3 }
```

```
-- -----
-- Notifications for use by RBridges
-- -----
```

rbridgeBaseNewDrb NOTIFICATION-TYPE

```
-- OBJECTS      { }
STATUS          current
DESCRIPTION
    "The rbridgeBaseNewDrb notification indicates that the
    sending agent has become the new Designated RBridge; the
    notification is sent by an RBridge soon after its election
    as the new DRB root, e.g., upon expiration of the Topology
    Change Timer, immediately subsequent to its election."
::= { rbridgeNotifications 1 }
```

rbridgeBaseTopologyChange NOTIFICATION-TYPE

```
-- OBJECTS      { }
STATUS          current
DESCRIPTION
    "The rbridgeBaseTopologyChange notification is sent by an
    RBridge when any of its configured ports transition to/from
    the VLAN-x designated forwarder. The notification is not
    sent if an rbridgeBaseNewDrb notification is sent for the
    same transition."
::= { rbridgeNotifications 2 }
```

```
-- Compliance and Group sections

rbridgeCompliances    OBJECT IDENTIFIER ::= { rbridgeConformance 1 }

rbridgeGroup          OBJECT IDENTIFIER ::= { rbridgeConformance 2 }

-----
-- Units of Conformance
-----

rbridgeBaseGroup OBJECT-GROUP
  OBJECTS {
    rbridgeBaseTrillVersion,
    rbridgeBaseNumPorts,
    rbridgeBaseForwardDelay,
    rbridgeBaseUniMultipathEnable,
    rbridgeBaseMultiMultipathEnable,
    rbridgeBaseAcceptEncapNonadj,
    rbridgeBaseNicknameNumber
  }
  STATUS      current
  DESCRIPTION
    "A collection of objects providing basic control
    and status information for the RBridge."
  ::= { rbridgeGroup 1 }

rbridgeBaseNicknameGroup OBJECT-GROUP
  OBJECTS {
    rbridgeBaseNicknamePriority,
    rbridgeBaseNicknameDtrPriority,
    rbridgeBaseNicknameType,
    rbridgeBaseNicknameRowStatus
  }
  STATUS      current
  DESCRIPTION
    "A collection of objects providing basic control
    and status information for RBridge nicknames."
  ::= { rbridgeGroup 2 }

rbridgeBasePortGroup OBJECT-GROUP
  OBJECTS {
    rbridgeBasePortIfIndex,
    rbridgeBasePortDisable,
    rbridgeBasePortTrunkPort,
    rbridgeBasePortAccessPort,
    rbridgeBasePortP2pHellos,
    rbridgeBasePortState,
```

```
    rbridgeBasePortDesiredDesigVlan,
    rbridgeBasePortDesigVlan,
    rbridgeBasePortInhibitionTime,
    rbridgeBasePortDisableLearning,
    rbridgeBasePortStpRoot,
    rbridgeBasePortStpRootChanges,
    rbridgeBasePortStpWiringCloset
}
STATUS          current
DESCRIPTION
    "A collection of objects providing basic control
    and status information for RBridge ports."
::= { rbridgeGroup 3 }

rbridgeFdbGroup OBJECT-GROUP
    OBJECTS {
        rbridgeConfidenceNative,
        rbridgeConfidenceDecap,
        rbridgeConfidenceStatic,
        rbridgeUniFdbPort,
        rbridgeUniFdbNickname,
        rbridgeUniFdbConfidence,
        rbridgeUniFdbStatus
    }
    STATUS          current
    DESCRIPTION
        "A collection of objects providing information
        about the Unicast Address Database."
    ::= { rbridgeGroup 4 }

rbridgeFibGroup OBJECT-GROUP
    OBJECTS {
        rbridgeUniFibHopCount,
        rbridgeMultiFibPorts
    }
    STATUS          current
    DESCRIPTION
        "A collection of objects providing information
        about the Unicast and Multicast FIBs."
    ::= { rbridgeGroup 5 }

rbridgeVlanGroup OBJECT-GROUP
    OBJECTS {
        rbridgeVlanForwarderLosses,
        rbridgeVlanDisableLearning,
        rbridgeVlanSnooping,
        rbridgeVlanPortInhibited,
        rbridgeVlanPortForwarder,
```

```
        rbridgeVlanPortAnnouncing,
        rbridgeVlanPortDetectedVlanMapping
    }
    STATUS          current
    DESCRIPTION
        "A collection of objects providing information
        about VLANs on the RBridge."
    ::= { rbridgeGroup 6 }

rbridgePortCounterGroup OBJECT-GROUP
    OBJECTS {
        rbridgePortRpfCheckFails,
        rbridgePortHopCountExceeds,
        rbridgePortOptionDrops,
        rbridgePortTrillInFrames,
        rbridgePortTrillOutFrames
    }
    STATUS          current
    DESCRIPTION
        "A collection of objects providing per-port
        counters for the RBridge."
    ::= { rbridgeGroup 7 }

rbridgeEsadiGroup OBJECT-GROUP
    OBJECTS {
        rbridgeEsadiEnable,
        rbridgeEsadiConfidence,
        rbridgeEsadiDrbPriority,
        rbridgeEsadiDrb,
        rbridgeEsadiDrbHoldingTime,
        rbridgeEsadiRowStatus
    }
    STATUS          current
    DESCRIPTION
        "A collection of objects providing information
        about ESADI instances on the RBridge."
    ::= { rbridgeGroup 8 }

rbridgeSnoopingGroup OBJECT-GROUP
    OBJECTS {
        rbridgeSnoopingPortAddrType,
        rbridgeSnoopingAddrPorts
    }
    STATUS          current
    DESCRIPTION
        "A collection of objects providing information about
        IP Multicast Snooping. This MIB requires support for
        only global IPv4 and IPv6 address types in
```

rbridgeSnoopingPortAddrType and rbridgeSnoopingAddrType,  
so the length of rbridgeSnoopingAddr can be either 4 or  
16 bytes."

::= { rbridgeGroup 9 }

rbridgeDtreeGroup OBJECT-GROUP

OBJECTS {  
    rbridgeDtreePriority,  
    rbridgeDtreeActiveTrees,  
    rbridgeDtreeMaxTrees,  
    rbridgeDtreeDesiredUseTrees,  
    rbridgeDtreeNickname,  
    rbridgeDtreeIngress  
}

STATUS current

DESCRIPTION

"A collection of objects providing information  
about distribution trees."

::= { rbridgeGroup 10 }

rbridgeTrillGroup OBJECT-GROUP

OBJECTS {  
    rbridgeTrillMinMtuDesired,  
    rbridgeTrillSz,  
    rbridgeTrillMaxMtuProbes,  
    rbridgeTrillNbrMtu,  
    rbridgeTrillNbrFailedMtuTest  
}

STATUS current

DESCRIPTION

"A collection of objects providing information  
about TRILL neighbors."

::= { rbridgeGroup 11 }

rbridgeNotificationGroup NOTIFICATION-GROUP

NOTIFICATIONS {  
    rbridgeBaseNewDrb,  
    rbridgeBaseTopologyChange  
}

STATUS current

DESCRIPTION

"A collection of objects describing notifications (traps)."

::= { rbridgeGroup 12 }

```
-- -----
-- Compliance Statement
-- -----

rbridgeCompliance MODULE-COMPLIANCE
    STATUS      current
    DESCRIPTION
        "The compliance statement for support of RBridge
        services."

    MODULE
        MANDATORY-GROUPS {
            rbridgeBaseGroup,
            rbridgeBaseNicknameGroup,
            rbridgeBasePortGroup,
            rbridgeFdbGroup,
            rbridgeFibGroup,
            rbridgeVlanGroup,
            rbridgeDtreeGroup,
            rbridgeTrillGroup,
            rbridgeNotificationGroup
        }

    GROUP      rbridgePortCounterGroup
    DESCRIPTION
        "Implementation of this group is optional."

    GROUP      rbridgeEsadiGroup
    DESCRIPTION
        "Implementation of this group is optional."

    GROUP      rbridgeSnoopingGroup
    DESCRIPTION
        "Implementation of this group is optional."

    ::= { rbridgeCompliances 1 }

rbridgeReadOnlyCompliance MODULE-COMPLIANCE
    STATUS      current
    DESCRIPTION
        "When this MIB is implemented in read-only mode, then
        the implementation can claim read-only compliance.
        In that case, RBridge objects can be monitored but
        cannot be configured with this implementation."
```

```
MODULE
  MANDATORY-GROUPS {
    rbridgeBaseGroup,
    rbridgeBaseNicknameGroup,
    rbridgeBasePortGroup,
    rbridgeFdbGroup,
    rbridgeFibGroup,
    rbridgeVlanGroup,
    rbridgeDtreeGroup,
    rbridgeTrillGroup,
    rbridgeNotificationGroup
  }

  OBJECT rbridgeBaseForwardDelay
  MIN-ACCESS read-only
  DESCRIPTION
    "Write access is not required."

  OBJECT rbridgeBaseUniMultipathEnable
  MIN-ACCESS read-only
  DESCRIPTION
    "Write access is not required."

  OBJECT rbridgeBaseMultiMultipathEnable
  MIN-ACCESS read-only
  DESCRIPTION
    "Write access is not required."

  OBJECT rbridgeBaseAcceptEncapNonadj
  MIN-ACCESS read-only
  DESCRIPTION
    "Write access is not required."

  OBJECT rbridgeBaseNicknameNumber
  MIN-ACCESS read-only
  DESCRIPTION
    "Write access is not required."

  OBJECT rbridgeBaseNicknamePriority
  MIN-ACCESS read-only
  DESCRIPTION
    "Write access is not required."

  OBJECT rbridgeBaseNicknameDtrPriority
  MIN-ACCESS read-only
  DESCRIPTION
    "Write access is not required."
```

OBJECT rbridgeBaseNicknameRowStatus  
SYNTAX INTEGER { active(1) }  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required, and 'active' is the only  
    status that needs to be supported."

OBJECT rbridgeBasePortDisable  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT rbridgeBasePortTrunkPort  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT rbridgeBasePortAccessPort  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT rbridgeBasePortP2pHellos  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT rbridgeBasePortInhibitionTime  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT rbridgeBasePortDisableLearning  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT rbridgeBasePortDesiredDesigVlan  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT rbridgeBasePortStpWiringCloset  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT rbridgeConfidenceNative  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT rbridgeConfidenceDecap  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT rbridgeConfidenceStatic  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT rbridgeVlanDisableLearning  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT rbridgeVlanPortAnnouncing  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT rbridgeEsadiEnable  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT rbridgeEsadiConfidence  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT rbridgeEsadiDrbPriority  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT rbridgeEsadiDrbHoldingTime  
MIN-ACCESS read-only  
DESCRIPTION  
    "Write access is not required."

OBJECT rbridgeEsadiRowStatus  
SYNTAX INTEGER { active(1) }  
MIN-ACCESS read-only

## DESCRIPTION

"Write access is not required, and 'active' is the only status that needs to be supported."

OBJECT rbridgeDtreePriority

MIN-ACCESS read-only

## DESCRIPTION

"Write access is not required."

OBJECT rbridgeTrillMinMtuDesired

MIN-ACCESS read-only

## DESCRIPTION

"Write access is not required."

OBJECT rbridgeTrillMaxMtuProbes

MIN-ACCESS read-only

## DESCRIPTION

"Write access is not required."

GROUP rbridgePortCounterGroup

## DESCRIPTION

"Implementation of this group is optional."

GROUP rbridgeEsadiGroup

## DESCRIPTION

"Implementation of this group is optional."

GROUP rbridgeSnoopingGroup

## DESCRIPTION

"Implementation of this group is optional."

::= { rbridgeCompliances 2 }

END

## 8. Security Considerations

This MIB relates to a system that will provide network connectivity and packet-forwarding services. As such, improper manipulation of the objects represented by this MIB may result in denial of service to a large number of end-users.

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 are the tables and objects and their sensitivity/vulnerability:

The following tables and objects in the RBRIDGE-MIB can be manipulated to interfere with the operation of RBridges:

- o rbridgeBaseUniMultipathEnable affects the ability of the RBridge to route unicast traffic over multiple paths, and rbridgeBaseMultiMultipathEnable affects the ability of the RBridge to route multi-destination traffic over multiple paths.
- o rbridgeBasePortTable contains a number of objects that may affect network connectivity. Actions that may be triggered by manipulating objects in this table include disabling of an RBridge port, discarding of native packets, disabling learning, and others.
- o rbridgeEsadiTable contains objects that affect the operation of the ESADI protocol used for learning, and manipulation of the objects contained therein can be used to confuse the learning ability of RBridges.
- o rbridgeDtreePriority can affect computation of distribution trees within an RBridge campus, thereby affecting the forwarding of multi-destination traffic.
- o rbridgeTrillMinMtuDesired can affect the size of packets being used to exchange information between RBridges.

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. For example, access to network topology and RBridge attributes can reveal information that should not be available to all users of the network.

SNMP versions prior to SNMPv3 did not include adequate security. Even if the network itself is secure (for example by using IPsec), 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.

Implementations SHOULD provide the security features described by the SNMPv3 framework (see [RFC3410]), and implementations claiming compliance to the SNMPv3 standard MUST include full support for authentication and privacy via the User-based Security Model (USM) [RFC3414] with the AES cipher algorithm [RFC3826]. Implementations MAY also provide support for the Transport Security Model (TSM) [RFC5591] in combination with a secure transport such as SSH [RFC5592] or TLS/DTLS [RFC6353].

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.

For other RBridge security considerations, see [RFC6325].

## 9. IANA Considerations

The MIB module in this document uses the following IANA-assigned OBJECT IDENTIFIER value recorded in the SMI Numbers registry:

Descriptor	OBJECT IDENTIFIER value
-----	-----
rbridgeMIB	{ mib-2 214 }

## 10. Contributors

The authors would like to acknowledge the contributions of Donald Eastlake, Radia Perlman, Anoop Ghanwani, Dan Romascanu, Mahesh Akula, Sue Hares, and Joan Cucchiara.

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