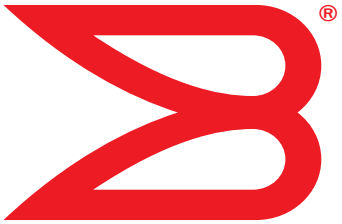
53-1002083-01
07 December 2010



Network OS

MIB Reference

Supporting Network OS v2.0.0

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Document History

Document Title	Publication Number	Summary of Changes	Publication Date
Network OS MIB Reference	*53-1002083-01*	New document	December 2010

Contents

About This Document

In this chapter

How this document is organized

This document is organized to help you find the information that you want as quickly and easily as possible.

The document contains the following components:

- Chapter 1, "Understanding Brocade SNMP," provides an introduction to Brocade SNMP and MIBs.
- Chapter 2, "MIB-II (RFC1213-MIB)," provides information for MIB-II.
- Chapter 3, "USM MIB Objects," provides information on USM MIB object types.
- Chapter 4, "IEEE 802.1x PAE MIB Objects," provides information on IEEE 802.1x PAE MIB object types.
- Chapter 5, "LLDP MIB Objects," provides information on LLDP MIB object types.
- Chapter 6, "IEEE 802.3 LAG MIB Objects," provides information on IEEE 802.3 LAG MIB object types.
- Chapter 7, "Bridge-MIB Objects," provides information on Bridge-MIB object types.
- Chapter 8, "sFlow MIB Objects," provides information on sFlow MIB object types.
- Appendix A, "MIB OIDs and their Matching Object Names," provides a listing of the MIB object names and the corresponding MIB Object ID (OID) associated with each.

Supported hardware and software

Although many different software and hardware configurations are tested and supported by Brocade Communications Systems, Inc., documenting all possible configurations and scenarios is beyond the scope of this document.

This document supports Brocade Network OS version 2.0.0 and the Brocade VDX 6720 Data Center Switches supporting this Network OS:

- Brocade VDX 6720-24
- Brocade VDX 6720-60

Document conventions

This section describes text formatting conventions and important notices formats.

Text formatting

The narrative-text formatting conventions that are used in this document are as follows:

bold text	Identifies command names Identifies the names of user-manipulated GUI elements Identifies keywords and operands Identifies text to enter at the GUI or CLI
italic text	Provides emphasis Identifies variables Identifies paths and Internet addresses Identifies document titles
`code` text	Identifies CLI output Identifies syntax examples

For readability, command names in the narrative portions of this guide are presented in mixed lettercase: for example, **switchShow**. In actual examples, command lettercase is often all lowercase. Otherwise, this manual specifically notes those cases in which a command is case sensitive.

Notes, cautions, and warnings

The following notices and statements are used in this manual. They are listed below in order of increasing severity of potential hazards.

NOTE
A note provides a tip, guidance, or advice, emphasizes important information, or provides a reference to related information.

ATTENTION
An Attention statement indicates potential damage to hardware or data.

CAUTION
A Caution statement alerts you to situations that can be potentially hazardous to you or cause damage to hardware, firmware, software, or data.

DANGER

A Danger statement indicates conditions or situations that can be potentially lethal or extremely hazardous to you. Safety labels are also attached directly to products to warn of these conditions or situations.

Key terms

For definitions specific to Brocade and Fibre Channel, see the technical glossaries on MyBrocade. See "Brocade resources" on page ix for instructions on accessing MyBrocade.

For definitions of SAN-specific terms, visit the Storage Networking Industry Association online dictionary at:

http://www.snia.org/education/dictionary

Notice to the reader

This document may contain references to the trademarks of the following corporations. These trademarks are the properties of their respective companies and corporations.

These references are made for informational purposes only.

Corporation	Referenced Trademarks and Products
Microsoft Corporation	Windows, Windows NT, Internet Explorer
Oracle Corporation	Oracle, Java

Additional information

This section lists additional Brocade and industry-specific documentation that you might find helpful.

Brocade resources

To get up-to-the-minute information, go to *http://my.brocade.com* and register at no cost for a user ID and password.

White papers, online demonstrations, and data sheets are available through the Brocade website at:

http://www.brocade.com/products-solutions/products/index.page

For additional Brocade documentation, visit the Brocade website:

http://www.brocade.com

Release notes are available on the MyBrocade website and are also bundled with the Network OS firmware.

Other industry resources

For additional resource information, visit the Technical Committee T11 website. This website provides interface standards for high-performance and mass storage applications for Fibre Channel, storage management, and other applications:

http://www.t11.org

For information about the Fibre Channel industry, visit the Fibre Channel Industry Association website:

http://www.fibrechannel.org

Getting technical help

Contact your switch supplier for hardware, firmware, and software support, including product repairs and part ordering. To expedite your call, have the following information immediately available:

1. General Information
   - Switch model
   - Switch operating system version
   - Software name and software version, if applicable
   - Error numbers and messages received
   - capture support-save using **copy support** command
   - Detailed description of the problem, including the switch or fabric behavior immediately following the problem, and specific questions
   - Description of any troubleshooting steps already performed and the results
   - Serial console and Telnet session logs
   - syslog message logs
2. Switch Serial Number

   The switch serial number and corresponding bar code are provided on the serial number label, as illustrated below:

   

   The serial number label is located as follows:

   - *Brocade VDX 6720*—On the switch ID pull-out tab located on the bottom of the port side of the switch
3. World Wide Name (WWN)

Use the **show license id** command to display the WWN of the chassis. If you cannot use the **show license id** command because the switch is inoperable, you can get the WWN from the same place as the serial number.

Document feedback

Because quality is our first concern at Brocade, we have made every effort to ensure the accuracy and completeness of this document. However, if you find an error or an omission, or you think that a topic needs further development, we want to hear from you. Forward your feedback to:

documentation@brocade.com

Provide the title and version number and as much detail as possible about your comment, including the topic heading and page number and your suggestions for improvement.

Chapter

1

Understanding Brocade SNMP

In this chapter

Understanding SNMP basics

The Simple Network Management Protocol (SNMP) is an industry-standard method of monitoring and managing network devices. This protocol promotes interoperability because SNMP-capable systems must adhere to a common set of framework and language rules.

Understanding the components of SNMP makes it possible to use third-party tools to view, browse, and manipulate Brocade switch variables (MIBs) remotely as well as to set up an enterprise-level management process. Every Brocade switch and director supports SNMP.

Every Brocade switch carries an *agent* and management information base (MIB), as shown in Figure 1. The agent accesses information about a device and makes it available to an SNMP network management station.

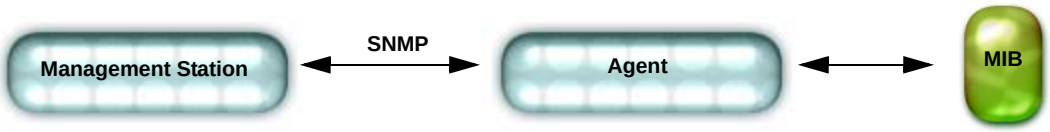

FIGURE 1 SNMP structure

When active, the management station can **get** information or **set** information when it queries an agent. SNMP commands, such as **get**, **set**, **getnext**, **setnext**, and **getresponse**, are sent from the management station, and the agent replies once the value is obtained or modified (Figure 2). Agents use variables to report such data as the number of bytes and packets in and out of the device, or the number of broadcast messages sent and received. These variables are also known as *managed objects*. All managed objects are contained in the MIB.

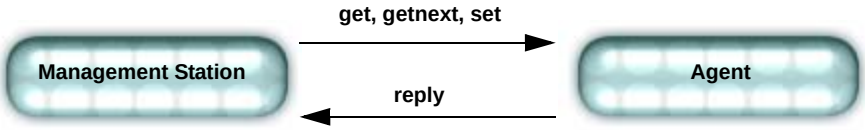

FIGURE 2 SNMP query

The management station can also receive *traps*, unsolicited messages from the switch agent if an unusual event occurs (Figure 3). Refer to "Understanding SNMP traps" on page 3 for more information.

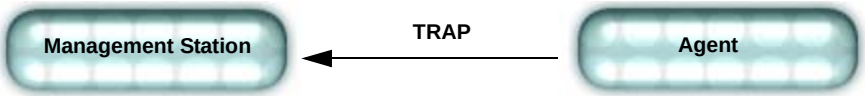

FIGURE 3 SNMP trap

The agent can receive queries from one or more management stations and can send traps to up to *six* management stations.

Understanding MIBs

The management information base (MIB) is a database of monitored and managed information on a device, in this case a Brocade switch. The MIB structure can be represented by a tree hierarchy. The root splits into three main branches: International Organization for Standardization (ISO), Consultative Committee for International Telegraph and Telephone (CCITT), and joint ISO/CCITT. These branches have short text strings and integers (OIDs) to identify them. Text strings describe *object names*, while integers allow software to create compact, encoded representations of the names.

Each MIB variable is assigned an object identifier (OID). The OID is the sequence of numeric labels on the nodes along a path from the root to the object. For example, as shown in Figure 4, the Entity MIB OID is:

```
1.3.6.1.2.1.47
```

The corresponding name is:

```
iso.org.dod.internet.mgmt.mib-2.entityMIB
```

The other branches are part of the standard MIBs, and the portions relevant to configuring SNMP on a Brocade switch are referenced in the remainder of this reference.

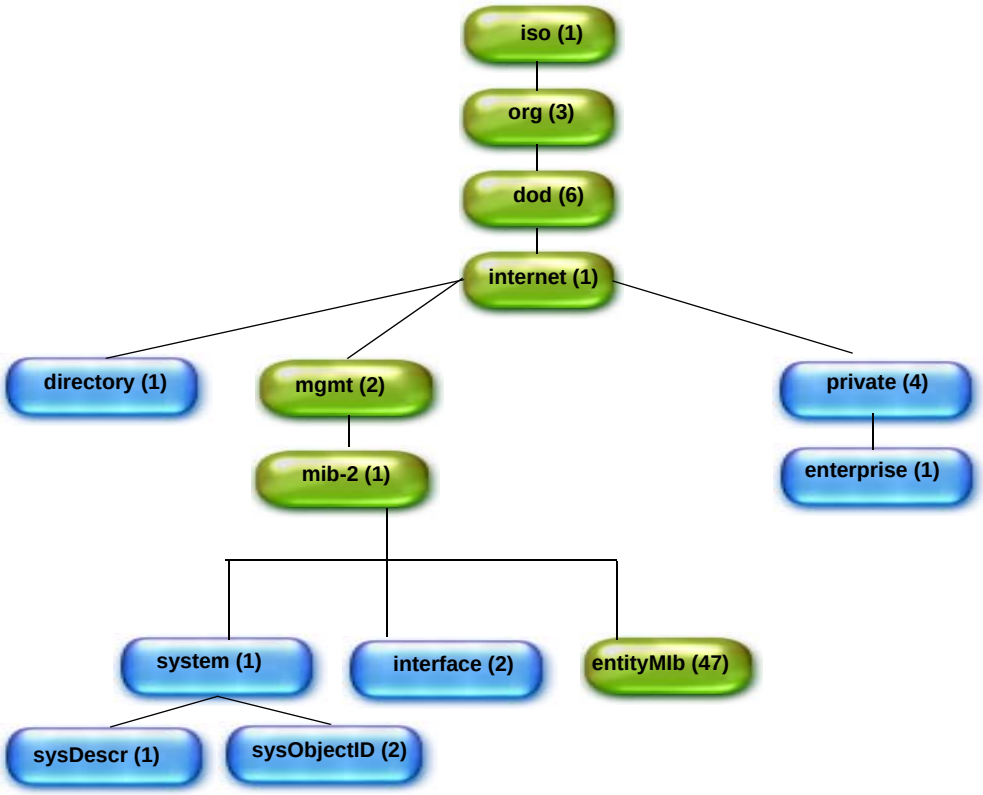

FIGURE 4 Brocade MIB tree location

Use a MIB browser to access the MIB variables: all MIB browsers perform queries and load MIBs.

Once loaded, the MAX-ACCESS provides access levels between the agent and management station. The access levels are as follows:

- not-accessible

  You cannot read or write to this variable.
- read-create

  Specifies a tabular object that can be read, modified, or created as a new row in a table.
- read-only - *Public*

  You can only monitor information.
- read-write - *Private*

  You can read or modify this variable.
- accessible-to-notify

  You can read this information only through traps.

Understanding SNMP traps

An unsolicited message that comes to the management station from the SNMP agent on the device is called a *trap*. Brocade switches send traps out on UDP port 162. In order to receive traps, the management station IP address must be configured on the switch.

Loading Brocade MIBs

The Brocade MIB is a set of variables that are private extensions to the Internet standard MIB-II. The Brocade agents support many other Internet-standard MIBs. These standard MIBs are defined in RFC publications. To find specific MIB information, examine the Brocade proprietary MIB structure and the standard RFC MIBs supported by Brocade.

Brocade MIB files

The Brocade MIB files are as follows:

- BRCD_NOS_PRODUCTS.mib
- BRCD_REG.mib
- BRCD_TC.mib

Standard MIBS

Distribution of standard MIBs has been stopped. Download the following MIBs from the *http://www.oidview.com/* website:

- SNMP-FRAMEWORK-MIB
- IF-MIB
- IANAifType-MIB
- INET-ADDRESS-MIB
- RFC1213-MIB
- SNMPv2-MIB
- ENTITY-MIB
- RMON-MIB
- SNMPv2-PARTY-MIB
- SNMPv2-SMI-MIB
- SNMP-VIEW-BASED-ACM-MIB
- SNMP-USER-BASED-SM-MIB
- SNMP-TARGET-MIB

Before loading MIBs

Before loading Brocade MIB files, ensure that you have the correct version of SNMP for the Brocade Network OS (Table 1).

TABLE 1 Network OS-supported SNMP versions

Firmware	SNMPv1	SNMPv2	SNMPv3
Network OS v2.0.0	Yes	Yes[1]	No

1. SNMPv2c is supported in Network OS v2.0.0, but SNMPv2c informs are not supported.

MIB loading order

Many MIBs use definitions that are defined in other MIBs. These definitions are listed in the IMPORTS section near the top of the MIB. When loading the Brocade MIBs, refer to Figure 5 to ensure any MIB dependencies are loading in the correct order.

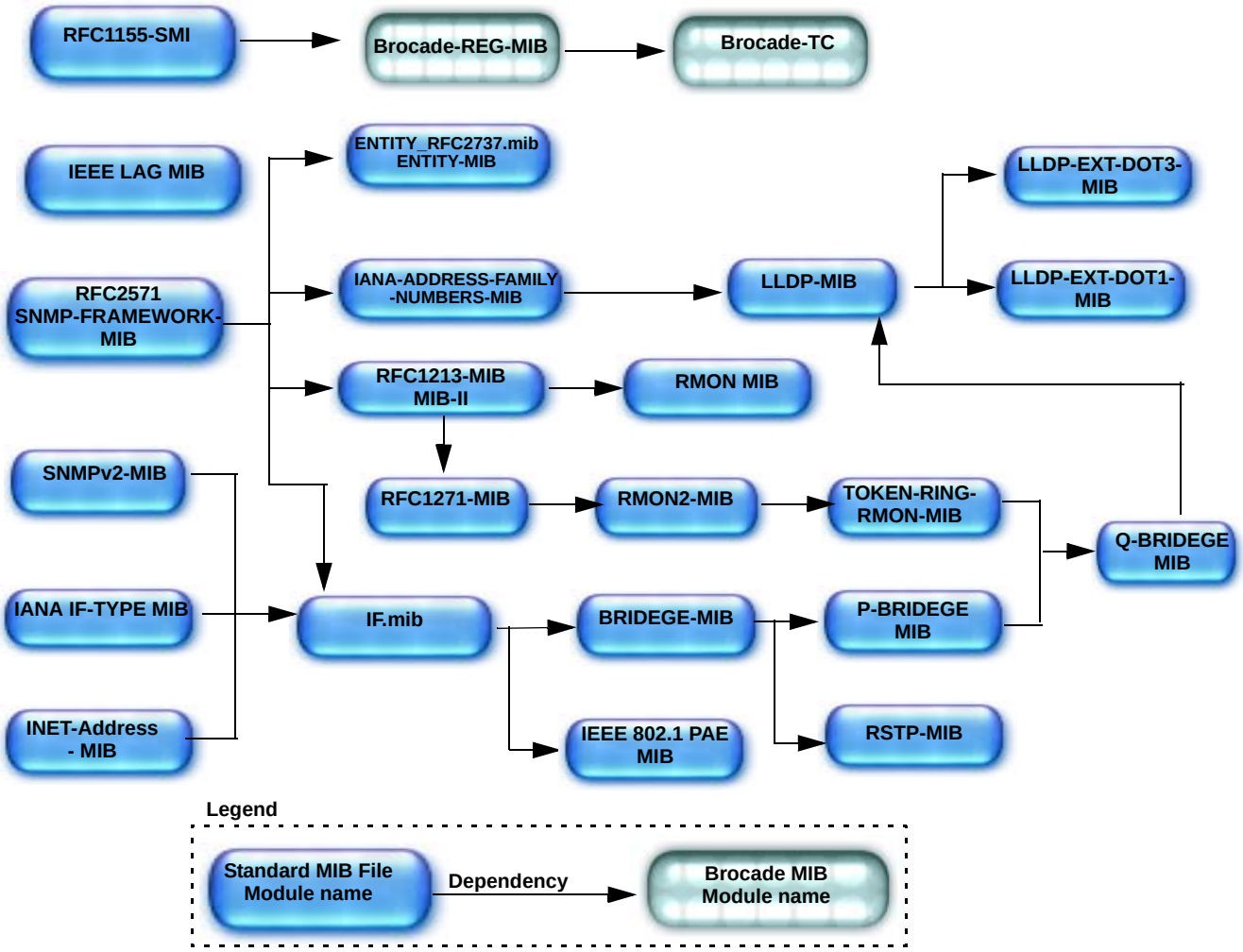

FIGURE 5 Brocade SNMP MIB dependencies and advised installation order

Network OS commands for configuring SNMP

Network OS v2.0.0 supports SNMP versions 1 and 2c. Use the following commands (Table 2) to configure SNMPv1 and SNMPv2c hosts and their configurations. Refer to the *Network OS Administrator's Guide* for procedures for configuring SNMP on the Brocade switches.

TABLE 2 Commands for configuring SNMP

Command	Description
[no] snmp-server community <*string*> **[ro|rw]**	This command sets the community string to permit access to SNMP and read-write or read-only access for each community. The **no** form of the command removes the specified community string.
[no] snmp-server host <*ipv4 host*> <*community-string*>**[version [1 | 2c]] [udp-port** <*port*>**]**	This command sets the destination IP addresses, version, community string (for version 1 and version 2c), and destination port for the trap or inform.The **no** form of the command changes the SNMP server host configurations to the default value.
[no] snmp-server location <*string*>	This command sets the SNMP server location string. The **no** form of the command changes the location to the default value.
[no] snmp-server contact <*string*>	This command sets the SNMP sever contact string. The **no** form of the command changes the contact to the default value.
show running-config snmp-server	This command displays the currently running user configuration for SNMP.

Chapter

MIB-II (RFC1213-MIB)

2

In this chapter

MIB II overview

The descriptions of each of the MIB variables in this chapter come directly from the MIB-II itself. The notes that follow the descriptions refer to Brocade-specific information and are provided by Brocade.

MIB-II object hierarchy

Figure 6 through Figure 25 depict the organization and structure of MIB-II.

```
- iso
    - org
        - dod
            - internet
                - directory
                    - mgmt
                        - mib-2
                            - system
                            - interfaces
                            - at
                            - ip
                            - icmp
                            - tcp
                            - udp
                            - egp
                            - transmission
                            - snmp
                            - rmon
                            - iFMIB
                            - entityMIB
```

FIGURE 6 MIB-II overall hierarchy

```
- system (1.3.6.1.2.1.1)
    - sysDescr 1.3.6.1.2.1.1.1
    - sysObjectID 1.3.6.1.2.1.1.2
    - sysUpTime 1.3.6.1.2.1.1.3
    - sysContact 1.3.6.1.2.1.1.4
    - sysName 1.3.6.1.2.1.1.5
    - sysLocation 1.3.6.1.2.1.1.6
    - sysServices 1.3.6.1.2.1.1.7
```

FIGURE 7 System hierarchy

```
- interfaces (1.3.6.1.2.1.2)
    - ifNumber 1.3.6.1.2.1.2.1
    - ifTable 1.3.6.1.2.1.2.2
        - ifEntry 1.3.6.1.2.1.2.2.1
            - ifIndex 1.3.6.1.2.1.2.2.1.1
            - ifDescr 1.3.6.1.2.1.2.2.1.2
            - ifType 1.3.6.1.2.1.2.2.1.3
            - ifMtu 1.3.6.1.2.1.2.2.1.4
            - ifSpeed 1.3.6.1.2.1.2.2.1.5
            - ifPhysAddress 1.3.6.1.2.1.2.2.1.6
            - ifAdminStatus 1.3.6.1.2.1.2.2.1.7
            - ifOperStatus 1.3.6.1.2.1.2.2.1.8
            - ifLastChange 1.3.6.1.2.1.2.2.1.9
            - ifInOctets 1.3.6.1.2.1.2.2.1.10
            - ifInUcastPkts 1.3.6.1.2.1.2.2.1.11
            - ifInNUcastPkts 1.3.6.1.2.1.2.2.1.12
            - ifInDiscards 1.3.6.1.2.1.2.2.1.13
            - ifInErrors 1.3.6.1.2.1.2.2.1.14
            - ifInUnknownProtos 1.3.6.1.2.1.2.2.1.15
            - ifOutOctets 1.3.6.1.2.1.2.2.1.16
            - ifOutUcastPkts 1.3.6.1.2.1.2.2.1.17
            - ifOutNUcastPkts 1.3.6.1.2.1.2.2.1.18
            - ifOutDiscards 1.3.6.1.2.1.2.2.1.19
            - ifOutErrors 1.3.6.1.2.1.2.2.1.20
            - ifOutQLen 1.3.6.1.2.1.2.2.1.21
            - ifSpecific 1.3.6.1.2.1.2.2.1.22
```

FIGURE 8 Interfaces hierarchy

```
- at (1.3.6.1.2.1.3)
    - atTable 1.3.6.1.2.1.3.1
        - atEntry 1.3.6.1.2.1.3.1.1
            - atIfIndex 1.3.6.1.2.1.3.1.1.1
            - atPhysAddress 1.3.6.1.2.1.3.1.1.2
            - atNetAddress 1.3.6.1.2.1.3.1.1.3
```

FIGURE 9 AT hierarchy

```
- ip (1.3.6.1.2.1.4)
    - ipForwarding 1.3.6.1.2.1.4.1
    - ipDefaultTTL 1.3.6.1.2.1.4.2
    - ipInReceives 1.3.6.1.2.1.4.3
    - ipInHdrErrors 1.3.6.1.2.1.4.4
    - ipInAddrErrors 1.3.6.1.2.1.4.5
    - ipForwDatagrams 1.3.6.1.2.1.4.6
    - ipInUnknownProtos 1.3.6.1.2.1.4.7
    - ipInDiscards 1.3.6.1.2.1.4.8
    - ipInDelivers 1.3.6.1.2.1.4.9
    - ipOutRequests 1.3.6.1.2.1.4.10
    - ipOutDiscards 1.3.6.1.2.1.4.11
    - ipOutNoRoutes 1.3.6.1.2.1.4.12
    - ipReasmTimeout 1.3.6.1.2.1.4.13
    - ipReasmReqds 1.3.6.1.2.1.4.14
    - ipReasmOKs 1.3.6.1.2.1.4.15
    - ipReasmFails 1.3.6.1.2.1.4.16
    - ipFragOKs 1.3.6.1.2.1.4.17
    - ipFragFails 1.3.6.1.2.1.4.18
    - ipFragCreates 1.3.6.1.2.1.4.19
    - ipAddrTable 1.3.6.1.2.1.4.20
        - ipAddrEntry 1.3.6.1.2.1.4.20.1
            - ipAdEntAddr 1.3.6.1.2.1.4.20.1.1
            - ipAdEntIfIndex 1.3.6.1.2.1.4.20.1.2
            - ipAdEntNetMask 1.3.6.1.2.1.4.20.1.3
            - ipAdEntBcastAddr 1.3.6.1.2.1.4.20.1.4
            - ipAdEntReasmMaxSize 1.3.6.1.2.1.4.20.1.5
    - ipRouteTable 1.3.6.1.2.1.4.21
        - ipRouteEntry 1.3.6.1.2.1.4.21.1
            - ipRouteDest 1.3.6.1.2.1.4.21.1.1
            - ipRouteIfIndex 1.3.6.1.2.1.4.21.1.2
            - ipRouteMetric1 1.3.6.1.2.1.4.21.1.3
            - ipRouteMetric2 1.3.6.1.2.1.4.21.1.4
            - ipRouteMetric3 1.3.6.1.2.1.4.21.1.5
            - ipRouteMetric4 1.3.6.1.2.1.4.21.1.6
            - ipRouteNextHop 1.3.6.1.2.1.4.21.1.7
            - ipRouteType 1.3.6.1.2.1.4.21.1.8
            - ipRouteProto 1.3.6.1.2.1.4.21.1.9
            - ipRouteAge 1.3.6.1.2.1.4.21.1.10
            - ipRouteMask 1.3.6.1.2.1.4.21.1.11
            - ipRouteMetric5 1.3.6.1.2.1.4.21.1.12
            - ipRouteInfo 1.3.6.1.2.1.4.21.1.13
    - ipNetToMediaTable 1.3.6.1.2.1.4.22
        - ipNetToMediaEntry 1.3.6.1.2.1.4.22.1
            - ipNetToMediaIfIndex 1.3.6.1.2.1.4.22.1.1
            - ipNetToMediaPhysAddress 1.3.6.1.2.1.4.22.1.2
            - ipNetToMediaNetAddress 1.3.6.1.2.1.4.22.1.3
            - ipNetToMediaType 1.3.6.1.2.1.4.22.1.4
    - ipRoutingDiscards 1.3.6.1.2.1.4.23
```

FIGURE 10 IP hierarchy

- icmp (1.3.6.1.2.1.5)
  - icmpInMsgs 1.3.6.1.2.1.5.1
  - icmpInErrors 1.3.6.1.2.1.5.2
  - icmpInDestUnreachs 1.3.6.1.2.1.5.3
  - icmpInTimeExcds 1.3.6.1.2.1.5.4
  - icmpInParmProbs 1.3.6.1.2.1.5.5
  - icmpInSrcQuenchs 1.3.6.1.2.1.5.6
  - icmpInRedirects 1.3.6.1.2.1.5.7
  - icmpInEchos 1.3.6.1.2.1.5.8
  - icmpInEchoReps 1.3.6.1.2.1.5.9
  - icmpInTimestamps 1.3.6.1.2.1.5.10
  - icmpInTimestampReps 1.3.6.1.2.1.5.11
  - icmpInAddrMasks 1.3.6.1.2.1.5.12
  - icmpInAddrMaskReps 1.3.6.1.2.1.5.13
  - icmpOutMsgs 1.3.6.1.2.1.5.14
  - icmpOutErrors 1.3.6.1.2.1.5.15
  - icmpOutDestUnreachs 1.3.6.1.2.1.5.16
  - icmpOutTimeExcds 1.3.6.1.2.1.5.17
  - icmpOutParmProbs 1.3.6.1.2.1.5.18
  - icmpOutSrcQuenchs 1.3.6.1.2.1.5.19
  - icmpOutRedirects 1.3.6.1.2.1.5.20
  - icmpOutEchos 1.3.6.1.2.1.5.21
  - icmpOutEchoReps 1.3.6.1.2.1.5.22
  - icmpOutTimestamps 1.3.6.1.2.1.5.23
  - icmpOutTimestampReps 1.3.6.1.2.1.5.24
  - icmpOutAddrMasks 1.3.6.1.2.1.5.25
  - icmpOutAddrMaskReps 1.3.6.1.2.1.5.26
  - icmpOutSrcQuenchs 1.3.6.1.2.1.5.19
  - icmpOutRedirects 1.3.6.1.2.1.5.20
  - icmpOutEchos 1.3.6.1.2.1.5.21
  - icmpOutEchoReps 1.3.6.1.2.1.5.22
  - icmpOutTimestamps 1.3.6.1.2.1.5.23
  - icmpOutTimestampReps 1.3.6.1.2.1.5.24
  - icmpOutAddrMasks 1.3.6.1.2.1.5.25
  - icmpOutAddrMaskReps 1.3.6.1.2.1.5.26

FIGURE 11 ICMP hierarchy

```
- tcp (1.3.6.1.2.1.6)
    - tcpRtoAlgorithm 1.3.6.1.2.1.6.1
    - tcpRtoMin 1.3.6.1.2.1.6.2
    - tcpRtoMax 1.3.6.1.2.1.6.3
    - tcpMaxConn 1.3.6.1.2.1.6.4
    - tcpActiveOpens 1.3.6.1.2.1.6.5
    - tcpPassiveOpens 1.3.6.1.2.1.6.6
    - tcpAttemptFails 1.3.6.1.2.1.6.7
    - tcpEstabResets 1.3.6.1.2.1.6.8
    - tcpCurrEstab 1.3.6.1.2.1.6.9
    - tcpInSegs 1.3.6.1.2.1.6.10
    - tcpOutSegs 1.3.6.1.2.1.6.11
    - tcpRetransSegs 1.3.6.1.2.1.6.12
    - tcpConnTable 1.3.6.1.2.1.6.13
        - tcpConnEntry 1.3.6.1.2.1.6.13.1
            - tcpConnState 1.3.6.1.2.1.6.13.1.1
            - tcpConnLocalAddress 1.3.6.1.2.1.6.13.1.2
            - tcpConnLocalPort 1.3.6.1.2.1.6.13.1.3
            - tcpConnRemAddress 1.3.6.1.2.1.6.13.1.4
            - tcpConnRemPort 1.3.6.1.2.1.6.13.1.5
    - tcpInErrs 1.3.6.1.2.1.6.14
    - tcpOutRsts 1.3.6.1.2.1.6.15
```

FIGURE 12 TCP hierarchy

```
- udp (1.3.6.1.2.1.7)
    - udpInDatagrams 1.3.6.1.2.1.7.1
    - udpNoPorts 1.3.6.1.2.1.7.2
    - udpInErrors 1.3.6.1.2.1.7.3
    - udpOutDatagrams 1.3.6.1.2.1.7.4
    - udpTable 1.3.6.1.2.1.7.5
        - udpEntry 1.3.6.1.2.1.7.5.1
            - udpLocalAddress 1.3.6.1.2.1.7.5.1.1
            - udpLocalPort 1.3.6.1.2.1.7.5.1.2
```

FIGURE 13 UDP hierarchy

```
- egp (1.3.6.1.2.1.8)
    - egpInMsgs
    - egpInErrors
    - egpOutMsgs
    - egpOutErrors
    - egpNeighTable
        - egpNeighEntry
            - egpNeighState
            - egpNeighAddr
            - egpNeighAs
            - egpNeighInMsgs
            - egpNeighInErrs
            - egpNeighOutMsgs
            - egpNeighOutErrs
            - egpNeighInErrMsgs
            - egpNeighOutErrMsgs
            - egpNeighStateUps
            - egpNeighStateDowns
            - egpNeighIntervalHello
            - egpNeighIntervalPoll
            - egpNeighMode
            - egpNeighEventTrigger
    - egpAs
```

FIGURE 14 EGP hierarchy

```
- snmp (1.3.6.1.2.1.11)
    - snmpInPkts 1.3.6.1.2.1.11.1
    - snmpOutPkts 1.3.6.1.2.1.11.2
    - snmpInBadVersions 1.3.6.1.2.1.11.3
    - snmpInBadCommunityNames 1.3.6.1.2.1.11.4
    - snmpInBadCommunityUses 1.3.6.1.2.1.11.5
    - snmpInASNParseErrs 1.3.6.1.2.1.11.6
    - snmpInTooBigs 1.3.6.1.2.1.11.8
    - snmpInNoSuchNames 1.3.6.1.2.1.11.9
    - snmpInBadValues 1.3.6.1.2.1.11.10
    - snmpInReadOnlys 1.3.6.1.2.1.11.11
    - snmpInGenErrs 1.3.6.1.2.1.11.12
    - snmpInTotalReqVars 1.3.6.1.2.1.11.13
    - snmpInTotalSetVars 1.3.6.1.2.1.11.14
    - snmpInGetRequests 1.3.6.1.2.1.11.15
    - snmpInGetNexts 1.3.6.1.2.1.11.16
    - snmpInSetRequests 1.3.6.1.2.1.11.17
    - snmpInGetResponses 1.3.6.1.2.1.11.18
    - snmpInTraps 1.3.6.1.2.1.11.19
    - snmpOutTooBigs 1.3.6.1.2.1.11.20
    - snmpOutNoSuchNames 1.3.6.1.2.1.11.21
    - snmpOutBadValues 1.3.6.1.2.1.11.22
    - snmpOutGenErrs 1.3.6.1.2.1.11.24
    - snmpOutGetRequests 1.3.6.1.2.1.11.25
    - snmpOutGetNexts 1.3.6.1.2.1.11.26
    - snmpOutSetRequests 1.3.6.1.2.1.11.27
    - snmpOutGetResponses 1.3.6.1.2.1.11.28
    - snmpOutTraps 1.3.6.1.2.1.11.29
    - snmpEnableAuthenTraps 1.3.6.1.2.1.11.30
    - snmpSilentDrops 1.3.6.1.2.1.11.31
    - snmpProxyDrops 1.3.6.1.2.1.11.32
```

FIGURE 15 SNMP hierarchy

- rmon (1.3.6.1.2.1.16)
  - rmonEventsV2 1.3.6.1.2.1.16.0
    - risingAlarm 1.3.6.1.2.1.16.0.1
    - fallingAlarm 1.3.6.1.2.1.16.0.2
  - statistics 1.3.6.1.2.1.16.1
    - etherStatsTable 1.3.6.1.2.1.16.1.1
      - etherStatsEntry 1.3.6.1.2.1.16.1.1.1
        - etherStatsIndex 1.3.6.1.2.1.16.1.1.1.1
        - etherStatsDataSource 1.3.6.1.2.1.16.1.1.1.2
        - etherStatsDropEvents 1.3.6.1.2.1.16.1.1.1.3
        - etherStatsOctets 1.3.6.1.2.1.16.1.1.1.4
        - etherStatsPkts 1.3.6.1.2.1.16.1.1.1.5
        - etherStatsBroadcastPkts 1.3.6.1.2.1.16.1.1.1.6
        - etherStatsMulticastPkts 1.3.6.1.2.1.16.1.1.1.7
        - etherStatsCRCAlignErrors 1.3.6.1.2.1.16.1.1.1.8
        - etherStatsUndersizePkts 1.3.6.1.2.1.16.1.1.1.9
        - etherStatsOversizePkts 1.3.6.1.2.1.16.1.1.1.10
        - etherStatsFragments 1.3.6.1.2.1.16.1.1.1.11
        - etherStatsJabbers 1.3.6.1.2.1.16.1.1.1.12
        - etherStatsCollisions 1.3.6.1.2.1.16.1.1.1.13
        - etherStatsPkts64Octets 1.3.6.1.2.1.16.1.1.1.14
        - etherStatsPkts65to127Octets 1.3.6.1.2.1.16.1.1.1.15
        - etherStatsPkts128to255Octets 1.3.6.1.2.1.16.1.1.1.16
        - etherStatsPkts256to511Octets 1.3.6.1.2.1.16.1.1.1.17
        - etherStatsPkts512to1023Octets 1.3.6.1.2.1.16.1.1.1.18
        - etherStatsPkts1024to1518Octets 1.3.6.1.2.1.16.1.1.1.19
        - etherStatsOwner 1.3.6.1.2.1.16.1.1.1.20
        - etherStatsStatus 1.3.6.1.2.1.16.1.1.1.21
  - history 1.3.6.1.2.1.16.2
    - historyControlTable 1.3.6.1.2.1.16.2.1
      - historyControlEntry 1.3.6.1.2.1.16.2.1.1
        - historyControlIndex 1.3.6.1.2.1.16.2.1.1.1
        - historyControlDataSource 1.3.6.1.2.1.16.2.1.1.2
        - historyControlBucketsRequested 1.3.6.1.2.1.16.2.1.1.3
        - historyControlBucketsGranted 1.3.6.1.2.1.16.2.1.1.4
        - historyControlInterval 1.3.6.1.2.1.16.2.1.1.5
        - historyControlOwner 1.3.6.1.2.1.16.2.1.1.6
        - historyControlStatus 1.3.6.1.2.1.16.2.1.1.7
    - etherHistoryTable 1.3.6.1.2.1.16.2.2
      - etherHistoryEntry 1.3.6.1.2.1.16.2.2.1
        - etherHistoryIndex 1.3.6.1.2.1.16.2.2.1.1
        - etherHistorySampleIndex 1.3.6.1.2.1.16.2.2.1.2
        - etherHistoryIntervalStart 1.3.6.1.2.1.16.2.2.1.3
        - etherHistoryDropEvents 1.3.6.1.2.1.16.2.2.1.4
        - etherHistoryOctets 1.3.6.1.2.1.16.2.2.1.5
        - etherHistoryPkts 1.3.6.1.2.1.16.2.2.1.6
        - etherHistoryBroadcastPkts 1.3.6.1.2.1.16.2.2.1.7
        - etherHistoryMulticastPkts 1.3.6.1.2.1.16.2.2.1.8
        - etherHistoryCRCAlignErrors 1.3.6.1.2.1.16.2.2.1.9
        - etherHistoryUndersizePkts 1.3.6.1.2.1.16.2.2.1.10
        - etherHistoryOversizePkts 1.3.6.1.2.1.16.2.2.1.11
        - etherHistoryFragments 1.3.6.1.2.1.16.2.2.1.12
        - etherHistoryJabbers 1.3.6.1.2.1.16.2.2.1.13
        - etherHistoryCollisions 1.3.6.1.2.1.16.2.2.1.14
        - etherHistoryUtilization 1.3.6.1.2.1.16.2.2.1.15

- alarm 1.3.6.1.2.1.16.3
  - alarmTable 1.3.6.1.2.1.16.3.1
    - alarmEntry 1.3.6.1.2.1.16.3.1.1
      - alarmIndex 1.3.6.1.2.1.16.3.1.1.1
      - alarmInterval 1.3.6.1.2.1.16.3.1.1.2
      - alarmVariable 1.3.6.1.2.1.16.3.1.1.3
      - alarmSampleType 1.3.6.1.2.1.16.3.1.1.4
      - alarmValue 1.3.6.1.2.1.16.3.1.1.5
      - alarmStartupAlarm 1.3.6.1.2.1.16.3.1.1.6
      - alarmRisingThreshold 1.3.6.1.2.1.16.3.1.1.7
      - alarmFallingThreshold 1.3.6.1.2.1.16.3.1.1.8
      - alarmRisingEventIndex 1.3.6.1.2.1.16.3.1.1.9
      - alarmFallingEventIndex 1.3.6.1.2.1.16.3.1.1.10
      - alarmOwner 1.3.6.1.2.1.16.3.1.1.11
      - alarmStatus 1.3.6.1.2.1.16.3.1.1.12
- event 1.3.6.1.2.1.16.9
  - eventTable 1.3.6.1.2.1.16.9.1
    - eventEntry 1.3.6.1.2.1.16.9.1.1
      - eventIndex 1.3.6.1.2.1.16.9.1.1.1
      - eventDescription 1.3.6.1.2.1.16.9.1.1.2
      - eventType 1.3.6.1.2.1.16.9.1.1.3
      - eventCommunity 1.3.6.1.2.1.16.9.1.1.4
      - eventLastTimeSent 1.3.6.1.2.1.16.9.1.1.5
      - eventOwner 1.3.6.1.2.1.16.9.1.1.6
      - eventStatus 1.3.6.1.2.1.16.9.1.1.7
  - logTable 1.3.6.1.2.1.16.9.2
    - logEntry 1.3.6.1.2.1.16.9.2.1
      - logEventIndex 1.3.6.1.2.1.16.9.2.1.1
      - logIndex 1.3.6.1.2.1.16.9.2.1.2
      - logTime 1.3.6.1.2.1.16.9.2.1.3
      - logDescription 1.3.6.1.2.1.16.9.2.1.4

FIGURE 16 RMON hierarchy

- ifMIB (1.3.6.1.2.1.31)
  - ifXTable 1.3.6.1.2.1.31.1.1
    - ifXentry 1.3.6.1.2.1.31.1.1.1
      - ifName 1.3.6.1.2.1.31.1.1.1.1
      - ifInMulticastPkts 1.3.6.1.2.1.31.1.1.1.2
      - ifInBroadcastPkts 1.3.6.1.2.1.31.1.1.1.3
      - ifOutMulticastPkts 1.3.6.1.2.1.31.1.1.1.4
      - ifOutBroadcastPkts 1.3.6.1.2.1.31.1.1.1.5
      - ifHCInOctets 1.3.6.1.2.1.31.1.1.1.6
      - ifHCInUcastPkts 1.3.6.1.2.1.31.1.1.1.7
      - ifHCInMulticastPkts 1.3.6.1.2.1.31.1.1.1.8
      - ifHCInBroadcastPkts 1.3.6.1.2.1.31.1.1.1.9
      - ifHCOutOctets 1.3.6.1.2.1.31.1.1.1.10
      - ifHCOutUcastPkts 1.3.6.1.2.1.31.1.1.1.11
      - ifHCOutMulticastPkts 1.3.6.1.2.1.31.1.1.1.12
      - ifHCOutBroadcastPkts 1.3.6.1.2.1.31.1.1.1.13
      - ifLinkUpDownTrapEnable 1.3.6.1.2.1.31.1.1.1.14
      - ifHighSpeed 1.3.6.1.2.1.31.1.1.1.15
      - ifPromiscuousMode 1.3.6.1.2.1.31.1.1.1.16
      - ifConnectorPresent 1.3.6.1.2.1.31.1.1.1.17
      - ifAlias 1.3.6.1.2.1.31.1.1.1.18
      - ifCounterDiscontinuityTime 1.3.6.1.2.1.31.1.1.1.19

FIGURE 17 ifMIB hierarchy

Entity MIB system organization of MIB objects

Figure 18 through Figure 24 depict the organization and structure of the Entity MIB file system.

```
- iso
    - org
        - dod
            - internet
                - mgmt
                    - mib-2
                        - entityMIB
                            - entityMIBObjects
                                - entityPhysical
                                - entityLogical
                                - entityMapping
                                - entityGeneral
                            - entityMIBTraps
                                - entityMIBTrapPrefix
                            - entityConformance
                                - entityCompliances
                                - entityGroups
```

FIGURE 18 Overall tree structure for Entity MIB

```
- entityPhysical
    - entPhysicalTable 1.3.6.1.2.1.47.1.1.1
        - entPhysicalEntry 1.3.6.1.2.1.47.1.1.1.1
            - entPhysicalIndex 1.3.6.1.2.1.47.1.1.1.1.1
            - entPhysicalDescr 1.3.6.1.2.1.47.1.1.1.1.2
            - entPhysicalVendorType 1.3.6.1.2.1.47.1.1.1.1.3
            - entPhysicalContainedIn 1.3.6.1.2.1.47.1.1.1.1.4
            - entPhysicalClass 1.3.6.1.2.1.47.1.1.1.1.5
            - entPhysicalParentRelPos 1.3.6.1.2.1.47.1.1.1.1.6
            - entPhysicalName 1.3.6.1.2.1.47.1.1.1.1.7
            - entPhysicalHardwareRev 1.3.6.1.2.1.47.1.1.1.1.8
            - entPhysicalFirmwareRev 1.3.6.1.2.1.47.1.1.1.1.9
            - entPhysicalSoftwareRev 1.3.6.1.2.1.47.1.1.1.1.10
            - entPhysicalSerialNum 1.3.6.1.2.1.47.1.1.1.1.11
            - entPhysicalMfgName 1.3.6.1.2.1.47.1.1.1.1.12
            - entPhysicalModelName 1.3.6.1.2.1.47.1.1.1.1.13
            - entPhysicalAlias 1.3.6.1.2.1.47.1.1.1.1.14
            - entPhysicalAssetID 1.3.6.1.2.1.47.1.1.1.1.15
            - entPhysicalIsFRU 1.3.6.1.2.1.47.1.1.1.1.16
```

FIGURE 19 entityPhysical hierarchy

```
- entityLogical
    - entLogicalTable 1.3.6.1.2.1.47.1.2.1
        - entLogicalEntry 1.3.6.1.2.1.47.1.2.1.1
            - entLogicalIndex 1.3.6.1.2.1.47.1.2.1.1.1
            - entLogicalDescr 1.3.6.1.2.1.47.1.2.1.1.2
            - entLogicalType 1.3.6.1.2.1.47.1.2.1.1.3
            - entLogicalCommunity 1.3.6.1.2.1.47.1.2.1.1.4
            - entLogicalTAddress 1.3.6.1.2.1.47.1.2.1.1.5
            - entLogicalTDomain 1.3.6.1.2.1.47.1.2.1.1.6
            - entLogicalContextEngineID 1.3.6.1.2.1.47.1.2.1.1.7
            - entLogicalContextName 1.3.6.1.2.1.47.1.2.1.1.8
```

FIGURE 20 entityLogical hierarchy

```
- entityMapping
    - entLPMappingTable 1.3.6.1.2.1.47.1.3.1
        - entLPMappingEntry 1.3.6.1.2.1.47.1.3.1.1
            - entLPPhysicalIndex 1.3.6.1.2.1.47.1.3.1.1.1
    - entAliasMappingTable 1.3.6.1.2.1.47.1.3.2
        - entAliasMappingEntry 1.3.6.1.2.1.47.1.3.2.1
            - entAliasLogicalIndexOrZero 1.3.6.1.2.1.47.1.3.2.1.1
            - entAliasMappingIdentifier 1.3.6.1.2.1.47.1.3.2.1.2
    - entPhysicalContainsTable 1.3.6.1.2.1.47.1.3.3
        - entPhysicalContainsEntry 1.3.6.1.2.1.47.1.3.3.1
            - entPhysicalChildIndex 1.3.6.1.2.1.47.1.3.3.1.1
```

FIGURE 21 entityMapping hierarchy

```
- entityGeneral
    - entLastChangeTime 1.3.6.1.2.1.47.1.4.1
```

FIGURE 22 entityGeneral hierarchy

```
- entityMIBTraps
    - entityMIBTrapPrefix (1.3.6.1.2.1.47.2.0)
        - entConfigChange 1.3.6.1.2.1.47.2.0.1
```

FIGURE 23 entityMIBTrapPrefix hierarchy

```
- entityConformance
    - entityCompliances (1.3.6.1.2.1.47.3.1)
        - entityCompliance 1.3.6.1.2.1.47.3.1.1
        - entity2Compliance 1.3.6.1.2.1.47.3.1.2
    - entityGroups (1.3.6.1.2.1.47.3.2)
        - entityPhysicalGroup 1.3.6.1.2.1.47.3.2.1
        - entityLogicalGroup 1.3.6.1.2.1.47.3.2.2
        - entityMappingGroup 1.3.6.1.2.1.47.3.2.3
        - entityGeneralGroup 1.3.6.1.2.1.47.3.2.4
        - entityNotificationsGroup 1.3.6.1.2.1.47.3.2.5
        - entityPhysical2Group 1.3.6.1.2.1.47.3.2.6
        - entityLogical2Group 1.3.6.1.2.1.47.3.2.7
```

FIGURE 24 entityConformance hierarchy

Objects and types imported

The following objects and types are imported from RFC1155-SMI:

- mgmt
- NetworkAddress
- IpAddress
- Counter
- Gauge
- TimeTicks

System group

All systems must implement the System group. If an agent is not configured to have a value for any of the System group variables, a string of length 0 is returned.

sysDescr 1.3.6.1.2.1.1.1

A textual description of the entity. This value should include the full name and version identification of the hardware type, software operating system, and networking software.

Format This must contain only printable ASCII characters.

Default The switch type. The default value is Brocade VDX switch.

sysObjectID 1.3.6.1.2.1.1.2

The vendor's authoritative identification of the network management subsystem contained in the entity. This value is allocated within the SMI enterprises subtree (1.3.6.1.4.1) and provides an easy and unambiguous means for determining what kind of device is being managed.

Example If a vendor "NetYarn, Inc." was assigned the subtree 1.3.6.1.4.1.4242, it could assign the identifier 1.3.6.1.4.1.4242.1.1 to its "Knit Router".

Default The default value is vdxCallisto24 for Brocade VDX 6720-24 and vdxCallisto60 for Brocade VDX 6720-60

sysUpTime 1.3.6.1.2.1.1.3

The time (in hundredths of a second) since the network management portion of the system was last reinitialized.

sysContact 1.3.6.1.2.1.1.4

The textual identification of the contact person for this managed node, together with information on how to contact this person. The minimum length of the string must be 4.

Default Field Support

Set command Set this value using the **snmp-server contact** <*contact-string*> command.

sysName 1.3.6.1.2.1.1.5

An administratively assigned name for this managed node. By convention, this is the node's fully qualified domain name.

Default Preassigned name of the logical switch.

sysLocation 1.3.6.1.2.1.1.6

The physical location of this node (for example, telephone closet, 3rd floor). The minimum length of the string must be 4.

Default End User Premise

Set command Set this value using the **snmp-server location** <*location-string*> command.

sysServices 1.3.6.1.2.1.1.7

A value that indicates the set of services that this entity primarily offers. The value is a sum. This sum initially takes the value 0. Then, for each layer, L, in the range 1 through 7, for which this node performs transactions, 2 raised to (L - 1) is added to the sum. For example, a node that primarily performs routing functions has a value of 4 (2^{3-1}). In contrast, a node that is a host and offers application services has a value of 72 ($2^{4-1} + 2^{7-1}$).

Calculate In the context of the Internet suite of protocols, values should be calculated accordingly:

Layer functionality
1 = physical (for example, repeaters)
2 = datalink/subnetwork (for example, bridges)
3 = internet (for example, IP gateways)
4 = end-to-end (for example, IP hosts)
7 = applications (for example, mail relays)

For systems including OSI protocols, layers 5 and 6 also can be counted. The return value is always 79.

Interfaces group

Implementation of the Interfaces group is mandatory for all systems. To support FCIP tunneling, entries are created in the ifTable for each WAN interface (GbE port), each FC port, and each FCIP tunnel (transport interface).

Logical Inter Switch Link (LISL) is an FC interface.

ifNumber 1.3.6.1.2.1.2.1

The number of network interfaces and existing FC ports present on this system, regardless of their current state. This number will vary across platforms (switches).

The return value is dynamic for all Brocade switches and depends on the number of GbE ports, FC ports and transport interfaces.

ifTable 1.3.6.1.2.1.2.2

A list of interface entries. The number of entries is given by the value of ifNumber.

The Interfaces table contains information on the entity's interfaces. Each interface is thought of as being attached to a subnetwork. Note that this term should not be confused with *subnet*, which refers to an addressing partitioning scheme used in the Internet suite of protocols.

ifEntry 1.3.6.1.2.1.2.2.1

An interface entry containing objects at the subnetwork layer and below, for a particular interface.

Index ifIndex

ifIndex 1.3.6.1.2.1.2.2.1.1

A unique value for each interface.

The values range between 1 and the value of ifNumber. The value for each interface must remain constant, at least from one reinitialization of the entity's network management system to the next reinitialization.

For Network Interface, the number starts from 805306369 and increments with the interface count. For FC ports, the number starts from 1073741824 and increments with the existing FC ports. Similarly the index value range for the interfaces are as follows:

- For GbE port the number starts from 268435456
- For Ten GbE (FCoE ports) the number starts from 402653184
- For FCIP Tunnel the number starts from 536870912
- For xFCIP Tunnel the number starts from 1342177280
- For Port channel the number starts from 671088640
- For VLAN the number starts from 1207959552

ifDescr 1.3.6.1.2.1.2.2.1.2

A textual string containing information about the interface.

Values

- For WAN interface- *GbE port for FCIP*
- For transport interface- *FCIP tunnel ID*
- For FC ports- *Port name* (if set), otherwise, *FC port <slot/port>*

ifType 1.3.6.1.2.1.2.2.1.3

The type of interface, designated by the physical link protocols immediately below the network layer in the protocol stack.

Values

- For WAN interface, FCIP Link - *ethernetCsmacd (6)*
- For transport interface - *FCIPLink (224)*
- For FC ports - *Fibre Channel (56)*
- For lo - *softwareLoopback (24)*
- For sit0 - *131*
- For fc0/port0 - *other*

ifMtu 1.3.6.1.2.1.2.2.1.4

The size of the largest datagram that can be sent or received on the interface, specified in octets.

Values For interfaces that are used to transmit network datagrams, the value is the size of the largest network datagram that can be sent on the interface.

- eth0 returns 1500
- lo returns 16436
- fc0 returns 2024
- FCIP GbE returns 1500
- sit0 returns 1480
- port0 returns 2112

ifSpeed 1.3.6.1.2.1.2.2.1.5

An estimate (in bits per second) of the interface's current bandwidth.

Values For interfaces that do not vary in bandwidth or interfaces for which no accurate estimation can be made, this object should contain the nominal bandwidth.

- eth0 returns 100000000 and not null
- fc port returns 1,000,000,000 for 1 Gbps port
- fc port returns 2000000000 for 2 Gbps port
- fc port returns 4000000000 for 4 Gbps port
- For 10G: Value displayed is 4294967295
- For 8G: Value displayed is 4294967294

ifPhysAddress 1.3.6.1.2.1.2.2.1.6

The interface's address at the protocol layer immediately below the network layer in the protocol stack.

Values For interfaces that do not have such an address (for example, a serial line), this object should contain an octet string of zero length.

- eth0 returns the MAC address for GbE ports
- lo returns null
- SNMP represents the FC port ID in ASCII hex represenation. For example, 36:35:35:33:36 is equivalent to the decimal value of 65536. To get the decimal value 36-30 = 6; 35-30= 5 and so on. To get the FC port ID, convert the decimal into hex (the hex value of 65536 is 01 00 00, where the first two digits are the domain, the next two digits are the area, and the last two digits are the port number).

  ASCII hex (36:35:35:33:36) => decimal (65536) => hex (01 00 00)

ifAdminStatus 1.3.6.1.2.1.2.2.1.7

The desired state of the interface.

Values

- up (1)
- down (2) or
- testing (3)

Supports Read only, should return same value with ifOperStatus for WAN and FC ports interfaces.

NOTE
The testing (3) state indicates that no operational packets can be passed.

ifOperStatus 1.3.6.1.2.1.2.2.1.8

The current operational state of the interface.

Values

- up (1)
- down (2) or
- testing (3)
- unknown (4)
- dormant (5)
- notPresent (6)
- lowerLayerDown (7)

Active tunnels will be up; inactive tunnels will be down (configured but not online).

NOTE
The testing (3) state indicates that no operational packets can be passed.

ifLastChange 1.3.6.1.2.1.2.2.1.9

The value of sysUpTime at the time the interface entered its current operational state. If the current state was entered prior to the last re-initialization of the local network management subsystem, then this object contains a zero value.

ifInOctets 1.3.6.1.2.1.2.2.1.10

The total number of octets received on the interface, including framing characters.

ifInUcastPkts 1.3.6.1.2.1.2.2.1.11

The number of subnetwork-unicast packets delivered to a higher-layer protocol.

Not supported.

ifInNUcastPkts 1.3.6.1.2.1.2.2.1.12

The number of nonunicast packets (for example, subnetwork-broadcast or subnetwork-multicast) delivered to a higher-layer protocol.

Not supported.

ifInDiscards 1.3.6.1.2.1.2.2.1.13

The number of inbound packets that were chosen to be discarded (even though no errors had been detected) to prevent their being deliverable to a higher-layer protocol.

One possible reason for discarding such a packet could be to free buffer space.

ifInErrors 1.3.6.1.2.1.2.2.1.14

The number of inbound packets that contained errors, which thereby prevented them from being deliverable to a higher-layer protocol.

ifInUnknownProtos 1.3.6.1.2.1.2.2.1.15

The number of packets received by way of the interface that were discarded because of an unknown or unsupported protocol.

Not supported.

ifOutOctets 1.3.6.1.2.1.2.2.1.16

The total number of octets transmitted out of the interface, including framing characters.

ifOutUcastPkts 1.3.6.1.2.1.2.2.1.17

The total number of packets that were requested, by higher-level protocols, to be transmitted to a subnetwork-unicast address, including those that were discarded or not sent.

ifOutNUcastPkts 1.3.6.1.2.1.2.2.1.18

The total number of packets that were requested, by higher-level protocols, to be transmitted to a nonunicast address (for example, a subnetwork-broadcast or subnetwork-multicast), including those that were discarded or not sent.

Not supported.

ifOutDiscards 1.3.6.1.2.1.2.2.1.19

The number of outbound packets that were chosen to be discarded (even though no errors had been detected) to prevent their being transmitted. One possible reason for discarding such a packet could be to free buffer space.

ifOutErrors 1.3.6.1.2.1.2.2.1.20

The number of outbound packets that could not be transmitted because of errors.

ifOutQLen 1.3.6.1.2.1.2.2.1.21

The length of the output packet queue (in packets).

Not supported.

ifSpecific 1.3.6.1.2.1.2.2.1.22

A reference to MIB definitions specific to the particular media being used to realize the interface.

If the interface is realized by an Ethernet, then the value of this object refers to a document defining objects specific to Ethernet. If this information is not present, its value must be set to the Object Identifier 0 0, which is a syntactically valid object identifier, and any conferment implementation of ASN.1 and BER must be able to generate and recognize this value.

Returns

- eth0 returns null OID
- lo returns null OID
- fc0 returns null OID

AT group

Implementation of the Address Translation group is mandatory for all systems. Note, however, that this group is deprecated by MIB-II. From MIB-II onward, each network protocol group contains its own address translation tables.

atTable 1.3.6.1.2.1.3.1

The Address Translation group contains one table, which is the union across all interfaces of the translation tables for converting a network address (for example, an IP address) into a subnetwork-specific address. This document refers to such a subnetwork-specific address as a *physical address*.

For example, for broadcast media, where ARP is in use, the translation table is equivalent to the ARP cache; on an X.25 network, where non-algorithmic translation to X.121 addresses is required, the translation table contains the network address to X.121 address equivalences.

The Address Translation tables contain the network address to physical address equivalences. Some interfaces do not use translation tables for determining address equivalences (for example, DDN-X.25 has an algorithmic method); if all interfaces are of this type, then the Address Translation table is empty.

atEntry 1.3.6.1.2.1.3.1.1

Each entry contains one network address to physical address equivalence.

Index atIfIndex, atNetAddress

atIfIndex 1.3.6.1.2.1.3.1.1.1

The interface on which this entry's equivalence is effective. The interface identified by a particular value of this index is the same interface as identified by the same value of ifIndex.

atPhysAddress 1.3.6.1.2.1.3.1.1.2

The media-dependent physical address.

atNetAddress 1.3.6.1.2.1.3.1.1.3

The network address (for example, the IP address) corresponding to the media-dependent physical address.

IP group

Implementation of the IP group is mandatory for all systems.

ipForwarding 1.3.6.1.2.1.4.1

The indication of whether this entity is acting as an IP gateway in respect to the forwarding of datagrams received by, but not addressed to, this entity. IP gateways forward datagrams; IP hosts do not (except those source-routed through the host).

ipDefaultTTL 1.3.6.1.2.1.4.2

The default value inserted into the time-to-live field of the IP header of datagrams originated at this entity, whenever a TTL value is not supplied by the transport layer protocol.

ipInReceives 1.3.6.1.2.1.4.3

The total number of input datagrams received from interfaces, including those received in error.

ipInHdrErrors 1.3.6.1.2.1.4.4

The number of input datagrams discarded due to errors in their IP headers, including bad checksums, version number mismatch, other format errors, time-to-live exceeded, errors discovered in processing their IP options, and so on.

ipInAddrErrors 1.3.6.1.2.1.4.5

The number of input datagrams discarded because the IP address in their IP header's destination field was not a valid address to be received at this entity. This count includes invalid addresses (for example, 0.0.0.0) and addresses of unsupported classes (for example, Class E). For entities that are not IP gateways and therefore do not forward datagrams, this counter includes datagrams discarded because the destination address was not a local address.

ipForwDatagrams 1.3.6.1.2.1.4.6

The number of input datagrams for which this entity was not final IP destination, as a result of which an attempt was made to find a route to forward them to that final destination. In entities that do not act as IP gateways, this counter includes only those packets that were source-routed through this entity, and the Source-Route option processing was successful.

ipInUnknownProtos 1.3.6.1.2.1.4.7

The number of locally addressed datagrams received successfully but discarded because of an unknown or unsupported protocol.

ipInDiscards 1.3.6.1.2.1.4.8

The number of input IP datagrams for which no problems were encountered to prevent their continued processing, but which were discarded (for example, for lack of buffer space).

This counter does not include any datagrams discarded while awaiting reassembly.

ipInDelivers 1.3.6.1.2.1.4.9

The total number of input datagrams successfully delivered to IP user protocols (including ICMP).

ipOutRequests 1.3.6.1.2.1.4.10

The total number of IP datagrams that local IP user protocols (including ICMP) supplied to IP in requests for transmission. Note that this counter does not include any datagrams counted in ipForwDatagrams.

ipOutDiscards 1.3.6.1.2.1.4.11

The number of output IP datagrams for which no problem was encountered to prevent their transmission to their destination, but which were discarded (for example, for lack of buffer space).

NOTE
This counter would include datagrams counted in ipForwDatagrams if any such packets met this (discretionary) discard criterion.

ipOutNoRoutes 1.3.6.1.2.1.4.12

The number of IP datagrams discarded because no route could be found to transmit them to their destination.

NOTE
This counter includes any packets counted in ipForwDatagrams that meet this “no-route” criterion. Note that this includes any datagrams that a host cannot route because all of its default gateways are down.

ipReasmTimeout 1.3.6.1.2.1.4.13

The maximum number of seconds that received fragments are held while they are awaiting reassembly at this entity.

ipReasmReqds 1.3.6.1.2.1.4.14

The number of IP fragments received that needed to be reassembled at this entity.

ipReasmOKs 1.3.6.1.2.1.4.15

The number of IP datagrams successfully reassembled.

ipReasmFails 1.3.6.1.2.1.4.16

The number of failures detected by the IP reassembly algorithm (for whatever reason: timed out, errors, and so on).

NOTE
This is not necessarily a count of discarded IP fragments, because some algorithms (notably the algorithm in RFC 815) can lose track of the number of fragments by combining them as they are received.

ipFragOKs 1.3.6.1.2.1.4.17

The number of IP datagrams that have been successfully fragmented at this entity.

ipFragFails 1.3.6.1.2.1.4.18

The number of IP datagrams that have been discarded because they needed to be fragmented at this entity but could not be (for example, because their Don't Fragment flag was set).

ipFragCreates 1.3.6.1.2.1.4.19

The number of IP datagram fragments that have been generated as a result of fragmentation at this entity.

ipAddrTable 1.3.6.1.2.1.4.20

The table of addressing information relevant to this entity's IP addresses.

ipAddrEntry 1.3.6.1.2.1.4.20.1

The addressing information for one of this entity's IP addresses.

Index ipAdEntAddr

ipAdEntAddr 1.3.6.1.2.1.4.20.1.1

The IP address to which this entry's addressing information pertains.

ipAdEntIfIndex 1.3.6.1.2.1.4.20.1.2

The index value which uniquely identifies the interface to which this entry is applicable. The interface identified by a particular value of this index is the same interface as identified by the same value of ifIndex.

ipAdEntNetMask 1.3.6.1.2.1.4.20.1.3

The subnet mask associated with the IP address of this entry. The value of the mask is an IP address with all the network bits set to 1 and all the host bits set to 0.

ipAdEntBcastAddr 1.3.6.1.2.1.4.20.1.4

The value of the least-significant bit in the IP broadcast address used for sending datagrams on the (logical) interface associated with the IP address of this entry. For example, when the Internet standard all-ones broadcast address is used, the value will be 1. This value applies to both the subnet and network broadcasts addresses used by the entity on this (logical) interface.

ipAdEntReasmMaxSize 1.3.6.1.2.1.4.20.1.5

The size of the largest IP datagram that this entity can reassemble from incoming IP fragmented datagrams received on this interface.

Not supported.

ipRouteTable 1.3.6.1.2.1.4.21

The IP routing table contains an entry for each route currently known to this entity.

ipRouteEntry 1.3.6.1.2.1.4.21.1

A route to a particular destination.

Index ipRouteDest

ipRouteDest 1.3.6.1.2.1.4.21.1.1

The destination IP address of this route.

An entry with a value of 0.0.0.0 is considered a default route. Multiple routes to a single destination can appear in the table, but access to such multiple entries is dependent on the table-access mechanisms defined by the network management protocol in use.

ipRouteIfIndex 1.3.6.1.2.1.4.21.1.2

The index value that uniquely identifies the local interface through which the next hop of this route should be reached.

The interface identified by a particular value of this index is the same interface identified by the same value of ifIndex.

ipRouteMetric1 1.3.6.1.2.1.4.21.1.3

The primary routing metric for this route.

The semantics of this metric are determined by the routing protocol specified in the route's ipRouteProto value. If this metric is not used, its value should be set to -1.

ipRouteMetric2 1.3.6.1.2.1.4.21.1.4

An alternate routing metric for this route.

The semantics of this metric are determined by the routing protocol specified in the route's ipRouteProto value. If this metric is not used, its value should be set to -1.

ipRouteMetric3 1.3.6.1.2.1.4.21.1.5

An alternate routing metric for this route.

The semantics of this metric are determined by the routing protocol specified in the route's ipRouteProto value. If this metric is not used, its value should be set to -1.

ipRouteMetric4 1.3.6.1.2.1.4.21.1.6

An alternate routing metric for this route.

The semantics of this metric are determined by the routing protocol specified in the route's ipRouteProto value. If this metric is not used, its value should be set to -1.

ipRouteNextHop 1.3.6.1.2.1.4.21.1.7

The IP address of the next hop of this route. (In the case of a route bound to an interface that is realized through a broadcast media, the value of this field is the agent’s IP address on that interface.)

ipRouteType 1.3.6.1.2.1.4.21.1.8

The type of route. Setting this object to 2 (invalid) has the effect of invalidating the corresponding entry in the ipRouteTable object. That is, it effectively dissasociates the destination identified with said entry from the route identified with said entry. It is an implementation-specific matter as to whether the agent removes an invalidated entry from the table. Accordingly, management stations must be prepared to receive tabular information from agents that corresponds to entries not currently in use. Proper interpretation of such entries requires examination of the relevant ipRouteType object.

The values direct (3) and indirect (4) refer to the notion of direct and indirect routing in the IP architecture.

Valid values		
	other (1)	None of the following
	invalid (2)	An invalidated route—route to directly
	direct (3)	Connected (sub)network—route to a non-local
	indirect (4)	Host/network/subnetwork

ipRouteProto 1.3.6.1.2.1.4.21.1.9

The routing mechanism by which this route was learned.

Inclusion of values for gateway routing protocols is not intended to imply that hosts should support those protocols.

ipRouteAge 1.3.6.1.2.1.4.21.1.10

The number of seconds since this route was last updated or otherwise determined to be correct.

Older semantics cannot be implied except through knowledge of the routing protocol by which the route was learned.

Not supported.

ipRouteMask 1.3.6.1.2.1.4.21.1.11

The mask to be logical-ANDed with the destination address before being compared to the value in the ipRouteDest field. For those systems that do not support arbitrary subnet masks, an agent constructs the value of the ipRouteMask by determining whether the value of the correspondent ipRouteDest field belong to a class-A, B, or C network, and then using one of the following:

mask	network
255.0.0.0	class-A
255.255.0.0	class-B
255.255.255.0	class-C

NOTE
If the value of the ipRouteDest is 0.0.0.0 (default route), then the mask value is also 0.0.0.0.

All IP routing subsystems implicitly use this mechanism.

ipRouteMetric5 1.3.6.1.2.1.4.21.1.12

An alternate routing metric for this route.

The semantics of this metric are determined by the routing protocol specified in the route's ipRouteProto value. If this metric is not used, its value should be set to -1.

ipRouteInfo 1.3.6.1.2.1.4.21.1.13

A reference to MIB definitions specific to the particular routing protocol that is responsible for this route, as determined by the value specified in the route's ipRouteProto value. If this information is not present, its value should be set to the Object Identifier {0 0}, which is a syntactically valid object identifier; any conferment implementation of ASN.1 and BER must be able to generate and recognize this value.

ipNetToMediaTable 1.3.6.1.2.1.4.22

The IP Address Translation table used for mapping from IP addresses to physical addresses.

NOTE
The IP address translation table contains the IP address to physical address equivalences. Some interfaces do not use translation tables for determining address equivalences. For example, DDN-X.25 has an algorithmic method; if all interfaces are of this type, then the Address Translation table is empty.

ipNetToMediaEntry 1.3.6.1.2.1.4.22.1

Each entry contains one IP address to physical address equivalence.

Index ipNetToMediaIfIndex, ipNetToMediaNetAddress

ipNetToMediaIfIndex 1.3.6.1.2.1.4.22.1.1

The interface on which this entry's equivalence is effective.

The interface identified by a particular value of this index is the same interface identified by the same value of ifIndex.

ipNetToMediaPhysAddress 1.3.6.1.2.1.4.22.1.2

The media-dependent physical address.

ipNetToMediaNetAddress 1.3.6.1.2.1.4.22.1.3

The IpAddress corresponding to the media-dependent physical address.

ipNetToMediaType 1.3.6.1.2.1.4.22.1.4

The type of mapping.

ipRoutingDiscards 1.3.6.1.2.1.4.23

The number of routing entries discarded even though they are valid. One possible reason for discarding such an entry could be to free buffer space for other routing entries.

Not supported.

ICMP group

Implementation of the ICMP group is mandatory for all systems.

icmpInMsgs 1.3.6.1.2.1.5.1

The total number of ICMP messages that the entity received.

This counter includes all ICMP messages counted by icmpInErrors.

icmpInErrors 1.3.6.1.2.1.5.2

The number of ICMP messages that the entity received but determined to have ICMP-specific errors (bad ICMP checksums, bad length, and so on).

icmpInDestUnreachs 1.3.6.1.2.1.5.3

The number of ICMP Destination Unreachable messages received.

icmpInTimeExcds 1.3.6.1.2.1.5.4

The number of ICMP Time Exceeded messages received.

icmpInParmProbs 1.3.6.1.2.1.5.5

The number of ICMP Parameter Problem messages received.

icmpInSrcQuenchs 1.3.6.1.2.1.5.6

The number of ICMP Source Quench messages received.

icmpInRedirects 1.3.6.1.2.1.5.7

The number of ICMP Redirect messages received.

icmpInEchos 1.3.6.1.2.1.5.8

The number of ICMP Echo (request) messages received.

icmpInEchoReps 1.3.6.1.2.1.5.9

The number of ICMP Echo Reply messages received.

icmpInTimestamps 1.3.6.1.2.1.5.10

The number of ICMP Timestamp (request) messages received.

icmpInTimestampReps 1.3.6.1.2.1.5.11

The number of ICMP Timestamp Reply messages received.

icmpInAddrMasks 1.3.6.1.2.1.5.12

The number of ICMP Address Mask Request messages received.

icmpInAddrMaskReps 1.3.6.1.2.1.5.13

The number of ICMP Address Mask Reply messages received.

icmpOutMsgs 1.3.6.1.2.1.5.14

The total number of ICMP messages that this entity attempted to send.

NOTE
This counter includes all those counted by icmpOutErrors.

icmpOutErrors 1.3.6.1.2.1.5.15

The number of ICMP messages that this entity did not send due to problems discovered within ICMP such as a lack of buffers. This value must not include errors discovered outside the ICMP layer such as the inability of IP to route the resultant datagram. In some implementations there might be no types of error that contribute to this counter's value.

icmpOutDestUnreachs 1.3.6.1.2.1.5.16

The number of ICMP Destination Unreachable messages sent.

icmpOutTimeExcds 1.3.6.1.2.1.5.17

The number of ICMP Time Exceeded messages sent.

icmpOutParmProbs 1.3.6.1.2.1.5.18

The number of ICMP Parameter Problem messages sent.

icmpOutSrcQuenchs 1.3.6.1.2.1.5.19

The number of ICMP Source Quench messages sent.

icmpOutRedirects 1.3.6.1.2.1.5.20

The number of ICMP Redirect messages sent. For a host, this object is always 0, since hosts do not send redirects.

icmpOutEchos 1.3.6.1.2.1.5.21

The number of ICMP Echo (request) messages sent.

icmpOutEchoReps 1.3.6.1.2.1.5.22

The number of ICMP Echo Reply messages sent.

icmpOutTimestamps 1.3.6.1.2.1.5.23

The number of ICMP Timestamp (request) messages sent.

icmpOutTimestampReps 1.3.6.1.2.1.5.24

The number of ICMP Timestamp Reply messages sent.

icmpOutAddrMasks 1.3.6.1.2.1.5.25

The number of ICMP Address Mask Request messages sent.

icmpOutAddrMaskReps 1.3.6.1.2.1.5.26

The number of ICMP Address Mask Reply messages sent.

TCP group

Implementation of the TCP group is mandatory for all systems that implement the TCP.

Instances of object types that represent information about a particular TCP connection are transient; they persist only as long as the connection in question.

tcpRtoAlgorithm 1.3.6.1.2.1.6.1

The algorithm used to determine the time-out value used for retransmitting unacknowledged octets.

tcpRtoMin 1.3.6.1.2.1.6.2

The minimum value permitted by a TCP implementation for the retransmission time-out, measured in milliseconds.

More refined semantics for objects of this type depend upon the algorithm used to determine the retransmission time-out. In particular, when the time-out algorithm is 3 (rsre), an object of this type has the semantics of the LBOUND quantity described in RFC 793.

tcpRtoMax 1.3.6.1.2.1.6.3

The maximum value permitted by a TCP implementation for the retransmission time-out, measured in milliseconds.

More refined semantics for objects of this type depend upon the algorithm used to determine the retransmission time-out. In particular, when the time-out algorithm is 3 (rsre), an object of this type has the semantics of the UBOUND quantity described in RFC 793.

tcpMaxConn 1.3.6.1.2.1.6.4

The limit on the total number of TCP connections the entity can support. In entities where the maximum number of connections is dynamic, this object should contain the value -1.

tcpActiveOpens 1.3.6.1.2.1.6.5

The number of times TCP connections have made a direct transition to the SYN-SENT state from the CLOSED state.

tcpPassiveOpens 1.3.6.1.2.1.6.6

The number of times TCP connections have made a direct transition to the SYN-RCVD state from the LISTEN state.

tcpAttemptFails 1.3.6.1.2.1.6.7

The number of times TCP connections have made a direct transition to the CLOSED state from either the SYN-SENT state or the SYN-RCVD state, plus the number of times TCP connections have made a direct transition to the LISTEN state from the SYN-RCVD state.

tcpEstabResets 1.3.6.1.2.1.6.8

The number of times TCP connections have made a direct transition to the CLOSED state from either the ESTABLISHED state or the CLOSE-WAIT state.

tcpCurrEstab 1.3.6.1.2.1.6.9

The number of TCP connections for which the current state is either ESTABLISHED or CLOSE-WAIT.

tcpInSegs 1.3.6.1.2.1.6.10

The total number of segments received, including those received in error. This count includes segments received on currently established connections.

tcpOutSegs 1.3.6.1.2.1.6.11

The total number of segments sent, including those on current connections but excluding those containing only retransmitted octets.

tcpRetransSegs 1.3.6.1.2.1.6.12

The total number of segments retransmitted; that is, the number of TCP segments transmitted containing one or more previously transmitted octets.

TCP connection table

The TCP connection table contains information about this entity's existing TCP connections.

tcpConnTable 1.3.6.1.2.1.6.13

A table containing TCP connection-specific information.

tcpConnEntry 1.3.6.1.2.1.6.13.1

Information about a particular current TCP connection. An object of this type is transient, in that it ceases to exist when (or soon after) the connection makes the transition to the CLOSED state.

Index tcpConnLocalAddress, tcpConnLocalPort, tcpConnRemAddress, tcpConnRemPort

tcpConnState 1.3.6.1.2.1.6.13.1.1

The state of this TCP connection.

The only value that might be set by a management station is deleteTCB (12). Accordingly, it is appropriate for an agent to return a badValue response if a management station attempts to set this object to any other value.

If a management station sets this object to the value delete12 (TCB), then this has the effect of deleting the TCB (as defined in RFC 793) of the corresponding connection on the managed node, resulting in immediate termination of the connection.

As an implementation-specific option, a RST segment might be sent from the managed node to the other TCP endpoint (note, however, that RST segments are not sent reliably).

Values Possible values are:

- closed
- listen
- synSent (3)
- synReceived (4)
- established (5)
- finWait1 (6)
- finWait2 (7)
- closeWait (8)
- lastAck (9)
- closing (10)
- timeWait (11)
- deleteTCB (12)

tcpConnLocalAddress 1.3.6.1.2.1.6.13.1.2

The local IP address for this TCP connection. In the case of a connection in the listen state that is willing to accept connections for any IP interface associated with the node, the value 0.0.0.0 is used.

tcpConnLocalPort 1.3.6.1.2.1.6.13.1.3

The local port number for this TCP connection.

tcpConnRemAddress 1.3.6.1.2.1.6.13.1.4

The remote IP address for this TCP connection.

tcpConnRemPort 1.3.6.1.2.1.6.13.1.5

The remote port number for this TCP connection.

tcpInErrs 1.3.6.1.2.1.6.14

The total number of segments received in error (for example, bad TCP checksums).

tcpOutRsts 1.3.6.1.2.1.6.15

The number of TCP segments sent containing the RST flag.

UDP group

Implementation of the UDP group is mandatory for all systems that implement the UDP.

udpInDatagrams 1.3.6.1.2.1.7.1

The total number of UDP datagrams delivered to UDP users.

udpNoPorts 1.3.6.1.2.1.7.2

The total number of received UDP datagrams for which there was no application at the destination port.

udpInErrors 1.3.6.1.2.1.7.3

The number of received UDP datagrams that could not be delivered for reasons other than the lack of an application at the destination port.

udpOutDatagrams 1.3.6.1.2.1.7.4

The total number of UDP datagrams sent from this entity.

udpTable 1.3.6.1.2.1.7.5

The UDP listener table contains information about this entity's UDP end-points on which a local application is currently accepting datagrams.

udpEntry 1.3.6.1.2.1.7.5.1

Information about a particular current UDP listener.

Index udpLocalAddress, udpLocalPort

udpLocalAddress 1.3.6.1.2.1.7.5.1.1

The local IP address for this UDP listener. In the case of a UDP listener that is willing to accept datagrams for any IP interface associated with the node, the value 0.0.0.0 is used.

udpLocalPort 1.3.6.1.2.1.7.5.1.2

The local port number for this UDP listener.

EGP group

Brocade does not support the EGP group. This section is not applicable. Refer to the RFC1213 for complete information regarding the EGP group.

Transmission group

Brocade does not support the Transmission group. This section is not applicable. Refer to the RFC1213 for complete information regarding the Transmission group.

SNMP group

Implementation of the SNMP group is mandatory for all systems that support an SNMP protocol entity. Some of the objects defined next are zero-valued in those SNMP implementations that are optimized to support only those functions specific to either a management agent or a management station. All of the objects that follow refer to an SNMP entity, and there might be several SNMP entities residing on a managed node (for example, if the node is acting as a management station).

snmpInPkts 1.3.6.1.2.1.11.1

The total number of messages delivered to the SNMP entity from the transport service.

snmpOutPkts 1.3.6.1.2.1.11.2

The total number of SNMP messages that were passed from the SNMP protocol entity to the transport service.

snmpInBadVersions 1.3.6.1.2.1.11.3

The total number of SNMP messages that were delivered to the SNMP protocol entity and were for an unsupported SNMP version.

snmpInBadCommunityNames 1.3.6.1.2.1.11.4

The total number of SNMP messages delivered to the SNMP protocol entity that used a SNMP community name not known to said entity.

snmpInBadCommunityUses 1.3.6.1.2.1.11.5

The total number of SNMP messages delivered to the SNMP protocol entity that represented an SNMP operation that was not allowed by the SNMP community named in the message.

snmpInASNParseErrs 1.3.6.1.2.1.11.6

The total number of ASN.1 or BER errors encountered by the SNMP protocol entity when decoding received SNMP messages.

NOTE
1.3.6.1.2.1.11.7 is not supported.

snmpInTooBigs 1.3.6.1.2.1.11.8

The total number of SNMP PDUs that were delivered to the SNMP protocol entity and for which the value of the error-status field is “tooBig.”

snmpInNoSuchNames 1.3.6.1.2.1.11.9

The total number of SNMP PDUs that were delivered to the SNMP protocol entity and for which the value of the error-status field is “noSuchName.”

snmpInBadValues 1.3.6.1.2.1.11.10

The total number of SNMP PDUs that were delivered to the SNMP protocol entity and for which the value of the error-status field is “badValue.”

snmpInReadOnlys 1.3.6.1.2.1.11.11

The total number valid SNMP PDUs that were delivered to the SNMP protocol entity and for which the value of the error-status field is “read-only.”

It is a protocol error to generate an SNMP PDU that contains the value “read-only” in the error-status field; as such, this object is provided as a means of detecting incorrect implementations of the SNMP.

snmpInGenErrs 1.3.6.1.2.1.11.12

The total number of SNMP PDUs that were delivered to the SNMP protocol entity and for which the value of the error-status field is “genErr.”

snmpInTotalReqVars 1.3.6.1.2.1.11.13

The total number of MIB objects that have been retrieved successfully by the SNMP protocol entity as the result of receiving valid SNMP Get-Request and Get-Next PDUs.

snmpInTotalSetVars 1.3.6.1.2.1.11.14

The total number of MIB objects that have been altered successfully by the SNMP protocol entity as the result of receiving valid SNMP Set-Request PDUs.

snmpInGetRequests 1.3.6.1.2.1.11.15

Status Mandatory

The total number of SNMP Get-Request PDUs that have been accepted and processed by the SNMP protocol entity.

snmpInGetNexts 1.3.6.1.2.1.11.16

The total number of SNMP Get-Next PDUs that have been accepted and processed by the SNMP protocol entity.

snmpInSetRequests 1.3.6.1.2.1.11.17

The total number of SNMP Set-Request PDUs that have been accepted and processed by the SNMP protocol entity.

snmpInGetResponses 1.3.6.1.2.1.11.18

The total number of SNMP Get-Response PDUs that have been accepted and processed by the SNMP protocol entity.

snmpInTraps 1.3.6.1.2.1.11.19

The total number of SNMP Trap PDUs that have been accepted and processed by the SNMP protocol entity.

snmpOutTooBigs 1.3.6.1.2.1.11.20

The total number of SNMP PDUs that were generated by the SNMP protocol entity and for which the value of the error-status field is too large.

snmpOutNoSuchNames 1.3.6.1.2.1.11.21

The total number of SNMP PDUs that were generated by the SNMP protocol entity and for which the value of the error-status field is “noSuchName.”

snmpOutBadValues 1.3.6.1.2.1.11.22

The total number of SNMP PDUs that were generated by the SNMP protocol entity and for which the value of the error-status field is “badValue.”

NOTE
1.3.6.1.2.1.11.23 is not supported.

snmpOutGenErrs 1.3.6.1.2.1.11.24

The total number of SNMP PDUs that were generated by the SNMP protocol entity and for which the value of the error-status field is “genErr.”

snmpOutGetRequests 1.3.6.1.2.1.11.25

The total number of SNMP Get-Request PDUs that have been generated by the SNMP protocol entity.

snmpOutGetNexts 1.3.6.1.2.1.11.26

The total number of SNMP Get-Next PDUs that have been generated by the SNMP protocol entity.

snmpOutSetRequests 1.3.6.1.2.1.11.27

The total number of SNMP Set-Request PDUs that have been generated by the SNMP protocol entity.

snmpOutGetResponses 1.3.6.1.2.1.11.28

The total number of SNMP Get-Response PDUs that have been generated by the SNMP protocol entity.

snmpOutTraps 1.3.6.1.2.1.11.29

The total number of SNMP Trap PDUs that have been generated by the SNMP protocol entity.

snmpEnableAuthenTraps 1.3.6.1.2.1.11.30

Indicates whether the SNMP agent process is permitted to generate authentication-failure traps. The value of this object overrides any configuration information; as such, it provides a means whereby all authentication-failure traps might be disabled.

Values Possible values are:

- enabled (1)
- disabled (2)

This object is stored in nonvolatile memory so that it remains constant between reinitializations of the switch.

snmpSilentDrops 1.3.6.1.2.1.11.31

The total number of Confirmed Class PDUs (such as GetRequest-PDUs, GetNextRequest-PDUs, GetBulkRequest-PDUs, SetRequest-PDUs, and InformRequest-PDUs) delivered to the SNMP entity and which were silently dropped because the size of a reply containing an alternate Response Class PDU (such as a Response-PDU) with an empty variable-bindings field was greater than either a local constraint or the maximum message size associated with the originator of the request.

snmpProxyDrops 1.3.6.1.2.1.11.32

The total number of Confirmed Class PDUs (such as GetRequest-PDUs, GetNextRequest-PDUs, GetBulkRequest-PDUs, SetRequest-PDUs, and InformRequest-PDUs) delivered to the SNMP entity and which were silently dropped because the transmission of the (possibly translated) message to a proxy target failed in a manner (other than a time-out) such that no Response Class PDU (such as a Response-PDU) could be returned.

RMON group

Remote network monitoring devices, often called monitors or probes, are instruments that exist for the purpose of managing a network. This MIB defines objects for managing remote network monitoring devices.

The groups supported under this are, statistics, alarm, event, and logTable.

rmonEventsV2 1.3.6.1.2.1.16.0

Definition point for RMON notifications.

risingAlarm 1.3.6.1.2.1.16.0.1

Objects

1. alarmIndex
2. alarmVariable
3. alarmSampleType
4. alarmValue
5. alarmRisingThreshold

The SNMP trap that is generated when an alarm entry crosses its rising threshold and generates an event that is configured for sending SNMP traps.

fallingAlarm 1.3.6.1.2.1.16.0.2

Objects

1. alarmIndex
2. alarmVariable
3. alarmSampleType

4. alarmValue

5. alarmFallingThreshold

The SNMP trap that is generated when an alarm entry crosses its falling threshold and generates an event that is configured for sending SNMP traps.

statistics 1.3.6.1.2.1.16.1

A collection of statistics kept for a particular Ethernet interface.

Set command Statistics are enabled on an Ethernet interface using the **rmon collection stats** <*stats-index*> command.

etherStatsTable 1.3.6.1.2.1.16.1.1

A list of Ethernet statistics entries.

etherStatsEntry 1.3.6.1.2.1.16.1.1.1

A collection of statistics kept for a particular Ethernet interface.

etherStatsIndex 1.3.6.1.2.1.16.1.1.1.1

The value of this object uniquely identifies this etherStats entry.

etherStatsDataSource 1.3.6.1.2.1.16.1.1.1.2

This object identifies the source of the data that this etherStats entry is configured to analyze. This source can be any Ethernet interface on this device. To identify a particular interface, this object will identify the instance of the ifIndex object, defined in RFC 1213 and RFC 1573 [4,6], for the desired interface.

etherStatsDropEvents 1.3.6.1.2.1.16.1.1.1.3

The total number of events in which packets were dropped by the probe due to lack of resources.

NOTE
This number is not necessarily the number of packets dropped; it is just the number of times this condition has been detected.

etherStatsOctets 1.3.6.1.2.1.16.1.1.1.4

The total number of octets of data (including those in bad packets) received on the network (excluding framing bits but including FCS octets). This object can be used as a reasonable estimate of Ethernet utilization.

etherStatsPkts 1.3.6.1.2.1.16.1.1.1.5

The total number of packets (including bad packets, broadcast packets, and multicast packets) received.

etherStatsBroadcastPkts 1.3.6.1.2.1.16.1.1.1.6

The total number of good packets received that were directed to the broadcast address.

NOTE
This does not include multicast packets.

etherStatsMulticastPkts 1.3.6.1.2.1.16.1.1.1.7

The total number of good packets received that were directed to a multicast address.

NOTE
This number does not include packets directed to the broadcast address.

etherStatsCRCAlignErrors 1.3.6.1.2.1.16.1.1.1.8

The total number of packets received that had a length (excluding framing bits, but including FCS octets) between 64 and 1518 octets, inclusive, but had one of the following errors:

- FCS error: A bad Frame Check Sequence (FCS) with an integral number of octets.
- Alignment error: A bad FCS with a non-integral number of octets.

etherStatsUndersizePkts 1.3.6.1.2.1.16.1.1.1.9

The total number of packets received that were less than 64 octets long (excluding framing bits, but including FCS octets) and were otherwise well formed.

etherStatsOversizePkts 1.3.6.1.2.1.16.1.1.1.10

The total number of packets received that were longer than 1518 octets (excluding framing bits, but including FCS octets) and were otherwise well formed.

etherStatsFragments 1.3.6.1.2.1.16.1.1.1.11

The total number of packets received that were less than 64 octets in length (excluding framing bits but including FCS octets) and had one of the following errors:

- FCS error: A bad FCS with an integral number of octets.
- Alignment error: A bad FCS with a non-integral number of octets.

NOTE
It is entirely normal for etherStatsFragments to increment. This is because it counts both runts (normal occurrences due to collisions) and noise hits.

etherStatsJabbers 1.3.6.1.2.1.16.1.1.1.12

The total number of packets received that were longer than 1518 octets (excluding framing bits, but including FCS octets), and had one of the following errors:

- FCS error: A bad FCS with an integral number of octets.
- Alignment error: A bad FCS with a non-integral number of octets.

etherStatsCollisions 1.3.6.1.2.1.16.1.1.1.13

The best estimate of the total number of collisions on this Ethernet segment. The value returned will depend on the location of the RMON probe.

etherStatsPkts64Octets 1.3.6.1.2.1.16.1.1.1.14

The total number of packets (including bad packets) received that were 64 octets in length (excluding framing bits but including FCS octets).

etherStatsPkts65to127Octets 1.3.6.1.2.1.16.1.1.1.15

The total number of packets (including bad packets) received that were between 65 and 127 octets in length inclusive (excluding framing bits but including FCS octets).

etherStatsPkts128to255Octets 1.3.6.1.2.1.16.1.1.1.16

The total number of packets (including bad packets) received that were between 128 and 255 octets in length inclusive (excluding framing bits but including FCS octets).

etherStatsPkts256to511Octets 1.3.6.1.2.1.16.1.1.1.17

The total number of packets (including bad packets) received that were between 256 and 511 octets in length inclusive (excluding framing bits but including FCS octets).

etherStatsPkts512to1023Octets 1.3.6.1.2.1.16.1.1.1.18

The total number of packets (including bad packets) received that were between 512 and 1023 octets in length inclusive (excluding framing bits but including FCS octets).

etherStatsPkts1024to15180ctets 1.3.6.1.2.1.16.1.1.1.19

The total number of packets (including bad packets) received that were between 1024 and 1518 octets in length inclusive (excluding framing bits but including FCS octets).

etherStatsOwner 1.3.6.1.2.1.16.1.1.1.20

The entity that configured this entry and is therefore using the resources assigned to it.

etherStatsStatus 1.3.6.1.2.1.16.1.1.1.21

The status of this etherStats entry.

history 1.3.6.1.2.1.16.2

A list of parameters that set up a periodic sampling of statistics.

Set command Use the **rmon collection history** <*index*> **command** to collect Ethernet group statistics on an interface.

historyControlTable 1.3.6.1.2.1.16.2.1

A list of history control entries.

historyControlEntry 1.3.6.1.2.1.16.2.1.1

A list of parameters that set up a periodic sampling of statistics.

historyControlIndex 1.3.6.1.2.1.16.2.1.1.1

An index that uniquely identifies an entry in the historyControl table. Each such entry defines a set of samples at a particular interval for an interface on the device.

historyControlDataSource 1.3.6.1.2.1.16.2.1.1.2

This object identifies the source of the data for which historical data was collected and placed in a media-specific table on behalf of this historyControlEntry. This source can be any interface on this device.

historyControlBucketsRequested 1.3.6.1.2.1.16.2.1.1.3

The requested number of discrete time intervals over which data is to be saved in the part of the media-specific table associated with this historyControlEntry.

historyControlBucketsGranted 1.3.6.1.2.1.16.2.1.1.4

The number of discrete sampling intervals over which data is to be saved in the part of the media-specific table associated with this historyControlEntry.

historyControlInterval 1.3.6.1.2.1.16.2.1.1.5

The interval in seconds over which the data is sampled for each bucket in the part of the media-specific table associated with this historyControlEntry. This interval can be set to any number of seconds between 1 and 3600 (1 hour). The default value is 1800.

historyControlOwner 1.3.6.1.2.1.16.2.1.1.6

The entity that configured this entry and is therefore using the resources assigned to it.

historyControlStatus 1.3.6.1.2.1.16.2.1.1.7

The status of this historyControl entry.

etherHistoryTable 1.3.6.1.2.1.16.2.2

A list of Ethernet history entries.

etherHistoryEntry 1.3.6.1.2.1.16.2.2.1

An historical sample of Ethernet statistics on a particular Ethernet interface.

etherHistoryIndex 1.3.6.1.2.1.16.2.2.1.1

The history of which this entry is a part. The history identified by a particular value of this index is the same history as identified by the same value of historyControlIndex.

etherHistorySampleIndex 1.3.6.1.2.1.16.2.2.1.2

An index that uniquely identifies the particular sample this entry represents among all samples associated with the same historyControlEntry. This index starts at 1 and increases by one as each new sample is taken.

etherHistoryIntervalStart 1.3.6.1.2.1.16.2.2.1.3

The value of sysUpTime at the start of the interval over which this sample was measured.

etherHistoryDropEvents 1.3.6.1.2.1.16.2.2.1.4

The total number of events in which packets were dropped by the probe due to lack of resources during this sampling interval.

NOTE
This number is not necessarily the number of packets dropped, it is just the number of times this condition has been detected.

etherHistoryOctets 1.3.6.1.2.1.16.2.2.1.5

The total number of octets of data (including those in bad packets) received on the network (excluding framing bits but including FCS octets).

etherHistoryPkts 1.3.6.1.2.1.16.2.2.1.6

The number of packets (including bad packets) received during this sampling interval.

etherHistoryBroadcastPkts 1.3.6.1.2.1.16.2.2.1.7

The number of good packets received during this sampling interval that were directed to the broadcast address.

etherHistoryMulticastPkts 1.3.6.1.2.1.16.2.2.1.8

The number of good packets received during this sampling interval that were directed to a multicast address.

NOTE
This number does not include packets addressed to the broadcast address

etherHistoryCRCAlignErrors 1.3.6.1.2.1.16.2.2.1.9

The number of packets received during this sampling interval that had a length (excluding framing bits but including FCS octets) between 64 and 1518 octets, inclusive, but had either a bad Frame Check Sequence (FCS) with an integral number of octets (FCS Error) or a bad FCS with a non-integral number of octets (Alignment Error).

etherHistoryUndersizePkts 1.3.6.1.2.1.16.2.2.1.10

The number of packets received during this sampling interval that were less than 64 octets long (excluding framing bits but including FCS octets) and were otherwise well formed.

etherHistoryOversizePkts 1.3.6.1.2.1.16.2.2.1.11

The number of packets received during this sampling interval that were longer than 1518 octets (excluding framing bits but including FCS octets) but were otherwise well formed.

etherHistoryFragments 1.3.6.1.2.1.16.2.2.1.12

The total number of packets received during this sampling interval that were less than 64 octets in length (excluding framing bits but including FCS octets), and had either a bad Frame Check Sequence (FCS) with an integral number of octets (FCS Error) or a bad FCS with a non-integral number of octets (Alignment Error).

etherHistoryJabbers 1.3.6.1.2.1.16.2.2.1.13

The number of packets received during this sampling interval that were longer than 1518 octets (excluding framing bits but including FCS octets), and had either a bad Frame Check Sequence (FCS) with an integral number of octets (FCS Error) or a bad FCS with a non-integral number of octets (Alignment Error).

etherHistoryCollisions 1.3.6.1.2.1.16.2.2.1.14

The best estimate of the total number of collisions on this Ethernet segment during this sampling interval.

etherHistoryUtilization 1.3.6.1.2.1.16.2.2.1.15

The best estimate of the mean physical layer network utilization on this interface during this sampling interval, in hundredths of a percent.

alarm 1.3.6.1.2.1.16.3

A list of alarm entries. A list of parameters that set up a periodic checking for alarm conditions.

Set command An alarm is created using the **rmon alarm** <*alarm-id*> command.

alarmTable 1.3.6.1.2.1.16.3.1

A list of alarm entries.

alarmEntry 1.3.6.1.2.1.16.3.1.1

A list of parameters that set up a periodic checking for alarm conditions.

alarmIndex 1.3.6.1.2.1.16.3.1.1.1

An index that uniquely identifies an entry in the alarm table. Each such entry defines a diagnostic sample at a particular interval for an object on the device.

alarmInterval 1.3.6.1.2.1.16.3.1.1.2

The interval in seconds over which the data is sampled and compared with the rising and falling thresholds.

alarmVariable 1.3.6.1.2.1.16.3.1.1.3

The object identifier of the particular variable to be sampled.

alarmSampleType 1.3.6.1.2.1.16.3.1.1.4

The method of sampling the selected variable and calculating the value to be compared against the thresholds.

If the value of this object is absoluteValue(1), the value of the selected variable will be compared directly with the thresholds at the end of the sampling interval. If the value of this object is deltaValue(2), the value of the selected variable at the last sample will be subtracted from the current value, and the difference compared with the thresholds. This object may not be modified if the associated alarmStatus object is equal to valid(1).

alarmValue 1.3.6.1.2.1.16.3.1.1.5

The value of the statistic during the last sampling period.

alarmStartupAlarm 1.3.6.1.2.1.16.3.1.1.6

The alarm that may be sent when this entry is first set to valid.

alarmRisingThreshold 1.3.6.1.2.1.16.3.1.1.7

A threshold for the sampled statistic. When the current sampled value is greater than or equal to this threshold and the value at the last sampling interval was less than this threshold, a single event will be generated.

After a rising event is generated, another such event will not be generated until the sampled value falls below this threshold and reaches the alarmFallingThreshold.

alarmFallingThreshold 1.3.6.1.2.1.16.3.1.1.8

A threshold for the sampled statistic. When the current sampled value is less than or equal to this threshold, and the value at the last sampling interval was greater than this threshold, a single event will be generated. After a falling event is generated, another such event will not be generated until the sampled value rises above this threshold and reaches the alarmRisingThreshold.

alarmRisingEventIndex 1.3.6.1.2.1.16.3.1.1.9

The index of the eventEntry that is used when a rising threshold is crossed.

alarmFallingEventIndex 1.3.6.1.2.1.16.3.1.1.10

The index of the eventEntry that is used when a falling threshold is crossed.

alarmOwner 1.3.6.1.2.1.16.3.1.1.11

The entity that configured this entry and is therefore using the resources assigned to it.

alarmStatus 1.3.6.1.2.1.16.3.1.1.12

The status of this alarm entry.

event 1.3.6.1.2.1.16.9

A set of parameters that describe an event to be generated when certain conditions are met.

Set command An event is created using the **rmon event** <*event-id*> command.

eventTable 1.3.6.1.2.1.16.9.1

A list of events to be generated.

eventEntry 1.3.6.1.2.1.16.9.1.1

A set of parameters that describe an event to be generated when certain conditions are met.

eventIndex 1.3.6.1.2.1.16.9.1.1.1

An index that uniquely identifies an entry in the event table. Each such entry defines one event that is to be generated when the appropriate conditions occur.

eventDescription 1.3.6.1.2.1.16.9.1.1.2

A comment describing this event entry.

eventType 1.3.6.1.2.1.16.9.1.1.3

The type of notification that the probe will make about this event.

In the case of a log, an entry is made in the log table for each event. In the case of snmp-trap, an SNMP trap is sent to one or more management stations.

eventCommunity 1.3.6.1.2.1.16.9.1.1.4

If an SNMP trap is to be sent, it will be sent to the SNMP community specified by this octet string.

eventLastTimeSent 1.3.6.1.2.1.16.9.1.1.5

The value of sysUpTime at the time this event entry last generated an event. If this entry has not generated any events, this value will be zero.

eventOwner 1.3.6.1.2.1.16.9.1.1.6

The entity that configured this entry and is therefore using the resources assigned to it. If this object contains a string starting with 'monitor' and has associated entries in the log table, all connected management stations should retrieve those log entries, as they may have significance to all management stations connected to this device.

eventStatus 1.3.6.1.2.1.16.9.1.1.7

The status of this event entry. If this object is not equal to valid (1), all associated log entries will be deleted by the agent.

logTable 1.3.6.1.2.1.16.9.2

A set of data describing an event that has been logged.

logEntry 1.3.6.1.2.1.16.9.2.1

A set of data describing an event that has been logged.

logEventIndex 1.3.6.1.2.1.16.9.2.1.1

The event entry that generated this log entry. The log identified by a particular value of this index is associated with the same eventEntry as identified by the same value of eventIndex.

logIndex 1.3.6.1.2.1.16.9.2.1.2

An index that uniquely identifies an entry in the log table amongst those generated by the same eventEntries.

logTime 1.3.6.1.2.1.16.9.2.1.3

The value of sysUpTime when this log entry was created.

logDescription 1.3.6.1.2.1.16.9.2.1.4

An implementation-dependent description of the event that activated this log entry.

ifMIB group

The ifMIB group is implemented to support FCIP tunnels. There are entries in the ifXTable for each WAN interface (GbE port), each FC port, and each FCIP tunnel (transport interface). The ifXtable is used to support 64 bit FC statistics counters.

ifXTable 1.3.6.1.2.1.31.1.1

A list of interface entries. The number of entries is given by the value of ifNumber. This table contains additional objects for the interface table.

ifXentry 1.3.6.1.2.1.31.1.1.1

An entry in the ifXtable containing additional management information applicable to a particular interface.

ifName 1.3.6.1.2.1.31.1.1.1.1

The textual name of the interface. The value of this object should be the name of the interface as assigned by the local device and should be suitable for use in commands entered at the devices console. This might be a text name, such as `le0 or a simple port number, such as `1, depending on the interface naming syntax of the device. If several entries in the iftable together represent a single interface as named by the device, then each will have the same value of ifName. Note that for an agent which responds to SNMP queries concerning an interface on some other (proxied) device, then the value of ifName for such an interface is the proxied devices local name for it. If there is no local name, or this object is otherwise not applicable, then this object contains a zero-length string.

ifInMulticastPkts 1.3.6.1.2.1.31.1.1.1.2

The number of packets, delivered by this sub-layer to a higher (sub-)layer, which were addressed to a multicast address at this sub-layer. For a MAC layer protocol, this includes both Group and Functional addresses. 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 ifCounterDiscontinuityTime.

Not supported.

ifInBroadcastPkts 1.3.6.1.2.1.31.1.1.1.3

The number of packets, delivered by this sub-layer to a higher (sub-)layer, which were addressed to a broadcast address at this sub-layer. 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 ifCounterDiscontinuityTime.

Not supported.

ifOutMulticastPkts 1.3.6.1.2.1.31.1.1.1.4

The total number of packets that higher-level protocols requested be transmitted, and which were addressed to a multicast address at this sub-layer, including those that were discarded or not sent. For a MAC layer protocol, this includes both Group and Functional addresses. 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 ifCounterDiscontinuityTime.

Not supported.

ifOutBroadcastPkts 1.3.6.1.2.1.31.1.1.1.5

The total number of packets that higher-level protocols requested be transmitted, and which were addressed to a Broadcast address at this sub-layer, including those that were discarded or not sent. For a MAC layer protocol, this includes both Group and Functional addresses. 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 ifCounterDiscontinuityTime

Not supported.

ifHCInOctets 1.3.6.1.2.1.31.1.1.1.6

The total number of octets received on the interface, including framing characters. This object is a 64-bit version of ifInOctets. 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 ifCounterDiscontinuityTime

ifHCInUcastPkts 1.3.6.1.2.1.31.1.1.1.7

The number of packets, delivered by this sub-layer to a higher (sub-)layer, which were not addressed to a multicast or broadcast address at this sub-layer. This object is a 64-bit version of ifInUcastPkts. 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 ifCounterDiscontinuityTime.

ifHCInMulticastPkts 1.3.6.1.2.1.31.1.1.1.8

The number of packets, delivered by this sub-layer to a higher (sub-)layer, which were addressed to a multicast address at this sub-layer. For a MAC layer protocol, this includes both Group and Functional addresses. This object is a 64-bit version of ifInMulticastPkts. 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 ifCounterDiscontinuityTime.

Not supported.

ifHCInBroadcastPkts 1.3.6.1.2.1.31.1.1.1.9

The number of packets, delivered by this sub-layer to a higher (sub-)layer, which were addressed to a broadcast address at this sub-layer. This object is a 64-bit version of ifInBroadcastPkts. 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 ifCounterDiscontinuityTime

Not supported.

ifHCOutOctets 1.3.6.1.2.1.31.1.1.1.10

The total number of octets transmitted out of the interface, including framing characters. This object is a 64-bit version of ifOutOctets. 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 ifCounterDiscontinuityTime.

ifHCOutUcastPkts 1.3.6.1.2.1.31.1.1.1.11

The total number of packets that higher-level protocols requested be transmitted, and which were not addressed to a multicast or broadcast address at this sub-layer, including those that were discarded or not sent. This object is a 64-bit version of ifOutUcastPkts. 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 ifCounterDiscontinuityTime.

ifHCOutMulticastPkts 1.3.6.1.2.1.31.1.1.1.12

The total number of packets that higher-level protocols requested be transmitted, and which were addressed to a multicast address at this sub-layer, including those that were discarded or not sent. For a MAC layer protocol, this includes both Group and Functional addresses. This object is a 64-bit version of ifOutMulticastPkts. 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 ifCounterDiscontinuityTime

Not supported.

ifHCOutBroadcastPkts 1.3.6.1.2.1.31.1.1.1.13

The total number of packets that higher-level protocols requested be transmitted, and which were addressed to a broadcast address at this sub-layer, including those that were discarded or not sent. This object is a 64-bit version of ifOutBroadcastPkts. 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 ifCounterDiscontinuityTime.

Not supported.

ifLinkUpDownTrapEnable 1.3.6.1.2.1.31.1.1.1.14

Indicates whether linkUp or linkDown traps should be generated for this interface. By default, this object should have the value enabled (1) for interfaces which do not operate on any other interface (as defined in the ifStackTable), and disabled (2) otherwise.

ifHighSpeed 1.3.6.1.2.1.31.1.1.1.15

An estimate of the current operational speed of the interface in millions of bits per second. A unit of 1000 equals 1,000,000 bps. For 1 Gbps, the value is 1000, for 2 Gbps, the value is 2000, and so on.

ifPromiscuousMode 1.3.6.1.2.1.31.1.1.1.16

This object has a value of false(2) if this interface only accepts packets or frames that are addressed to this station. This object has a value of true(1) when the station accepts all packets or frames transmitted on the media. The value true(1) is only legal on certain types of media. If legal, setting this object to a value of true(1) may require the interface to be reset before becoming effective. The value of ifPromiscuousMode does not affect the reception of broadcast and multicast packets or frames by the interface.

Hard-coded to false.

ifConnectorPresent 1.3.6.1.2.1.31.1.1.1.17

Set to true when media is connected, otherwise false. For virtual FC ports, it is always false.

ifAlias 1.3.6.1.2.1.31.1.1.1.18

This object is an alias name for the interface as specified by a network manager, and provides a non-volatile handle for the interface. On the first instantiation of an interface, the value of ifAlias associated with that interface is the zero-length string. As and when a value is written into an instance of ifAlias through a network management set operation, then the agent must retain the supplied value in the ifAlias instance associated with the same interface for as long as that interface remains instantiated, including across all re-initializations or reboots of the network management system, including those which result in a change of the interfaces ifIndex value. An example of the value which a network manager might store in this object for a WAN interface is the (Telcos) circuit number or identifier of the interface. Some agents may support write-access only for interfaces having particular values of iftype. An agent which supports write access to this object is required to keep the value in non-volatile storage, but it may limit the length of new values depending on how much storage is already occupied by the current values for other interfaces.

Not supported.

ifCounterDiscontinuityTime 1.3.6.1.2.1.31.1.1.1.19

The value of sysUpTime on the most recent occasion at which any one or more of this interfaces counters suffered a discontinuity. The relevant counters are the specific instances associated with this interface of any Counter32 or Counter64 object contained in the iftable or ifXTable. If no such discontinuities have occurred since the last re-initialization of the local management subsystem, then this object contains a zero value.

Not supported.

Generic traps

coldStart 1.3.6.1.6.3.1.1.5.1

A coldStart trap signifies that the sending protocol entity is reinitializing itself such that the agent's configuration or the protocol entity implementation may be altered.

This trap is generated for the following switch events:

- reboot
- fastboot

Warmstart 1.3.6.1.6.3.1.1.5.2

This trap is not supported for Network OS v2.0.0.

linkDown 1.3.6.1.6.3.1.1.5.3

A linkDown trap signifies that the sending protocol entity recognizes a failure in one of the communication links represented in the agent's configuration.

linkup 1.3.6.1.6.3.1.1.5.4

A linkUp trap signifies that the sending protocol entity recognizes that one of the communication links represented in the agent's configuration has come up.

Entity MIB

Entity MIB is the module for representing multiple logical entities supported by a single SNMP agent.

Definitions for Entity MIB

Table 3 lists the objects or definitions that are imported into the Entity MIB and the modules from which they are imported.

TABLE 3 Objects imported into the Entity MIB

Object	Imported from this module
MODULE-IDENTITY	SNMPv2-SMI
OBJECT-TYPE	
NOTIFICATION-TYPE	
mib-2	
TDomain	SNMPv2-TC
TAddress	
TEXTUAL-CONVENTION	
AutonomousType	
RowPointer	
TimeStamp	
TruthValue	
MODULE-COMPLIANCE	SNMPv2-CONF
OBJECT-GROUP	
NOTIFICATION-GROUP	
SnmpAdminString	SNMP-FRAMEWORK-MIB

Textual conventions for Entity MIB

PhysicalIndex

Arbitrary value that uniquely identifies the physical entity. Value should be a small positive integer; index values for different physical entities are not necessarily contiguous.

Syntax Integer (1... 2147483647)

PhysicalClass

An enumerated value that provides an indication of the general hardware type of a particular physical entity. There are no restrictions as to the number of entPhysicalEntries of each entPhysicalClass, which must be instantiated by an agent.

Syntax Integer

Table 4 lists the possible values for PhysicalClass.

TABLE 4 Possible values for PhysicalClass

Values	Description
other (1)	The physical entity class is known but does not match any of the supported values.
unknown (2)	The physical entity class is unknown to the agent.
chassis (3)	The physical entity class is an overall container for networking equipment. Any class of physical entity except a stack can be contained within a chassis, and a chassis might be contained only within a stack.
backplane (4)	The physical entity class is a device for aggregating and forwarding networking traffic, such as a shared backplane in a modular Ethernet switch. Note that an agent might model a backplane as a single physical entity, which is actually implemented as multiple discrete physical components (within a chassis or stack).
container (5)	The physical entity class is capable of containing one ore more removable physical entities, possibly of different types (such as a chassis slot or daughter-card holder). For example, each (empty or full) slot in a chassis is modeled as a container. Note that all removable physical entities should be modeled within a container entity, such as field-replaceable modules, fans, or power supplies. Note that all known containers, including empty containers, should be modeled by the agent.
powerSupply (6)	The physical entity class is a power-supplying component.
fan (7)	The physical entity class is a fan or other heat-reduction component.
sensor (8)	The physical entity class is a sensor, such as a temperature sensor within a router chassis.
module (9)	The physical entity class is a self-contained subsystem (such as a plug-in card or daughter-card). If it is removable, then it should be modeled within a container entity; otherwise, it should be modeled directly within another physical entity (for example, a chassis or another module).
port (10)	The physical entity class is a networking port, capable of receiving or transmitting networking traffic.
stack (11)	The physical entity class is a super-container (possibly virtual), intended to group together multiple chassis entities (such as a stack of multiple chassis entities). A stack might be realized by a virtual cable or a real interconnect cable attached to multiple chassis, or it can comprise multiple interconnect cables. A stack should not be modeled within any other physical entities, but a stack might be contained within another stack. Only chassis entities should be contained within a stack.

SnmpEngineIdOrNone

A specially formatted SnmpEngineID string for use with the Entity MIB.

If an instance of an object with syntax SnmpEngineIdOrNone has a non-zero length, then the object encoding and semantics are defined by the SnmpEngineID textual convention (Refer to RFC 2571 [RFC2571]).

If an instance of an object with syntax SnmpEngineIdOrNone contains a zero-length string, then no appropriate SnmpEngineID is associated with the logical entity (that is, SNMPv3 not supported).

If the WWN cannot be taken, the snmpEngineID takes the IP address + port number along with the private enterprise number and algorithm type used. An example of this type of snmpEngineID would be `00.00.06.34.00.00.00.A1.0A.20.93.CA (hex)`

Syntax OCTET STRING (SIZE(0..32)) Empty string or SnmpEngineID

Entity MIB objects

The Entity MIB objects are divided into the following groups:

The following sections list the MIBs in each group.

Physical Entity group

entPhysicalTable 1.3.6.1.2.1.47.1.1.1

Table 5 contains one row per physical entity (Figure 25). The table always contains at least one row for an “overall” physical entity.

The “overall” physical entry for Brocade is the chassis, and in Network OS v2.0.0 it is marked as a FRU.

TABLE 5 entPhysicalTable entries for Brocade switches

Platform	Blades	Fans	Power supply	WWN card
Brocade VDX 6720-24	Standalone	2 FRUs	2 PS	1 WWN unit
Brocade VDX 6720-60	Standalone	3 FRUs	2 PS	1 WWN unit

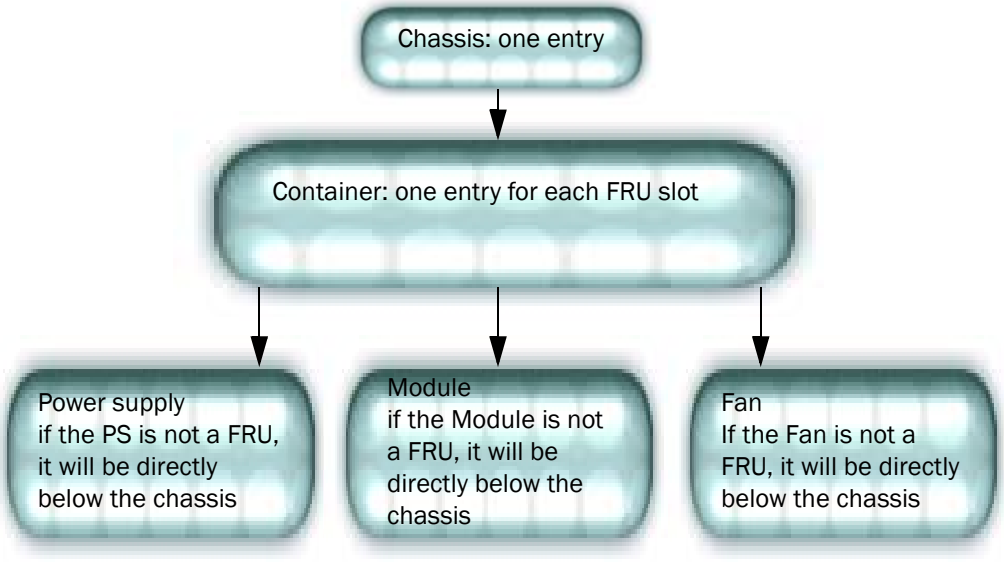

FIGURE 25 entPhysicalTable containment hierarchy (entPhysicalContainsTable)

entPhysicalEntry 1.3.6.1.2.1.47.1.1.1.1

Information about a particular physical entity.

Each entry provides objects (entPhysicalDescr, entPhysicalVendorType, and entPhysicalClass) to help an NMS identify and characterize the entry, and objects (entPhysicalContainedIn and entPhysicalParentRelPos) to help an NMS relate the particular entry to other entries in this table.

Index 1: entPhysicalIndex

entPhysicalIndex 1.3.6.1.2.1.47.1.1.1.1.1

The index for this entry. This object is not accessible.

entPhysicalDescr 1.3.6.1.2.1.47.1.1.1.1.2

A textual description of the physical entity (physical name of the entity, such as chassis, blade, port, and so on). This object should contain a string that identifies the entity manufacturer's name and should be set to a distinct value for each version or model of the physical entity.

The name provides the entity type and number (for example, slot 1, power supply, and so on). The description gives the textual description of the type of the entry (for example, power supply, module, and so on).

entPhysicalVendorType 1.3.6.1.2.1.47.1.1.1.1.3

An indication of the vendor-specific hardware type of the physical entity. Note that this is different from the definition of MIB-II sysObjectID.

An agent should set this object to an enterprise-specific registration identifier value, indicating the specific equipment type in detail. The associated instance of entPhysicalClass indicates the general type of hardware device.

If no vendor-specific registration identifier exists for this physical entity, or if the value is unknown by this agent, then the value {0, 0} is returned.

Returns Currently, NULL OID {0, 0} is returned.

entPhysicalContainedIn 1.3.6.1.2.1.47.1.1.1.1.4

The value of entPhysicalIndex for the physical entity that “contains” this physical entity. A value of 0 indicates this physical entity is not contained in any other physical entity. Note that the set of containment relationships define a strict hierarchy; that is, recursion is not allowed.

In the event a physical entity is contained by more than one physical entity (for example, double-wide modules), this object should identify the containing entity with the lowest value of entPhysicalIndex.

Value 0 for chassis entry. All containers have ContainedIn set to 1. All FRUs are contained in their respective slot container entries.

entPhysicalClass 1.3.6.1.2.1.47.1.1.1.1.5

An indication of the general hardware type of the physical entity.

An agent should set this object to the standard enumeration value that most accurately indicates the general class of the physical entity, or the primary class if there is more than one.

If no appropriate standard registration identifier exists for this physical entity, then the value other (1) is returned. If the value is unknown by this agent, then the value unknown (2) is returned.

entPhysicalParentRelPos 1.3.6.1.2.1.47.1.1.1.1.6

An indication of the relative position of this child component among all its *sibling* components. Sibling components are defined as entPhysicalEntries that share the same instance values of each of the entPhysicalContainedIn and entPhysicalClass objects.

For chassis entry, this value is -1; for containers, it is the sequential number of the container from the first one; for all FRUs, it is always 1.

An NMS can use this object to identify the relative ordering for all sibling components of a particular parent (identified by the entPhysicalContainedIn instance in each sibling entry).

This value should match any external labeling of the physical component if possible. For example, for a container (such as a card slot) labeled slot #3, entPhysicalParentRelPos should have the value 3. Note that the entPhysicalEntry for the module plugged into slot 3 should have an entPhysicalParentRelPos value of 1.

If the physical position of this component does not match any external numbering or clearly visible ordering, then user documentation or other external reference material should be used to determine the parent-relative position. If this is not possible, then the agent should assign a consistent (but possibly arbitrary) ordering to a given set of sibling components, perhaps based on internal representation of the components.

If the agent cannot determine the parent-relative position for some reason, or if the associated value of entPhysicalContainedIn is 0, then the value -1 is returned; otherwise, a non-negative integer is returned, indicating the parent-relative position of this physical entity.

Parent-relative ordering normally starts from 1 and continues to *n*, where *n* represents the highest-positioned child entity. However, if the physical entities (for example, slots) are labeled from a starting position of zero, then the first sibling should be associated with an entPhysicalParentRelPos value of 0. Note that this ordering might be sparse or dense, depending on agent implementation.

The actual values returned are not globally meaningful, as each parent component might use different numbering algorithms. The ordering is meaningful only among siblings of the same parent component.

The agent should retain parent-relative position values across reboots, either through algorithmic assignment or use of nonvolatile storage.

entPhysicalName 1.3.6.1.2.1.47.1.1.1.1.7

The textual name of the physical entity (physical name of the entity such as chassis, blade, port, and so on). The value of this object should be the name of the component as assigned by the local device and should be suitable for use in commands entered at the device's "console." This might be a text name, such as "console," or a simple component number (for example, port or module number) such as 1, depending on the physical component naming syntax of the device.

If there is no local name, or this object is otherwise not applicable, then this object contains a zero-length string.

Note that the value of entPhysicalName for two physical entities is the same in the event that the console interface does not distinguish between them (for example, slot-1 and the card in slot-1).

The name provides the type of the entry and its number (for example, slot 1, power supply, and so on). The description gives the textual description of the type of the entry (for example, power supply, module, and so on)

entPhysicalHardwareRev 1.3.6.1.2.1.47.1.1.1.1.8

The vendor-specific hardware revision string for the physical entity. The preferred value is the hardware revision identifier actually printed on the component itself (if present).

Note that if revision information is stored internally in a nonprintable (for example, binary) format, then the agent must convert such information to a printable format, in an implementation-specific manner.

If no specific hardware revision string is associated with the physical component, or if this information is unknown to the agent, then this object will contain a zero-length string.

Set to an empty string.

entPhysicalFirmwareRev 1.3.6.1.2.1.47.1.1.1.1.9

The vendor-specific firmware revision string for the physical entity.

Note that if revision information is stored internally in a nonprintable (for example, binary) format, then the agent must convert such information to a printable format, in an implementation-specific manner.

If no specific firmware programs are associated with the physical component, or if this information is unknown to the agent, then this object will contain a zero-length string.

Set to an empty string.

entPhysicalSoftwareRev 1.3.6.1.2.1.47.1.1.1.1.10

The vendor-specific software revision string for the physical entity.

Note that if revision information is stored internally in a nonprintable (for example, binary) format, then the agent must convert such information to a printable format, in an implementation-specific manner.

If no specific software programs are associated with the physical component, or if this information is unknown to the agent, then this object will contain a zero-length string.

Set to empty string.

entPhysicalSerialNum 1.3.6.1.2.1.47.1.1.1.1.11

The vendor-specific serial number string for the physical entity. The preferred value is the serial number actually printed on the component (if present).

On the first instantiation of a physical entity, the value of entPhysicalSerialNum associated with that entity is set to the correct vendor-assigned serial number, if this information is available to the agent. If a serial number is unknown or nonexistent, the entPhysicalSerialNum is set to a zero-length string instead.

Note that implementations that can correctly identify the serial numbers of all installed physical entities do not need to provide write access to the entPhysicalSerialNum object. Agents that cannot provide nonvolatile storage for the entPhysicalSerialNum strings are not required to implement write access for this object.

Not every physical component has a serial number or even needs one. Physical entities for which the associated value of the entPhysicalIsFRU object is equal to “false(2)” (for example, the repeater ports within a repeater module), do not need their own unique serial number. An agent does not have to provide write access for such entities and might return a zero-length string.

If write access is implemented for an instance of entPhysicalSerialNum and a value is written into the instance, the agent must retain the supplied value in the entPhysicalSerialNum instance associated with the same physical entity for as long as that entity remains instantiated. This includes instantiations across all reinitializations/reboots of the network management system, including those that result in a change of the physical entity’s entPhysicalIndex value.

Set to serial number and part number (if available), respectively.

entPhysicalMfgName 1.3.6.1.2.1.47.1.1.1.1.12

The name of the manufacturer of this physical component. The preferred value is the name actually printed on the component (if present).

Note that comparisons between instances of the entPhysicalModelName, entPhysicalFirmwareRev, entPhysicalSoftwareRev, and the entPhysicalSerialNum objects are meaningful only amongst entPhysicalEntries with the same value of entPhysicalMfgName.

If the manufacturer name string associated with the physical component is unknown to the agent, then this object contains a zero-length string.

Set to empty string.

entPhysicalModelName 1.3.6.1.2.1.47.1.1.1.1.13

The vendor-specific model name associated with this physical component. The preferred value is the customer-visible part number, which might be printed on the component.

If the model name string associated with the physical component is unknown to the agent, then this object contains a zero-length string.

Set to serial number and part number (if available) respectively.

entPhysicalAlias 1.3.6.1.2.1.47.1.1.1.1.14

This object is an alias name for the physical entity as specified by a network manager; it provides a nonvolatile handle for the physical entity.

On the first instantiation of a physical entity, the value of entPhysicalAlias associated with that entity is set to the zero-length string. However, the agent might set the value to a locally unique default value instead of a zero-length string.

If write access is implemented for an instance of entPhysicalAlias and a value is written into the instance, the agent must retain the supplied value in the entPhysicalAlias instance associated with the same physical entity for as long as that entity remains instantiated. This includes instantiations across all reinitializations/reboots of the network management system, including those that result in a change of the physical entity's entPhysicalIndex value.

Set to empty string.

entPhysicalAssetID 1.3.6.1.2.1.47.1.1.1.1.15

This object is a user-assigned asset tracking identifier for the physical entity as specified by a network manager; it provides nonvolatile storage of this information.

On the first instantiation of a physical entity, the value of entPhysicalAssetID associated with that entity is set to the zero-length string.

Not every physical component has an asset tracking identifier or even need one. Physical entities for which the associated value of the entPhysicalIsFRU object is equal to "false (2)" (for example, the repeater ports within a repeater module) do not need their own unique asset tracking identifier. An agent does not have to provide write access for such entities and might instead return a zero-length string.

If write access is implemented for an instance of entPhysicalAssetID and a value is written into the instance, the agent must retain the supplied value in the entPhysicalAssetID instance associated with the same physical entity for as long as that entity remains instantiated. This includes instantiations across all re-initializations/reboots of the network management system, including those that result in a change of the physical entity's entPhysicalIndex value.

If no asset tracking information is associated with the physical component, then this object contains a zero-length string.

Set to empty string.

entPhysicalIsFRU 1.3.6.1.2.1.47.1.1.1.1.16

The entPhysicalIsFRU object indicates whether this physical entity is considered a field replaceable unit by the vendor. If this object contains the value "true (1)," then this entPhysicalEntry identifies a field replaceable unit. For all entPhysicalEntries representing components that are permanently contained within a field replaceable unit, the value "false (2)" should be returned for this object.

Set to True (1) for FRU entries (port blades, CPs, sensors, power supplies, and fans; False (2) for container and chassis type entries.

Logical Entity group

Not supported.

entLogicalTable 1.3.6.1.2.1.47.1.2.1

This table contains one row per logical entity. For agents that implement more than one naming scope, at least one entry must exist. Agents that instantiate all MIB objects within a single naming scope are not required to implement this table.

entLogicalEntry 1.3.6.1.2.1.47.1.2.1.1

Information about a particular logical entity. Entities might be managed by this agent or other SNMP agents in the same chassis.

Index entLogicalIndex

entLogicalIndex 1.3.6.1.2.1.47.1.2.1.1.1

The value of this object uniquely identifies the logical entity. The value should be a small positive integer; index values for different logical entities are not necessarily contiguous.

entLogicalDescr 1.3.6.1.2.1.47.1.2.1.1.2

A textual description of the logical entity. This object should contain a string that identifies the manufacturer's name for the logical entity and should be set to a distinct value for each version of the logical entity.

entLogicalType 1.3.6.1.2.1.47.1.2.1.1.3

An indication of the type of logical entity. This is typically the Object Identifier name of the node in the SMI's naming hierarchy that represents the major MIB module, or the majority of the MIB modules, supported by the logical entity.

- A logical entity of a regular host/router -> mib-2
- A logical entity of a 802.1d bridge -> dot1dBridge
- A logical entity of a 802.3 repeater -> snmpDot3RptrMgmt

If an appropriate node in the SMI's naming hierarchy cannot be identified, the value mib-2 should be used.

entLogicalCommunity 1.3.6.1.2.1.47.1.2.1.1.4

An SNMPv1 or SNMPv2C community string, which can be used to access detailed management information for this logical entity. The agent should allow read access with this community string (to an appropriate subset of all managed objects) and might also return a community string based on the privileges of the request used to read this object.

Note that an agent might return a community string with read-only privileges, even if this object is accessed with a read-write community string. However, the agent must take care not to return a community string that allows more privileges than the community string used to access this object.

A compliant SNMP agent might want to conserve naming scopes by representing multiple logical entities in a single default naming scope. This is possible when the logical entities represented by the same value of entLogicalCommunity have no object instances in common. For example, "bridge1" and "repeater1" might be part of the main naming scope, but at least one additional community string is needed to represent "bridge2" and "repeater2."

Logical entities "bridge1" and "repeater1" would be represented by sysOREntries associated with the default naming scope.

For agents not accessible through SNMPvl or SNMPv2C, the value of this object is the empty string. This object might also contain an empty string if a community string has not yet been assigned by the agent, or no community string with suitable access rights can be returned for a particular SNMP request.

Note that this object is deprecated. Agents that implement SNMPv3 access should use the entLogicalContextEngineID and entLogicalContextName objects to identify the context associated with each logical entity. SNMPv3 agents might return a zero-length string for this object or might continue to return a community string (for example, tri-lingual agent support).

entLogicalTAddress 1.3.6.1.2.1.47.1.2.1.1.5

The transport service address by which the logical entity receives network management traffic, formatted according to the corresponding value of entLogicalTDomain.

For snmpUDPDomain, a TAddress is 6 octets long, the initial 4 octets containing the IP-address in network-byte order and the last 2 containing the UDP port in network-byte order. Refer to *Transport Mappings for Version 2 of the Simple Network Management Protocol* (RFC1906) for further information on snmpUDPDomain.

entLogicalTDomain 1.3.6.1.2.1.47.1.2.1.1.6

Indicates the kind of transport service by which the logical entity receives network management traffic. Possible values for this object are currently found in the *Transport Mappings for SNMPv2* document (RFC1906).

entLogicalContextEngineID 1.3.6.1.2.1.47.1.2.1.1.7

The authoritative contextEngineID that can be used to send an SNMP message concerning information held by this logical entity to the address specified by the associated entLogicalTAddress/entLogicalTDomain pair.

This object, together with the associated entLogicalContextName object, defines the context associated with a particular logical entity; it allows access to SNMP engines identified by a contextEngineId and contextName pair.

If no value has been configured by the agent, a zero-length string is returned, or the agent might choose not to instantiate this object at all.

entLogicalContextName 1.3.6.1.2.1.47.1.2.1.1.8

The contextName that can be used to send an SNMP message concerning information held by this logical entity to the address specified by the associated entLogicalTAddress/entLogicalTDomain pair.

This object, together with the associated entLogicalContextEngineID object, defines the context associated with a particular logical entity and allows access to SNMP engines identified by a contextEngineId and contextName pair.

If no value has been configured by the agent, a zero-length string is returned, or the agent might choose not to instantiate this object at all.

Entity Mapping group

entLPMappingTable 1.3.6.1.2.1.47.1.3.1

This table contains zero or more rows of logical entity to physical equipment associations. For each logical entity known by this agent, there are zero or more mappings to the physical resources used to realize that logical entity.

An agent should limit the number and nature of entries in this table such that only meaningful and nonredundant information is returned. For example, in a system that contains a single power supply, mappings between logical entities and the power supply are not useful and should not be included.

Also, only the most appropriate physical component that is closest to the root of a particular containment tree should be identified in an entLPMapping entry.

Suppose a bridge is realized on a particular module and all ports on that module are ports on this bridge. A mapping between the bridge and the module would be useful, but additional mappings between the bridge and each of the ports on that module would be redundant (since the entPhysicalContainedIn hierarchy can provide the same information). If, however, more than one bridge was utilizing ports on this module, then mappings between each bridge and the ports it used would be appropriate.

Also, in the case of a single backplane repeater, a mapping for the backplane to the single repeater entity is not necessary.

Not supported.

entLPMappingEntry 1.3.6.1.2.1.47.1.3.1.1

Information about a particular logical entity to physical equipment association. Note that the nature of the association is not specifically identified in this entry. It is expected that sufficient information exists in the MIBs used to manage a particular logical entity to infer how physical component information is utilized.

Not supported.

Index entLogicalIndex
entLPPhysicalIndex

entLPPhysicalIndex 1.3.6.1.2.1.47.1.3.1.1.1

The value of this object identifies the index value of a particular entPhysicalEntry associated with the indicated entLogicalEntity.

Not supported.

entAliasMappingTable 1.3.6.1.2.1.47.1.3.2

This table contains zero or more rows, representing mappings of logical entity and physical component to external MIB identifiers. Each physical port in the system might be associated with a mapping to an external identifier, which itself is associated with a particular logical entity's naming scope. A wildcard mechanism is provided to indicate that an identifier is associated with more than one logical entity.

Not supported.

entAliasMappingEntry 1.3.6.1.2.1.47.1.3.2.1

Information about a particular physical equipment, logical entity to external identifier binding. Each logical entity/physical component pair might be associated with one alias mapping. The logical entity index might also be used as a wildcard (Refer to "entAliasLogicalIndexOrZero 1.3.6.1.2.1.47.1.3.2.1.1" on page 72 for details.)

Note that only entPhysicalIndex values that represent physical ports (that is, associated entPhysicalClass value is "port (10)") are permitted to exist in this table.

Index entPhysicalIndex
entAliasLogicalIndexOrZero

Not supported.

entAliasLogicalIndexOrZero 1.3.6.1.2.1.47.1.3.2.1.1

The value of this object identifies the logical entity that defines the naming scope for the associated instance of the entAliasMappingIdentifier object.

If this object has a nonzero value, then it identifies the logical entity named by the same value of entLogicalIndex.

If this object has a value of zero, then the mapping between the physical component and the alias identifier for this entAliasMapping entry is associated with all unspecified logical entities. That is, a value of zero (the default mapping) identifies any logical entity that does not have an explicit entry in this table for a particular entPhysicalIndex/entAliasMappingIdentifier pair.

For example, to indicate that a particular interface (such as “physical component 33”) is identified by the same value of ifIndex for all logical entities, the following instance might exist:

```
entAliasMappingIdentifier.33.0 = ifIndex.5
```

In the event an entPhysicalEntry is associated differently for some logical entities, additional entAliasMapping entries might exist:

```
entAliasMappingIdentifier.33.0 = ifIndex.6
entAliasMappingIdentifier.33.4 = ifIndex.1
entAliasMappingIdentifier.33.5 = ifIndex.1
entAliasMappingIdentifier.33.10 = ifIndex.12
```

Note that entries with nonzero entAliasLogicalIndexOrZero index values have precedence over any zero-indexed entry. In this example, all logical entities except 4, 5, and 10 associate physical entity 33 with ifIndex.6.

Not supported.

entAliasMappingIdentifier 1.3.6.1.2.1.47.1.3.2.1.2

The value of this object identifies a particular conceptual row associated with the indicated entPhysicalIndex and entLogicalIndex pair.

Since only physical ports are modeled in this table, only entries that represent interfaces or ports are allowed. If an ifEntry exists on behalf of a particular physical port, then this object should identify the associated ifEntry. For repeater ports, the appropriate row in the rptrPortGroupTable should be identified instead.

For example, suppose a physical port was represented by entPhysicalEntry.3, entLogicalEntry.15 existed for a repeater, and entLogicalEntry.22 existed for a bridge. Then there might be two related instances of entAliasMappingIdentifier:

```
entAliasMappingIdentifier.3.15 == rptrPortGroupIndex.5.2
entAliasMappingIdentifier.3.22 == ifIndex.17
```

It is possible that other mappings (besides interfaces and repeater ports) might be defined in the future, as required.

Bridge ports are identified by examining the Bridge MIB and appropriate ifEntries associated with each dot1dBasePort and are thus not represented in this table.

Not supported.

entPhysicalContainsTable 1.3.6.1.2.1.47.1.3.3

A table that exposes the container/containee relationships between physical entities. This table provides all the information found by constructing the virtual containment tree for a given entPhysicalTable, but in a more direct format.

In the event a physical entity is contained by more than one other physical entity (for example, double-wide modules), this table should include these additional mappings, which cannot be represented in the entPhysicalTable virtual containment tree.

Supported.

entPhysicalContainsEntry 1.3.6.1.2.1.47.1.3.3.1

A single container / containee relationship.

Indexes 1: entPhysicalIndex

2: entPhysicalChildIndex

Not supported.

entPhysicalChildIndex 1.3.6.1.2.1.47.1.3.3.1.1

The value of entPhysicalIndex for the contained physical entity.

Not supported.

General group

Not supported.

entLastChangeTime 1.3.6.1.2.1.47.1.4.1

The value of sysUpTime at the time a conceptual row is created, modified, or deleted in any of the following tables:

- entPhysicalTable
- entLogicalTable
- entLPMappingTable
- entAliasMappingTable
- entPhysicalContainsTable

Entity MIB trap

Not supported.

This section lists the entityMIBTrap objects.

entConfigChange 1.3.6.1.2.1.47.2.0.1

An entConfigChange notification is generated when the value of entLastChangeTime changes. It can be utilized by an NMS to trigger logical/physical entity table maintenance polls.

An agent should not generate more than one entConfigChange notification event in a given time interval (five seconds is the suggested default). A notification event is the transmission of a single trap or inform PDU to a list of notification destinations.

If additional configuration changes occur within the throttling period, then notification events for these changes should be suppressed by the agent until the current throttling period expires. At the end of a throttling period, one notification event should be generated if any configuration changes occurred since the start of the throttling period; in such a case, another throttling period is started right away.

An NMS should periodically check the value of entLastChangeTime to detect any missed entConfigChange notification events, for example, due to throttling or transmission loss.

Entity MIB Conformance information

This section lists the entityConformance MIBs. Figure 24 on page 17 shows the structure of the entityConformance group.

entityCompliance 1.3.6.1.2.1.47.3.1.1

The compliance statement for SNMP entities that implement version 1 of the Entity MIB.

Status Deprecated

Mandatory groups

1: entityPhysicalGroup

2: entityLogicalGroup

3: entityMappingGroup

4: entityGeneralGroup

5: entityNotificationsGroup

entity2Compliance 1.3.6.1.2.1.47.3.1.2

The compliance statement for SNMP entities that implement version 2 of the Entity MIB.

Mandatory groups

1: entityPhysicalGroup

2: entityPhysical2Group

3: entityGeneralGroup

4: entityNotificationsGroup

Components

1. Type: Group
   Group: entityLogical2Group
   Description: Implementation of this group is not mandatory for agents which model all MIB object instances within a single naming scope.
2. Type: Group
   Group: entityMappingGroup
   Description: Implementation of the entPhysicalContainsTable is mandatory for all agents. Implementation of the entLPMappingTable and entAliasMappingTables are not mandatory for agents which model all MIB object instances within a single naming scope. Note that the entAliasMappingTable may be useful for all agents, however implementation of the entityLogicalGroup or entityLogical2Group is required to support this table.
3. Type: Object
   Object: entPhysicalSerialNum
   Min access: not-accessible
   Description: Read and write access is not required for agents which cannot identify serial number information for physical entities, or cannot provide non-volatile storage for NMS-assigned serial numbers. Write access is not required for agents which can identify serial number information for physical entities, but cannot provide non-volatile storage for NMS-assigned serial.

entityPhysicalGroup 1.3.6.1.2.1.47.3.2.1

The collection of objects used to represent physical system components, for which a single agent provides management information.

Objects

1: entPhysicalDescr

2: entPhysicalVendorType

3: entPhysicalContainedIn

4: entPhysicalClass

5: entPhysicalParentRelPos

6: entPhysicalName

entityLogicalGroup 1.3.6.1.2.1.47.3.2.2

The collection of objects used to represent the list of logical entities, for which a single agent provides management information.

Objects

1: entLogicalDescr

2: entLogicalType

3: entLogicalCommunity

4: entLogicalTAddress

5: entLogicalTDomain

Status Deprecated

entityMappingGroup 1.3.6.1.2.1.47.3.2.3

The collection of objects used to represent the associations between multiple logical entities, physical components, interfaces, and port identifiers, for which a single agent provides management information.

Objects
1: entLPPhysicalIndex

2: entAliasMappingIdentifier

3: entPhysicalChildIndex

entityGeneralGroup 1.3.6.1.2.1.47.3.2.4

The collection of objects that are used to represent general entity information for which a single agent provides management information.

Objects 1: entLastChangeTime

entityNotificationsGroup 1.3.6.1.2.1.47.3.2.5

The collection of notifications used to indicate Entity MIB data consistency and general status information.

Notifications 1: entConfigChange

entityPhysical2Group 1.3.6.1.2.1.47.3.2.6

The collection of objects used to represent physical system components, for which a single agent provides management information. This group augments the objects contained in the entityPhysicalGroup.

Objects
1: entPhysicalHardwareRev

2: entPhysicalFirmwareRev

3: entPhysicalSoftwareRev

4: entPhysicalSerialNum

5: entPhysicalMfgName

6: entPhysicalModelName

7: entPhysicalAlias

8: entPhysicalAssetID

9: entPhysicalIsFRU

entityLogical2Group 1.3.6.1.2.1.47.3.2.7

The collection of objects used to represent the list of logical entities, for which a single SNMP entity provides management information.

Objects

1: entLogicalDescr

2: entLogicalType

3: entLogicalTAddress

4: entLogicalTDomain

5: entLogicalContextEngineID

6: entLogicalContextName

2 entityLogical2Group 1.3.6.1.2.1.47.3.2.7

Chapter

USM MIB Objects

3

In this chapter

USM MIB objects overview

The descriptions of the MIB variables in this chapter come directly from the SNMP-USER-BASED-SM-MIB. The notes that follow the descriptions typically pertain to Brocade-specific information as provided by Brocade.

Figure 26 and Figure 27 depict the organization and structure of the usmMIBObjects MIB.

```
- iso
    - org
        - dod
            - internet
                - snmpV2
                    - snmpModules
                        - snmpUsmMIB
                            - usmMIBObjects
                                - usmStats
                                - usmUser
```

FIGURE 26 usmMIBObjects overall tree structure

```
- usmMIBObjects (1.3.6.1.6.3.15.1)
    - usmStats 1.3.6.1.6.3.15.1.1
        - usmStatsUnsupportedSecLevels 1.3.6.1.6.3.15.1.1.1
        - usmStatsNotInTimeWindows 1.3.6.1.6.3.15.1.1.2
        - usmStatsUnknownUserNames 1.3.6.1.6.3.15.1.1.3
        - usmStatsUnknownEngineIDs 1.3.6.1.6.3.15.1.1.4
        - usmStatsWrongDigests 1.3.6.1.6.3.15.1.1.5
        - usmStatsDecryptionErrors 1.3.6.1.6.3.15.1.1.6
    - usmUser 1.3.6.1.6.3.15.1.2
        - usmUserSpinLock 1.3.6.1.6.3.15.1.2.1
        - usmUserTable 1.3.6.1.6.3.15.1.2.2
            - usmUserEntry 1.3.6.1.6.3.15.1.2.2.1
                - usmUserEngineID 1.3.6.1.6.3.15.1.2.2.1.1
                - usmUserName 1.3.6.1.6.3.15.1.2.2.1.2
                - usmUserSecurityName 1.3.6.1.6.3.15.1.2.2.1.3
                - usmUserCloneFrom 1.3.6.1.6.3.15.1.2.2.1.4
                - usmUserAuthProtocol 1.3.6.1.6.3.15.1.2.2.1.5
                - usmUserAuthKeyChange 1.3.6.1.6.3.15.1.2.2.1.6
                - usmUserOwnAuthKeyChange 1.3.6.1.6.3.15.1.2.2.1.7
                - usmUserPrivProtocol 1.3.6.1.6.3.15.1.2.2.1.8
                - usmUserPrivKeyChange 1.3.6.1.6.3.15.1.2.2.1.9
                - usmUserOwnPrivKeyChange 1.3.6.1.6.3.15.1.2.2.1.10
                - usmUserPublic 1.3.6.1.6.3.15.1.2.2.1.11
                - usmUserStorageType 1.3.6.1.6.3.15.1.2.2.1.12
                - usmUserStatus 1.3.6.1.6.3.15.1.2.2.1.13
```

FIGURE 27 usmMIBObjects hierarchy

usmMIBObjects group

This section describes the MIB objects in the usmMIBObjects group.

usmStats

usmStatsUnsupportedSecLevels 1.3.6.1.6.3.15.1.1.1

The total number of packets received by the SNMP engine which were dropped because they requested a securityLevel that was unknown to the SNMP engine or otherwise unavailable.

usmStatsNotInTimeWindows 1.3.6.1.6.3.15.1.1.2

The total number of packets received by the SNMP engine which were dropped because they appeared outside of the authoritative SNMP engine's window.

usmStatsUnknownUserNames 1.3.6.1.6.3.15.1.1.3

The total number of packets received by the SNMP engine which were dropped because they referenced a user that was not known to the SNMP engine.

usmStatsUnknownEngineIDs 1.3.6.1.6.3.15.1.1.4

The total number of packets received by the SNMP engine which were dropped because they referenced an snmpEngineID that was not known to the SNMP engine.

usmStatsWrongDigests 1.3.6.1.6.3.15.1.1.5

The total number of packets received by the SNMP engine which were dropped because they did not contain the expected digest value.

usmStatsDecryptionErrors 1.3.6.1.6.3.15.1.1.6

The total number of packets received by the SNMP engine which were dropped because they could not be decrypted.

usmUser

usmUserSpinLock 1.3.6.1.6.3.15.1.2.1

An advisory lock used to allow several cooperating Command Generator Applications to coordinate their use of facilities to alter secrets in the usmUserTable.

usmUserTable 1.3.6.1.6.3.15.1.2.2

The table of users configured in the SNMP engine's Local Configuration Datastore (LCD).

usmUserEntry 1.3.6.1.6.3.15.1.2.2.1

A user configured in the SNMP engine's Local Configuration Datastore (LCD) for the User-based Security Model.

usmUserEngineID 1.3.6.1.6.3.15.1.2.2.1.1

An SNMP engine's administratively-unique identifier.

In a simple agent, this value is always that agent's own snmpEngineID value.

The value can also take the value of the snmpEngineID of a remote SNMP engine with which this user can communicate.

usmUserName 1.3.6.1.6.3.15.1.2.2.1.2

A human-readable string representing the name of the user.

This is the (User-based Security) Model dependent security ID.

usmUserSecurityName 1.3.6.1.6.3.15.1.2.2.1.3

A human-readable string representing the user in Security Model independent format.

The default transformation of the User-based Security Model dependent security ID to the securityName and vice versa is the identity function so that the securityName is the same as the userName.

usmUserCloneFrom 1.3.6.1.6.3.15.1.2.2.1.4

A pointer to another conceptual row in this usmUserTable. The user in this other conceptual row is called the clone-from user.

usmUserAuthProtocol 1.3.6.1.6.3.15.1.2.2.1.5

An indication of whether messages sent on behalf of this user to or from the SNMP engine identified by usmUserEngineID, can be authenticated, and if so, the type of authentication protocol which is used.

usmUserAuthKeyChange 1.3.6.1.6.3.15.1.2.2.1.6

An object, which when modified, causes the secret authentication key used for messages sent on behalf of this user to or from the SNMP engine, identified by usmUserEngineID, to be modified through a one-way function.

usmUserOwnAuthKeyChange 1.3.6.1.6.3.15.1.2.2.1.7

Behaves exactly as usmUserAuthKeyChange, with one notable difference: For the set operation to succeed, the usmUserName of the operation requester must match the smUserName that indexes the row which is targeted by this operation.

In addition, the USM security model must be used for this operation.

usmUserPrivProtocol 1.3.6.1.6.3.15.1.2.2.1.8

An indication of whether messages sent on behalf of this user to or from the SNMP engine identified by usmUserEngineID, can be protected from disclosure, and if so, the type of privacy protocol which is used.

No support for Privacy protocols other than DES in this object.

usmUserPrivKeyChange 1.3.6.1.6.3.15.1.2.2.1.9

An object, which when modified, causes the secret encryption key used for messages sent on behalf of this user to or from the SNMP engine identified by usmUserEngineID, to be modified through a one-way function.

usmUserOwnPrivKeyChange 1.3.6.1.6.3.15.1.2.2.1.10

Behaves exactly as usmUserPrivKeyChange, with one notable difference: For the Set operation to succeed, the usmUserName of the operation requester must match the usmUserName that indexes the row which is targeted by this operation. In addition, the USM security model must be used for this operation.

usmUserPublic 1.3.6.1.6.3.15.1.2.2.1.11

A publicly readable value which can be written as part of the procedure for changing a user's secret authentication or privacy key, and later read to determine whether the change of the secret was effected.

usmUserStorageType 1.3.6.1.6.3.15.1.2.2.1.12

The storage type for this conceptual row. Conceptual rows having the value 'permanent' must allow write-access at a minimum to the following:

- usmUserAuthKeyChange, usmUserOwnAuthKeyChange and usmUserPublic for a user who employs authentication, and
- usmUserPrivKeyChange, usmUserOwnPrivKeyChange and usmUserPublic for a user who employs privacy.

usmUserStatus 1.3.6.1.6.3.15.1.2.2.1.13

The status of this conceptual row.

3 usmUserStatus 1.3.6.1.6.3.15.1.2.2.1.13

Chapter

4

IEEE 802.1x PAE MIB Objects

In this chapter

IEEE 802.1x PAE MIB objects overview

The descriptions of the MIB variables in this chapter come directly from the IEEE 802.1x PAE MIB. The notes that follow the descriptions typically pertain to Brocade-specific information as provided by Brocade.

Figure 28 through Figure 30 depict the organization and structure of the IEEE 802.1x PAE MIB.

```
- iso
    - std
        - iso8802
            - ieee802dot1
                - ieee802dot1mibs
                    - ieee8021paeMIB
                        - paeMIBObjects
                            - dot1xPaeSystem
                                - dot1xPaePortTable
                            - dot1xPaeAuthenticator
                                - dot1xAuthConfigTable
                                - dot1xAuthStatsTable
                                - dot1xAuthDiagTable
                                - dot1xAuthSessionStatsTable
                            - dot1xPaeSupplicant
```

FIGURE 28 IEEE 802.1x PAE MIB overall tree structure

```
- dot1xPaeSystem
    - dot1xPaePortTable 1.0.8802.1.1.1.1.1.2
        - dot1xPaePortEntry 1.0.8802.1.1.1.1.1.2.1
            - dot1xPaePortNumber 1.0.8802.1.1.1.1.1.2.1.1
            - dot1xPaePortProtocolVersion 1.0.8802.1.1.1.1.1.2.1.2
            - dot1xPaePortCapabilities 1.0.8802.1.1.1.1.1.2.1.3
            - dot1xPaePortInitialize 1.0.8802.1.1.1.1.1.2.1.4
            - dot1xPaePortReauthenticate 1.0.8802.1.1.1.1.1.2.1.5
```

FIGURE 29 dot1xPaeSystem hierarchy

```
- dot1xPaeAuthenticator
    - dot1xAuthConfigTable 1.0.8802.1.1.1.1.2.1
        - dot1xAuthConfigEntry 1.0.8802.1.1.1.1.2.1.1
            - dot1xAuthPaeState 1.0.8802.1.1.1.1.2.1.1.1
            - dot1xAuthBackendAuthState 1.0.8802.1.1.1.1.2.1.1.2
            - dot1xAuthAdminControlledDirections 1.0.8802.1.1.1.1.2.1.1.3
            - dot1xAuthOperControlledDirections 1.0.8802.1.1.1.1.2.1.1.4
            - dot1xAuthAuthControlledPortStatus 1.0.8802.1.1.1.1.2.1.1.5
            - dot1xAuthAuthControlledPortControl 1.0.8802.1.1.1.1.2.1.1.6
            - dot1xAuthQuietPeriod 1.0.8802.1.1.1.1.2.1.1.7
            - dot1xAuthTxPeriod 1.0.8802.1.1.1.1.2.1.1.8
            - dot1xAuthSuppTimeout 1.0.8802.1.1.1.1.2.1.1.9
            - dot1xAuthServerTimeout 1.0.8802.1.1.1.1.2.1.1.10
            - dot1xAuthMaxReq 1.0.8802.1.1.1.1.2.1.1.11
            - dot1xAuthReAuthPeriod 1.0.8802.1.1.1.1.2.1.1.12
            - dot1xAuthReAuthEnabled 1.0.8802.1.1.1.1.2.1.1.13
            - dot1xAuthKeyTxEnabled 1.0.8802.1.1.1.1.2.1.1.14
    - dot1xAuthStatsTable 1.0.8802.1.1.1.1.2.2
        - dot1xAuthStatsEntry 1.0.8802.1.1.1.1.2.2.1
            - dot1xAuthEapolFramesRx 1.0.8802.1.1.1.1.2.2.1.1
            - dot1xAuthEapolFramesTx 1.0.8802.1.1.1.1.2.2.1.2
            - dot1xAuthEapolStartFramesRx 1.0.8802.1.1.1.1.2.2.1.3
            - dot1xAuthEapolLogoffFramesRx 1.0.8802.1.1.1.1.2.2.1.4
            - dot1xAuthEapolRespIdFramesRx 1.0.8802.1.1.1.1.2.2.1.5
            - dot1xAuthEapolRespFramesRx 1.0.8802.1.1.1.1.2.2.1.6
            - dot1xAuthEapolReqIdFramesTx 1.0.8802.1.1.1.1.2.2.1.7
            - dot1xAuthEapolReqFramesTx 1.0.8802.1.1.1.1.2.2.1.8
            - dot1xAuthInvalidEapolFramesRx 1.0.8802.1.1.1.1.2.2.1.9
            - dot1xAuthEapLengthErrorFramesRx 1.0.8802.1.1.1.1.2.2.1.10
            - dot1xAuthLastEapolFrameVersion 1.0.8802.1.1.1.1.2.2.1.11
            - dot1xAuthLastEapolFrameSource 1.0.8802.1.1.1.1.2.2.1.12
    - dot1xAuthDiagTable 1.0.8802.1.1.1.1.2.3
        - dot1xAuthDiagEntry 1.0.8802.1.1.1.1.2.3.1
            - dot1xAuthEntersConnecting 1.0.8802.1.1.1.1.2.3.1.1
            - dot1xAuthEapLogoffsWhileConnecting 1.0.8802.1.1.1.1.2.3.1.2
            - dot1xAuthEntersAuthenticating 1.0.8802.1.1.1.1.2.3.1.3
            - dot1xAuthAuthSuccessWhileAuthenticating 1.0.8802.1.1.1.1.2.3.1.4
            - dot1xAuthAuthTimeoutsWhileAuthenticating 1.0.8802.1.1.1.1.2.3.1.5
            - dot1xAuthAuthFailWhileAuthenticating 1.0.8802.1.1.1.1.2.3.1.6
            - dot1xAuthAuthReauthsWhileAuthenticating 1.0.8802.1.1.1.1.2.3.1.7
            - dot1xAuthAuthEapStartsWhileAuthenticating 1.0.8802.1.1.1.1.2.3.1.8
            - dot1xAuthAuthEapLogoffWhileAuthenticating 1.0.8802.1.1.1.1.2.3.1.9
            - dot1xAuthAuthReauthsWhileAuthenticated 1.0.8802.1.1.1.1.2.3.1.10
            - dot1xAuthAuthEapStartsWhileAuthenticated 1.0.8802.1.1.1.1.2.3.1.11
            - dot1xAuthAuthEapLogoffWhileAuthenticated 1.0.8802.1.1.1.1.2.3.1.12
            - dot1xAuthBackendResponses 1.0.8802.1.1.1.1.2.3.1.13
            - dot1xAuthBackendAccessChallenges 1.0.8802.1.1.1.1.2.3.1.14
            - dot1xAuthBackendOtherRequestsToSupplicant 1.0.8802.1.1.1.1.2.3.1.15
            - dot1xAuthBackendNonNakResponsesFromSupplicant
1.0.8802.1.1.1.1.2.3.1.16
            - dot1xAuthBackendAuthSuccesses 1.0.8802.1.1.1.1.2.3.1.17
            - dot1xAuthBackendAuthFails 1.0.8802.1.1.1.1.2.3.1.18
```

```
- dot1xAuthSessionStatsTable 1.0.8802.1.1.1.1.2.4
    - dot1xAuthSessionStatsEntry 1.0.8802.1.1.1.1.2.4.1
        - dot1xAuthSessionOctetsRx 1.0.8802.1.1.1.1.2.4.1.1
        - dot1xAuthSessionOctetsTx 1.0.8802.1.1.1.1.2.4.1.2
        - dot1xAuthSessionFramesRx 1.0.8802.1.1.1.1.2.4.1.3
        - dot1xAuthSessionFramesTx 1.0.8802.1.1.1.1.2.4.1.4
        - dot1xAuthSessionId 1.0.8802.1.1.1.1.2.4.1.5
        - dot1xAuthSessionAuthenticMethod 1.0.8802.1.1.1.1.2.4.1.6
        - dot1xAuthSessionTime 1.0.8802.1.1.1.1.2.4.1.7
        - dot1xAuthSessionTerminateCause 1.0.8802.1.1.1.1.2.4.1.8
        - dot1xAuthSessionUserName 1.0.8802.1.1.1.1.2.4.1.9
```

FIGURE 30 dot1xPaeAuthenticator hierarchy

dot1xPaeSystem group

dot1xPaePortTable 1.0.8802.1.1.1.1.1.2

A table of system-level information for each port supported by the Port Access Entity. An entry appears in this table for each port of this system.

dot1xPaePortEntry 1.0.8802.1.1.1.1.1.2.1

The Port number, protocol version, and initialization control for a Port.

dot1xPaePortNumber 1.0.8802.1.1.1.1.1.2.1.1

The Port number associated with this Port.

dot1xPaePortProtocolVersion 1.0.8802.1.1.1.1.1.2.1.2

The protocol version associated with this Port.

dot1xPaePortCapabilities 1.0.8802.1.1.1.1.1.2.1.3

Indicates the PAE functionality that this Port supports and that may be managed through this MIB.

Values dot1xPaePortAuthCapable (0)

dot1xPaePortSuppCapable (1)

dot1xPaePortInitialize 1.0.8802.1.1.1.1.1.2.1.4

The initialization control for this Port. Setting this attribute to TRUE causes the Port to be initialized. The attribute value reverts to FALSE once initialization has completed.

dot1xPaePortReauthenticate 1.0.8802.1.1.1.1.1.2.1.5

The reauthentication control for this port. Setting this attribute to TRUE causes the Authenticator PAE state machine for the Port to reauthenticate the Supplicant. Setting this attribute to FALSE has no effect. This attribute always returns FALSE when it is read.

dot1xPaeAuthenticator group

dot1xAuthConfigTable 1.0.8802.1.1.1.1.2.1

A table that contains the configuration objects for the Authenticator PAE associated with each port. An entry appears in this table for each port that may authenticate access to itself.

dot1xAuthConfigEntry 1.0.8802.1.1.1.1.2.1.1

The configuration information for an Authenticator PAE.

dot1xAuthPaeState 1.0.8802.1.1.1.1.2.1.1.1

The current value of the Authenticator PAE state machine.

Values
- initialize (1)
- disconnected (2)
- connecting (3)
- authenticating (4)
- authenticated (5)
- aborting (6)
- held (7)
- forceAuth (8)
- forceUnauth (9)
- restart (10)

dot1xAuthBackendAuthState 1.0.8802.1.1.1.1.2.1.1.2

The current state of the Backend Authentication state machine.

Values
- request (1)
- response (2)
- success (3)
- fail (4)

timeout (5)

idle (6)

initialize (7)

ignore (8)

dot1xAuthAdminControlledDirections 1.0.8802.1.1.1.1.2.1.1.3

The current value of the administrative controlled directions parameter for the Port.

dot1xAuthOperControlledDirections 1.0.8802.1.1.1.1.2.1.1.4

The current value of the operational controlled directions parameter for the Port.

dot1xAuthAuthControlledPortStatus 1.0.8802.1.1.1.1.2.1.1.5

The current value of the controlled Port status parameter for the Port.

dot1xAuthAuthControlledPortControl 1.0.8802.1.1.1.1.2.1.1.6

The current value of the controlled Port control parameter for the Port.

dot1xAuthQuietPeriod 1.0.8802.1.1.1.1.2.1.1.7

The value, in seconds, of the quietPeriod constant currently in use by the Authenticator PAE state machine.

dot1xAuthTxPeriod 1.0.8802.1.1.1.1.2.1.1.8

The value, in seconds, of the txPeriod constant currently in use by the Authenticator PAE state machine.

dot1xAuthSuppTimeout 1.0.8802.1.1.1.1.2.1.1.9

The value, in seconds, of the suppTimeout constant currently in use by the Backend Authentication state machine.

dot1xAuthServerTimeout 1.0.8802.1.1.1.1.2.1.1.10

The value, in seconds, of the serverTimeout constant currently in use by the Backend Authentication state machine.

dot1xAuthMaxReq 1.0.8802.1.1.1.1.2.1.1.11

The value of the maxReq constant currently in use by the Backend Authentication state machine.

dot1xAuthReAuthPeriod 1.0.8802.1.1.1.1.2.1.1.12

The value, in seconds, of the reAuthPeriod constant currently in use by the Reauthentication Timer state machine.

dot1xAuthReAuthEnabled 1.0.8802.1.1.1.1.2.1.1.13

The enable or disable control used by the Reauthentication Timer state machine (8.5.5.1).

dot1xAuthKeyTxEnabled 1.0.8802.1.1.1.1.2.1.1.14

The value of the keyTransmissionEnabled constant currently in use by the Authenticator PAE state machine.

dot1xAuthStatsTable 1.0.8802.1.1.1.1.2.2

A table that contains the statistics objects for the Authenticator PAE associated with each Port.

dot1xAuthStatsEntry 1.0.8802.1.1.1.1.2.2.1

The statistics information for an Authenticator PAE.

dot1xAuthEapolFramesRx 1.0.8802.1.1.1.1.2.2.1.1

The number of valid EAPOL frames of any type that have been received by this Authenticator.

dot1xAuthEapolFramesTx 1.0.8802.1.1.1.1.2.2.1.2

The number of EAPOL frames of any type that have been transmitted by this Authenticator.

dot1xAuthEapolStartFramesRx 1.0.8802.1.1.1.1.2.2.1.3

The number of EAPOL Start frames that have been received by this Authenticator.

dot1xAuthEapolLogoffFramesRx 1.0.8802.1.1.1.1.2.2.1.4

The number of EAPOL Logoff frames that have been received by this Authenticator.

dot1xAuthEapolRespIdFramesRx 1.0.8802.1.1.1.1.2.2.1.5

The number of EAP Response or ID frames that have been received by this Authenticator.

dot1xAuthEapolRespFramesRx 1.0.8802.1.1.1.1.2.2.1.6

The number of valid EAP Response frames (other than Response or ID frames) that have been received by this Authenticator.

dot1xAuthEapolReqIdFramesTx 1.0.8802.1.1.1.1.2.2.1.7

The number of EAP Request or ID frames that have been transmitted by this Authenticator.

dot1xAuthEapolReqFramesTx 1.0.8802.1.1.1.1.2.2.1.8

The number of EAP Request frames (other than Request or ID frames) that have been transmitted by this Authenticator.

dot1xAuthInvalidEapolFramesRx 1.0.8802.1.1.1.1.2.2.1.9

The number of EAPOL frames that have been received by this Authenticator in which the frame type is not recognized.

dot1xAuthEapLengthErrorFramesRx 1.0.8802.1.1.1.1.2.2.1.10

The number of EAPOL frames that have been received by this Authenticator in which the Packet Body Length field is invalid.

dot1xAuthLastEapolFrameVersion 1.0.8802.1.1.1.1.2.2.1.11

The protocol version number carried in the most recently received EAPOL frame.

dot1xAuthLastEapolFrameSource 1.0.8802.1.1.1.1.2.2.1.12

The source MAC address carried in the most recently received EAPOL frame.

dot1xAuthDiagTable 1.0.8802.1.1.1.1.2.3

A table that contains the diagnostics objects for the Authenticator PAE associated with each Port. An entry appears in this table for each port that may authenticate access to itself.

dot1xAuthDiagEntry 1.0.8802.1.1.1.1.2.3.1

The diagnostics information for an Authenticator PAE.

dot1xAuthEntersConnecting 1.0.8802.1.1.1.1.2.3.1.1

Counts the number of times that the state machine transitions to the CONNECTING state from any other state.

dot1xAuthEapLogoffsWhileConnecting 1.0.8802.1.1.1.1.2.3.1.2

Counts the number of times that the state machine transitions from CONNECTING to DISCONNECTED as a result of receiving an EAPOL-Logoff message.

dot1xAuthEntersAuthenticating 1.0.8802.1.1.1.1.2.3.1.3

Counts the number of times that the state machine transitions from CONNECTING to AUTHENTICATING, as a result of an EAP-Response or Identity message being received from the Supplicant.

dot1xAuthAuthSuccessWhileAuthenticating 1.0.8802.1.1.1.1.2.3.1.4

Counts the number of times that the state machine transitions from AUTHENTICATING to AUTHENTICATED, as a result of the Backend Authentication state machine indicating successful authentication of the Supplicant (authSuccess = TRUE).

dot1xAuthAuthTimeoutsWhileAuthenticating 1.0.8802.1.1.1.1.2.3.1.5

Counts the number of times that the state machine transitions from AUTHENTICATING to ABORTING, as a result of the Backend Authentication state machine indicating authentication timeout (authTimeout = TRUE).

dot1xAuthAuthFailWhileAuthenticating 1.0.8802.1.1.1.1.2.3.1.6

Counts the number of times that the state machine transitions from AUTHENTICATING to HELD, as a result of the Backend Authentication state machine indicating authentication failure (authFail = TRUE).

dot1xAuthAuthReauthsWhileAuthenticating 1.0.8802.1.1.1.1.2.3.1.7

Counts the number of times that the state machine transitions from AUTHENTICATING to ABORTING, as a result of a reauthentication request (reAuthenticate = TRUE).

dot1xAuthAuthEapStartsWhileAuthenticating 1.0.8802.1.1.1.1.2.3.1.8

Counts the number of times that the state machine transitions from AUTHENTICATING to ABORTING, as a result of an EAPOL-Start message being received from the Supplicant.

dot1xAuthAuthEapLogoffWhileAuthenticating 1.0.8802.1.1.1.1.2.3.1.9

Counts the number of times that the state machine transitions from AUTHENTICATING to ABORTING, as a result of an EAPOL-Logoff message being received from the Supplicant.

dot1xAuthAuthReauthsWhileAuthenticated 1.0.8802.1.1.1.1.2.3.1.10

Counts the number of times that the state machine transitions from AUTHENTICATED to CONNECTING, as a result of a reauthentication request (reAuthenticate = TRUE).

dot1xAuthAuthEapStartsWhileAuthenticated 1.0.8802.1.1.1.1.2.3.1.11

Counts the number of times that the state machine transitions from AUTHENTICATED to CONNECTING, as a result of an EAPOL-Start message being received from the Supplicant.

dot1xAuthAuthEapLogoffWhileAuthenticated 1.0.8802.1.1.1.1.2.3.1.12

Counts the number of times that the state machine transitions from AUTHENTICATED to DISCONNECTED, as a result of an EAPOL-Logoff message being received from the Supplicant.

dot1xAuthBackendResponses 1.0.8802.1.1.1.1.2.3.1.13

Counts the number of times that the state machine sends an initial Access-Request packet to the Authentication server (for example, executes sendRespToServer on entry to the RESPONSE state). Indicates that the Authenticator attempted communication with the Authentication Server.

dot1xAuthBackendAccessChallenges 1.0.8802.1.1.1.1.2.3.1.14

Counts the number of times that the state machine receives an initial Access-Challenge packet from the Authentication server (for example, aReq becomes TRUE, causing exit from the RESPONSE state). Indicates that the Authentication Server has communication with the Authenticator.

dot1xAuthBackendOtherRequestsToSupplicant 1.0.8802.1.1.1.1.2.3.1.15

Counts the number of times that the state machine sends an EAP-Request packet (other than an Identity, Notification, Failure or Success message) to the Supplicant (for example, executes txReq on entry to the REQUEST state). Indicates that the Authenticator chose an EAP-method.

dot1xAuthBackendNonNakResponsesFromSupplicant 1.0.8802.1.1.1.1.2.3.1.16

Counts the number of times that the state machine receives a response from the Supplicant to an initial EAP-Request, and the response is something other than EAP-NAK (for example, rxResp becomes TRUE, causing the state machine to transition from REQUEST to RESPONSE, and the response is not an EAP-NAK). Indicates that the Supplicant can respond to the Authenticator's chosen EAP-method.

dot1xAuthBackendAuthSuccesses 1.0.8802.1.1.1.1.2.3.1.17

Counts the number of times that the state machine receives an EAP-Success message from the Authentication Server (for example, aSuccess becomes TRUE, causing a transition from RESPONSE to SUCCESS). Indicates that the Supplicant has successfully authenticated to the Authentication Server.

dot1xAuthBackendAuthFails 1.0.8802.1.1.1.1.2.3.1.18

Counts the number of times that the state machine receives an EAP-Failure message from the Authentication Server (for example, aFail becomes TRUE, causing a transition from RESPONSE to FAIL). Indicates that the Supplicant has not authenticated to the Authentication Server.

dot1xAuthSessionStatsTable 1.0.8802.1.1.1.1.2.4

A table that contains the session statistics objects for the Authenticator PAE associated with each Port.

dot1xAuthSessionStatsEntry 1.0.8802.1.1.1.1.2.4.1

The session statistics information for an Authenticator PAE. This shows the current values being collected for each session that is still in progress, or the final values for the last valid session on each port where there is no session currently active.

dot1xAuthSessionOctetsRx 1.0.8802.1.1.1.1.2.4.1.1

The number of octets received in user data frames on this Port during the session.

dot1xAuthSessionOctetsTx 1.0.8802.1.1.1.1.2.4.1.2

The number of octets transmitted in user data frames on this Port during the session.

dot1xAuthSessionFramesRx 1.0.8802.1.1.1.1.2.4.1.3

The number of user data frames received on this Port during the session.

dot1xAuthSessionFramesTx 1.0.8802.1.1.1.1.2.4.1.4

The number of user data frames transmitted on this Port during the session.

dot1xAuthSessionId 1.0.8802.1.1.1.1.2.4.1.5

A unique identifier for the session, in the form of a printable ASCII string of at least three characters.

dot1xAuthSessionAuthenticMethod 1.0.8802.1.1.1.1.2.4.1.6

The authentication method used to establish the session.

Values remoteAuthServer(1)

localAuthServer(2)

dot1xAuthSessionTime 1.0.8802.1.1.1.1.2.4.1.7

The duration of the session in seconds.

dot1xAuthSessionTerminateCause 1.0.8802.1.1.1.1.2.4.1.8

The reason for the session termination.

Values supplicantLogoff (1)

portFailure (2)

supplicantRestart (3)

reauthFailed (4)

authControlForceUnauth (5)

portReInit (6)

portAdminDisabled (7)

notTerminatedYet (999)

dot1xAuthSessionUserName 1.0.8802.1.1.1.1.2.4.1.9

The User-Name representing the identity of the Supplicant PAE.

dot1xPaeSupplicant group

This group is not supported.

Chapter

LLDP MIB Objects

5

In this chapter

LLDP MIB objects overview

The descriptions of the MIB variables in this chapter come directly from the LLDP MIB. The notes that follow the descriptions typically pertain to Brocade-specific information as provided by Brocade.

Figure 31 through Figure 35 depict the organization and structure of the LLDP MIB.

```
- iso
    - std
        - iso8802
            - ieee802dot1
                - ieee802dot1mibs
                    - lldpMIB
                        - lldpNotifications
                        - lldpObjects
                            - lldpConfiguration
                                - lldpMessageTxInterval
                                - lldpMessageTxHoldMultiplier
                                - lldpReinitDelay
                                - lldpTxDelay
                                - lldpNotificationInterval
                                - lldpPortConfigTable
                                - lldpConfigManAddrTable
                            - lldpStatistics
                                - lldpStatsRemTablesLastChangeTime
                                - lldpStatsRemTablesInserts
                                - lldpStatsRemTablesDeletes
                                - lldpStatsRemTablesDrops
                                - lldpStatsRemTablesAgeouts
                                - lldpStatsTxPortTable
                                - lldpStatsRxPortTable
                            - lldpLocalSystemData
                                - lldpLocChassisIdSubtype
                                - lldpLocChassisId
                                - lldpLocSysName
                                - lldpLocSysDesc
                                - lldpLocSysCapSupported
                                - lldpLocSysCapEnabled
                                - lldpLocPortTable
                                - lldpLocManAddrTable
                            - lldpRemoteSystemsData
                                - lldpRemTable
                                - lldpRemManAddrTable
                                - lldpRemUnknownTLVTable
                                - lldpRemOrgDefInfoTable
```

FIGURE 31 LLDP MIB overall tree structure

```
- lldpConfiguration
    - lldpMessageTxInterval 1.0.8802.1.1.2.1.1.1
    - lldpMessageTxHoldMultiplier 1.0.8802.1.1.2.1.1.2
    - lldpReinitDelay 1.0.8802.1.1.2.1.1.3
    - lldpTxDelay 1.0.8802.1.1.2.1.1.4
    - lldpNotificationInterval 1.0.8802.1.1.2.1.1.5
    - lldpPortConfigTable 1.0.8802.1.1.2.1.1.6
        - lldpPortConfigEntry 1.0.8802.1.1.2.1.1.6.1
            - lldpPortConfigPortNum 1.0.8802.1.1.2.1.1.6.1.1
            - lldpPortConfigAdminStatus 1.0.8802.1.1.2.1.1.6.1.2
            - lldpPortConfigNotificationEnable 1.0.8802.1.1.2.1.1.6.1.3
            - lldpPortConfigTLVsTxEnable 1.0.8802.1.1.2.1.1.6.1.4
    - lldpConfigManAddrTable 1.0.8802.1.1.2.1.1.7
```

FIGURE 32 lldpConfiguration hierarchy

```
- lldpStatistics
    - lldpStatsRemTablesLastChangeTime 1.0.8802.1.1.2.1.2.1
    - lldpStatsRemTablesInserts 1.0.8802.1.1.2.1.2.2
    - lldpStatsRemTablesDeletes 1.0.8802.1.1.2.1.2.3
    - lldpStatsRemTablesDrops 1.0.8802.1.1.2.1.2.4
    - lldpStatsRemTablesAgeouts 1.0.8802.1.1.2.1.2.5
    - lldpStatsTxPortTable 1.0.8802.1.1.2.1.2.6
        - lldpStatsTxPortEntry 1.0.8802.1.1.2.1.2.6.1
            - lldpStatsTxPortNum 1.0.8802.1.1.2.1.2.6.1.1
            - lldpStatsTxPortFramesTotal 1.0.8802.1.1.2.1.2.6.1.2
    - lldpStatsRxPortTable 1.0.8802.1.1.2.1.2.7
        - lldpStatsRxPortEntry 1.0.8802.1.1.2.1.2.7.1
            - lldpStatsRxPortNum 1.0.8802.1.1.2.1.2.7.1.1
            - lldpStatsRxPortFramesDiscardedTotal 1.0.8802.1.1.2.1.2.7.1.2
            - lldpStatsRxPortFramesErrors 1.0.8802.1.1.2.1.2.7.1.3
            - lldpStatsRxPortFramesTotal 1.0.8802.1.1.2.1.2.7.1.4
            - lldpStatsRxPortTLVsDiscardedTotal 1.0.8802.1.1.2.1.2.7.1.5
            - lldpStatsRxPortTLVsUnrecognizedTotal 1.0.8802.1.1.2.1.2.7.1.6
            - lldpStatsRxPortAgeoutsTotal 1.0.8802.1.1.2.1.2.7.1.7
```

FIGURE 33 lldpStatistics hierarchy

```
- lldpLocalSystemData
    - lldpLocChassisIdSubtype 1.0.8802.1.1.2.1.3.1
    - lldpLocChassisId 1.0.8802.1.1.2.1.3.2
    - lldpLocSysName 1.0.8802.1.1.2.1.3.3
    - lldpLocSysDesc 1.0.8802.1.1.2.1.3.4
    - lldpLocSysCapSupported 1.0.8802.1.1.2.1.3.5
    - lldpLocSysCapEnabled 1.0.8802.1.1.2.1.3.6
    - lldpLocPortTable 1.0.8802.1.1.2.1.3.7
        - lldpLocPortEntry 1.0.8802.1.1.2.1.3.7.1
            - lldpLocPortNum 1.0.8802.1.1.2.1.3.7.1.1
            - lldpLocPortIdSubtype 1.0.8802.1.1.2.1.3.7.1.2
            - lldpLocPortId 1.0.8802.1.1.2.1.3.7.1.3
            - lldpLocPortDesc 1.0.8802.1.1.2.1.3.7.1.4
    - lldpLocManAddrTable 1.0.8802.1.1.2.1.3.8
        - lldpLocManAddrEntry 1.0.8802.1.1.2.1.3.8.1
            - lldpLocManAddrSubtype 1.0.8802.1.1.2.1.3.8.1.1
            - lldpLocManAddr 1.0.8802.1.1.2.1.3.8.1.2
            - lldpLocManAddrLen 1.0.8802.1.1.2.1.3.8.1.3
            - lldpLocManAddrIfSubtype 1.0.8802.1.1.2.1.3.8.1.4
            - lldpLocManAddrIfId 1.0.8802.1.1.2.1.3.8.1.5
            - lldpLocManAddrOID 1.0.8802.1.1.2.1.3.8.1.6
```

FIGURE 34 lldpLocalSystemData hierarchy

```
- lldpRemoteSystemsData
    - lldpRemTable 1.0.8802.1.1.2.1.4.1
        - lldpRemEntry 1.0.8802.1.1.2.1.4.1.1
            - lldpRemTimeMark 1.0.8802.1.1.2.1.4.1.1.1
            - lldpRemLocalPortNum 1.0.8802.1.1.2.1.4.1.1.2
            - lldpRemIndex 1.0.8802.1.1.2.1.4.1.1.3
            - lldpRemChassisIdSubtype 1.0.8802.1.1.2.1.4.1.1.4
            - lldpRemChassisId 1.0.8802.1.1.2.1.4.1.1.5
            - lldpRemPortIdSubtype 1.0.8802.1.1.2.1.4.1.1.6
            - lldpRemPortId 1.0.8802.1.1.2.1.4.1.1.7
            - lldpRemPortDesc 1.0.8802.1.1.2.1.4.1.1.8
            - lldpRemSysName 1.0.8802.1.1.2.1.4.1.1.9
            - lldpRemSysDesc 1.0.8802.1.1.2.1.4.1.1.10
            - lldpRemSysCapSupported 1.0.8802.1.1.2.1.4.1.1.11
            - lldpRemSysCapEnabled 1.0.8802.1.1.2.1.4.1.1.12
    - lldpRemManAddrTable 1.0.8802.1.1.2.1.4.2
        - lldpRemManAddrEntry 1.0.8802.1.1.2.1.4.2.1
            - lldpRemManAddrSubtype 1.0.8802.1.1.2.1.4.2.1.1
            - lldpRemManAddr 1.0.8802.1.1.2.1.4.2.1.2
            - lldpRemManAddrIfSubtype 1.0.8802.1.1.2.1.4.2.1.3
            - lldpRemManAddrIfId 1.0.8802.1.1.2.1.4.2.1.4
            - lldpRemManAddrOID 1.0.8802.1.1.2.1.4.2.1.5
    - lldpRemUnknownTLVTable 1.0.8802.1.1.2.1.4.3
        - lldpRemUnknownTLVEntry 1.0.8802.1.1.2.1.4.3.1
            - lldpRemUnknownTLVType 1.0.8802.1.1.2.1.4.3.1.1
            - lldpRemUnknownTLVInfo 1.0.8802.1.1.2.1.4.3.1.2
    - lldpRemOrgDefInfoTable 1.0.8802.1.1.2.1.4.4
        - lldpRemOrgDefInfoEntry 1.0.8802.1.1.2.1.4.4.1
            - lldpRemOrgDefInfoOUI 1.0.8802.1.1.2.1.4.4.1.1
            - lldpRemOrgDefInfoSubtype 1.0.8802.1.1.2.1.4.4.1.2
            - lldpRemOrgDefInfoIndex 1.0.8802.1.1.2.1.4.4.1.3
            - lldpRemOrgDefInfo 1.0.8802.1.1.2.1.4.4.1.4
```

FIGURE 35 lldpRemoteSystemsData hierarchy

LLDP MIB

The Management Information Base module for LLDP configuration, statistics, local system data and remote systems data components.

lldpNotifications 1.0.8802.1.1.2.0

Not supported.

lldpConfiguration group

lldpMessageTxInterval 1.0.8802.1.1.2.1.1.1

The interval at which LLDP frames are transmitted on behalf of this LLDP agent. The default value for this object is 30 seconds. The value of this object must be restored from non-volatile storage after a re-initialization of the management system.

lldpMessageTxHoldMultiplier 1.0.8802.1.1.2.1.1.2

The time-t o-live value expressed as a multiple of the lldpMessageTxInterval object.The actual time-to-live value used in LLDP frames, transmitted on behalf of this LLDP agent, can be expressed by the following formula: TTL = min(65535, (lldpMessageTxInterval * ldpMessageTxHoldMultiplier)) For example, if the value of lldpMessageTxInterval is 30, and the value of lldpMessageTxHoldMultiplier is 4, then the value 120 is encoded in the TTL field in the LLDP header.

The default value for this object is four seconds. The value of this object must be restored from non-volatile storage after a re-initialization of the management system.

lldpReinitDelay 1.0.8802.1.1.2.1.1.3

The lldpReinitDelay indicates the delay (in units of seconds) from when lldpPortConfigAdminStatus object of a particular port becomes 'disabled' until re-initialization will be attempted. The default value for lldpReintDelay object is two seconds. The value of this object must be restored from non-volatile storage after a re-initialization of the management system.

lldpTxDelay 1.0.8802.1.1.2.1.1.4

The lldpTxDelay indicates the delay (in units of seconds) between successive LLDP frame transmissions initiated by value or status changes in the LLDP local systems MIB. The recommended value for the lldpTxDelay is set by the following formula:

1 <= lldpTxDelay <= (0.25 * lldpMessageTxInterval)

The default value for lldpTxDelay object is two seconds.The value of this object must be restored from non-volatile storage after a re-initialization of the management system.

lldpNotificationInterval 1.0.8802.1.1.2.1.1.5

This object controls the transmission of LLDP notifications.

If notification transmission is enabled for particular ports, the suggested default throttling period is 5 seconds. The value of this object must be restored from non-volatile storage after a re-initialization of the management system.

lldpPortConfigTable 1.0.8802.1.1.2.1.1.6

The table that controls LLDP frame transmission on individual ports.

lldpPortConfigEntry 1.0.8802.1.1.2.1.1.6.1

The LLDP configuration information for a particular port. This configuration parameter controls the transmission and the reception of LLDP frames on those ports whose rows are created in this table.

lldpPortConfigPortNum 1.0.8802.1.1.2.1.1.6.1.1

The index value used to identify the port component (contained in the local chassis with the LLDP agent) associated with this entry. The value of this object is used as a port index to the lldpPortConfigTable.

lldpPortConfigAdminStatus 1.0.8802.1.1.2.1.1.6.1.2

The administratively desired status of the local LLDP agent.

lldpPortConfigNotificationEnable 1.0.8802.1.1.2.1.1.6.1.3

The lldpPortConfigNotificationEnable controls, on a per port basis, whether or not notifications from the agent are enabled. The value true(1) means that notifications are enabled; the value false(2) means that they are not.

lldpPortConfigTLVsTxEnable 1.0.8802.1.1.2.1.1.6.1.4

The lldpPortConfigTLVsTxEnable, defined as a bitmap, includes the basic set of LLDP TLVs whose transmission is allowed on the local LLDP agent by the network management. Each bit in the bitmap corresponds to a TLV type associated with a specific optional TLV.

lldpConfigManAddrTable 1.0.8802.1.1.2.1.1.7

Not supported.

lldpStatistics group

lldpStatsRemTablesLastChangeTime 1.0.8802.1.1.2.1.2.1

The value of sysUpTime object (defined in IETF RFC 3418) at the time an entry is created, modified, or deleted in the in tables associated with the lldpRemoteSystemsData objects and all LLDP extension objects associated with remote systems.

lldpStatsRemTablesInserts 1.0.8802.1.1.2.1.2.2

The number of times, the complete set of information advertised by a particular MSAP, has been inserted into tables contained in lldpRemoteSystemsData and lldpExtensions objects.

lldpStatsRemTablesDeletes 1.0.8802.1.1.2.1.2.3

The number of tim es, the complete set of information advertised by a particular MSAP, has been deleted from tables contained in lldpRemoteSystemsData and lldpExtensions objects.

lldpStatsRemTablesDrops 1.0.8802.1.1.2.1.2.4

The number o f times, the complete set of information advertised by a particular MSAP, could not be entered into tables contained in lldpRemoteSystemsData and lldpExtensions objects because of insufficient resources.

lldpStatsRemTablesAgeouts 1.0.8802.1.1.2.1.2.5

The number of t imes, the complete set of information advertised by a particular MSAP, has been deleted from tables contained in lldpRemoteSystemsData and lldpExtensions objects because the information timeliness interval has expired.

lldpStatsTxPortTable 1.0.8802.1.1.2.1.2.6

A table containing LLDP transmission statistics for individual ports. Entries are not required to exist in this table while the lldpPortConfigEntry object is equal to 'disabled(4)'.

lldpStatsTxPortEntry 1.0.8802.1.1.2.1.2.6.1

The LLDP frame transmission statistics for a particular port. The port must be contained in the same chassis as the LLDP agent.

lldpStatsTxPortNum 1.0.8802.1.1.2.1.2.6.1.1

The index value used to identify the port component (contained in the local chassis with the LLDP agent) associated with this entry. The value of this object is used as a port index to the lldpStatsTable.

lldpStatsTxPortFramesTotal 1.0.8802.1.1.2.1.2.6.1.2

The number of LLDP frames transmitted by this LLDP agent on the indicated port.

lldpStatsRxPortTable 1.0.8802.1.1.2.1.2.7

A table containing LLDP reception statistics for individual ports. Entries are not required to exist in this table while the lldpPortConfigEntry object is equal to 'disabled(4)'.

lldpStatsRxPortEntry 1.0.8802.1.1.2.1.2.7.1

The LLDP frame reception statistics for a particular port. The port must be contained in the same chassis as the LLDP agent.

lldpStatsRxPortNum 1.0.8802.1.1.2.1.2.7.1.1

The index value used to identify the port component (contained in the local chassis with the LLDP agent) associated with this entry. The value of this object is used as a port index to the lldpStatsTable.

lldpStatsRxPortFramesDiscardedTotal 1.0.8802.1.1.2.1.2.7.1.2

The number of LLDP frames received by this LLDP agent on the indicated port, and then discarded for any reason. This counter can provide an indication that LLDP header formatting problems may exist with the local LLDP agent in the sending system or that LLDPDU validation problems may exist with the local LLDP agent in the receiving system.

lldpStatsRxPortFramesErrors 1.0.8802.1.1.2.1.2.7.1.3

The number of invalid LLDP frames received by this LLDP agent on the indicated port, while this LLDP agent is enabled.

lldpStatsRxPortFramesTotal 1.0.8802.1.1.2.1.2.7.1.4

The number of valid LLDP frames received by this LLDP agent on the indicated port, while this LLDP agent is enabled.

lldpStatsRxPortTLVsDiscardedTotal 1.0.8802.1.1.2.1.2.7.1.5

The number of LLDP TLVs discarded for any reason by this LLDP agent on the indicated port.

lldpStatsRxPortTLVsUnrecognizedTotal 1.0.8802.1.1.2.1.2.7.1.6

The number of LLDP TLVs received on the given port that are not recognized by this LLDP agent on the indicated port.

lldpStatsRxPortAgeoutsTotal 1.0.8802.1.1.2.1.2.7.1.7

The counter that represents the number of age-outs that occurred on a given port. An age-out is the number of times the complete set of information advertised by a particular MSAP has been deleted from tables contained in lldpRemoteSystemsData and lldpExtensions objects because the information timeliness interval has expired.

lldpLocalSystemData group

lldpLocChassisIdSubtype 1.0.8802.1.1.2.1.3.1

The type of encoding used to identify the chassis associated with the local system.

lldpLocChassisId 1.0.8802.1.1.2.1.3.2

The string value used to id entify the chassis component associated with the local system.

lldpLocSysName 1.0.8802.1.1.2.1.3.3

The string value used to identify the system name of the local system. If the local agent supports IETF RFC 3418, lldpLocSysName object should have the same value of sysName object.

lldpLocSysDesc 1.0.8802.1.1.2.1.3.4

The string value used to identify the system description of the local system. If the local agent supports IETF RFC 3418, lldpLocSysDesc object should have the same value of sysDesc object.

lldpLocSysCapSupported 1.0.8802.1.1.2.1.3.5

The bitmap value used to identify which system capabilities are supported on the local system.

lldpLocSysCapEnabled 1.0.8802.1.1.2.1.3.6

The bitmap value used to identify which system capabilities are enabled on the local system.

lldpLocPortTable 1.0.8802.1.1.2.1.3.7

This table contains one or more rows per port information associated with the local system known to this agent.

lldpLocPortEntry 1.0.8802.1.1.2.1.3.7.1

The information about a particular port component. Entries may be created and deleted in this table by the agent.

lldpLocPortNum 1.0.8802.1.1.2.1.3.7.1.1

The index value used to identify the port component (contained in the local chassis with the LLDP agent) associated with this entry. The value of this object is used as a port index to the lldpLocPortTable.

lldpLocPortIdSubtype 1.0.8802.1.1.2.1.3.7.1.2

The type of port identifier encoding used in the associated lldpLocPortId object.

lldpLocPortId 1.0.8802.1.1.2.1.3.7.1.3

The string value used to identify the port component associated with a given port in the local system.

lldpLocPortDesc 1.0.8802.1.1.2.1.3.7.1.4

The string value used to identify the 802 LAN station's port description associated with the local system. If the local agent supports IETF RFC 2863, lldpLocPortDesc object should have the same value of ifDescr object.

lldpLocManAddrTable 1.0.8802.1.1.2.1.3.8

This table contains management address information on the local system known to this agent.

lldpLocManAddrEntry 1.0.8802.1.1.2.1.3.8.1

The management address information about a particular chassis component. There may be multiple management addresses configured on the system identified by a particular lldpLocChassisId. Each management address should have distinct management address type (lldpLocManAddrSubtype) and management address (lldpLocManAddr.)

lldpLocManAddrSubtype 1.0.8802.1.1.2.1.3.8.1.1

The type of management address identifier encoding used in the associated lldpLocManagmentAdd' object.

lldpLocManAddr 1.0.8802.1.1.2.1.3.8.1.2

The string value used to identify the management address component associated with the local system. The purpose of this address is to contact the management entity.

lldpLocManAddrLen 1.0.8802.1.1.2.1.3.8.1.3

The total length of the management address subtype and the management address fields in LLDPDUs transmitted by the local LLDP agent. The management address length field is needed so that the receiving systems that do not implement SNMP will not be required to implement an iana family numbers or address length equivalency table in order to decode the management address.

lldpLocManAddrIfSubtype 1.0.8802.1.1.2.1.3.8.1.4

The enumeration value that identifies the interface numbering method used for defining the interface number, associated with the local system.

lldpLocManAddrIfId 1.0.8802.1.1.2.1.3.8.1.5

The integer value used to identify the interface number regarding the management address component associated with the local system.

lldpLocManAddrOID 1.0.8802.1.1.2.1.3.8.1.6

The OID value used to identify the type of hardware component or protocol entity associated with the management address advertised by the local system agent.

lldpRemoteSystemsData group

lldpRemTable 1.0.8802.1.1.2.1.4.1

This table contains one or more rows per physical network connection known to this agent. and keeps a local copy of the information retrieved.

lldpRemEntry 1.0.8802.1.1.2.1.4.1.1

The information about a particular physical network connection. Entries may be created and deleted in this table by the agent, if a physical topology discovery process is active.

lldpRemTimeMark 1.0.8802.1.1.2.1.4.1.1.1

A TimeFilter for this entry.

lldpRemLocalPortNum 1.0.8802.1.1.2.1.4.1.1.2

The index value used to identify the port component (contained in the local chassis with the LLDP agent) associated with this entry. The lldpRemLocalPortNum identifies the port on which the remote system information is received. The value of this object is used as a port index to the lldpRemTable.

lldpRemIndex 1.0.8802.1.1.2.1.4.1.1.3

This object represents an arbitrary local integer value used by this agent to identify a particular connection instance, unique only for the indicated remote system.

lldpRemChassisIdSubtype 1.0.8802.1.1.2.1.4.1.1.4

The type of encoding used to identify the chassis associated with the remote system.

lldpRemChassisId 1.0.8802.1.1.2.1.4.1.1.5

The string value used to identify the chassis component associated with the remote system.

lldpRemPortIdSubtype 1.0.8802.1.1.2.1.4.1.1.6

The type of port identifier encoding used in the associated lldpRemPortId object.

lldpRemPortId 1.0.8802.1.1.2.1.4.1.1.7

The string value used to identify the port component associated with the remote system.

lldpRemPortDesc 1.0.8802.1.1.2.1.4.1.1.8

The string value used to identify the description of the given port associated with the remote system.

lldpRemSysName 1.0.8802.1.1.2.1.4.1.1.9

The string value used to identify the system name of the remote system.

lldpRemSysDesc 1.0.8802.1.1.2.1.4.1.1.10

The string value used to identify the system description of the remote system.

lldpRemSysCapSupported 1.0.8802.1.1.2.1.4.1.1.11

The bitmap value used to identify which system capabilities are supported on the remote system.

lldpRemSysCapEnabled 1.0.8802.1.1.2.1.4.1.1.12

The bitmap value used to identify which system capabilities are enabled on the remote system.

lldpRemManAddrTable 1.0.8802.1.1.2.1.4.2

This table contains one or more rows per management address information on the remote system learned on a particular port contained in the local chassis known to this agent.

lldpRemManAddrEntry 1.0.8802.1.1.2.1.4.2.1

The management address information about a particular chassis component.

lldpRemManAddrSubtype 1.0.8802.1.1.2.1.4.2.1.1

The type of management address identifier encoding used in the associated lldpRemManagmentAddr object.

lldpRemManAddr 1.0.8802.1.1.2.1.4.2.1.2

The string value used to identify the management address component associated with the remote system. The purpose of this address is to contact the management entity.

lldpRemManAddrIfSubtype 1.0.8802.1.1.2.1.4.2.1.3

The enumeration value that identifies the interface numbering method used for defining the interface number, associated with the remote system.

lldpRemManAddrIfId 1.0.8802.1.1.2.1.4.2.1.4

The integer value used to identify the interface number regarding the management address component associated with the remote system.

lldpRemManAddrOID 1.0.8802.1.1.2.1.4.2.1.5

The OID value used to identify the type of hardware component or protocol entity associated with the management address advertised by the remote system agent.

lldpRemUnknownTLVTable 1.0.8802.1.1.2.1.4.3

This table contains information about an incoming TLV which is not recognized by the receiving LLDP agent.

lldpRemUnknownTLVEntry 1.0.8802.1.1.2.1.4.3.1

The information about an unrecognized TLV received from a physical network connection. Entries may be created and deleted in this table by the agent, if a physical topology discovery process is active.

lldpRemUnknownTLVType 1.0.8802.1.1.2.1.4.3.1.1

This object represents the value extracted from the type field of the TLV.

lldpRemUnknownTLVInfo 1.0.8802.1.1.2.1.4.3.1.2

This object represents the value extracted from the value field of the TLV.

lldpRemOrgDefInfoTable 1.0.8802.1.1.2.1.4.4

This table contains one or more rows per physical network connection which advertises the organizationally defined information.

This table contains one or more rows of organizationally defined information that is not recognized by the local agent.

If the local system is capable of recognizing any organizationally defined information, appropriate extension MIBs from the organization should be used for information retrieval.

lldpRemOrgDefInfoEntry 1.0.8802.1.1.2.1.4.4.1

The information about the unrecognized organizationally defined information advertised by the remote system.

lldpRemOrgDefInfoOUI 1.0.8802.1.1.2.1.4.4.1.1

The Organizationally Unique Identifier (OUI), as defined in IEEE std 802-2001, is a 24 bit (three octets) globally unique assigned number referenced by various standards, of the information received from the remote system.

lldpRemOrgDefInfoSubtype 1.0.8802.1.1.2.1.4.4.1.2

The integer value used to identify the subtype of the organizationally defined information received from the remote system.

lldpRemOrgDefInfoIndex 1.0.8802.1.1.2.1.4.4.1.3

This object represents an arbitrary local integer value used by this agent to identify a particular unrecognized organizationally defined information instance, unique only for the lldpRemOrgDefInfoOUI and lldpRemOrgDefInfoSubtype from the same remote system.

An agent is encouraged to assign monotonically increasing index values to new entries, starting with one, after each reboot. It is considered unlikely that the lldpRemOrgDefInfoIndex will wrap between reboots.

lldpRemOrgDefInfo 1.0.8802.1.1.2.1.4.4.1.4

The string value used to identify the organizationally defined information of the remote system. The encoding for this object should be as defined for SnmpAdminString TC.

LLDP-EXT-DOT1-MIB

The LLDP Management Information Base extension module for IEEE 802.1 organizationally defined discovery information.

LLDP-EXT-DOT1-MIB organization

Figure 36 and Figure 37 depict the organization and structure of the LLDP-EXT-DOT1-MIB.

```
- iso
    - std
        - iso8802
            - ieee802dot1
                - ieee802dot1mibs
                    - lldpMIB
                        - lldpObjects
                            - lldpExtensions
                                - lldpXdot1MIB
                                    - lldpXdot1Objects
                                        - lldpXdot1Config
                                            - lldpXdot1ConfigPortVlanTable
                                            - lldpXdot1ConfigVlanNameTable
                                            - lldpXdot1ConfigProtoVlanTable
                                            - lldpXdot1ConfigProtocolTable
                                        - lldpXdot1LocalData
                                            - lldpXdot1LocTable
                                            - lldpXdot1LocProtoVlanTable
                                            - lldpXdot1LocVlanNameTable
                                            - lldpXdot1LocProtocolTable
                                        - lldpXdot1RemoteData
                                            - lldpXdot1RemTable
                                            - lldpXdot1RemProtoVlanTable
                                            - lldpXdot1RemVlanNameTable
                                            - lldpXdot1RemProtocolTable
```

FIGURE 36 LLDP-EXT-DOT1-MIB overall tree structure

```
- lldpXdot1ConfigPortVlanTable 1.0.8802.1.1.2.1.5.32962.1.1.1
    - lldpXdot1ConfigPortVlanEntry 1.0.8802.1.1.2.1.5.32962.1.1.1.1
        - lldpXdot1ConfigPortVlanTxEnable 1.0.8802.1.1.2.1.5.32962.1.1.1.1.1
- lldpXdot1ConfigVlanNameTable 1.0.8802.1.1.2.1.5.32962.1.1.2
    - lldpXdot1ConfigVlanNameEntry 1.0.8802.1.1.2.1.5.32962.1.1.2.1
        - lldpXdot1ConfigVlanNameTxEnable 1.0.8802.1.1.2.1.5.32962.1.1.2.1.1
- lldpXdot1ConfigProtoVlanTable 1.0.8802.1.1.2.1.5.32962.1.1.3
    - lldpXdot1ConfigProtoVlanEntry 1.0.8802.1.1.2.1.5.32962.1.1.3.1
        - lldpXdot1ConfigProtoVlanTxEnable 1.0.8802.1.1.2.1.5.32962.1.1.3.1.1
- lldpXdot1ConfigProtocolTable 1.0.8802.1.1.2.1.5.32962.1.1.4
    - lldpXdot1ConfigProtocolEntry 1.0.8802.1.1.2.1.5.32962.1.1.4.1
        - lldpXdot1ConfigProtocolTxEnable 1.0.8802.1.1.2.1.5.32962.1.1.4.1.1
- lldpXdot1LocTable 1.0.8802.1.1.2.1.5.32962.1.2.1
    - lldpXdot1LocEntry 1.0.8802.1.1.2.1.5.32962.1.2.1.1
        - lldpXdot1LocPortVlanId 1.0.8802.1.1.2.1.5.32962.1.2.1.1.1
- lldpXdot1LocProtoVlanTable 1.0.8802.1.1.2.1.5.32962.1.2.2
    - lldpXdot1LocProtoVlanEntry 1.0.8802.1.1.2.1.5.32962.1.2.2.1
        - lldpXdot1LocProtoVlanId 1.0.8802.1.1.2.1.5.32962.1.2.2.1.1
        - lldpXdot1LocProtoVlanSupported 1.0.8802.1.1.2.1.5.32962.1.2.2.1.2
        - lldpXdot1LocProtoVlanEnabled 1.0.8802.1.1.2.1.5.32962.1.2.2.1.3
- lldpXdot1LocVlanNameTable 1.0.8802.1.1.2.1.5.32962.1.2.3
    - lldpXdot1LocVlanNameEntry 1.0.8802.1.1.2.1.5.32962.1.2.3.1
        - lldpXdot1LocVlanId 1.0.8802.1.1.2.1.5.32962.1.2.3.1.1
        - lldpXdot1LocVlanName 1.0.8802.1.1.2.1.5.32962.1.2.3.1.2
- lldpXdot1LocProtocolTable 1.0.8802.1.1.2.1.5.32962.1.2.4
    - lldpXdot1LocProtocolEntry 1.0.8802.1.1.2.1.5.32962.1.2.4.1
        - lldpXdot1LocProtocolIndex 1.0.8802.1.1.2.1.5.32962.1.2.4.1.1
        - lldpXdot1LocProtocolId 1.0.8802.1.1.2.1.5.32962.1.2.4.1.2
- lldpXdot1RemTable 1.0.8802.1.1.2.1.5.32962.1.3.1
    - lldpXdot1RemEntry 1.0.8802.1.1.2.1.5.32962.1.3.1.1
        - lldpXdot1RemPortVlanId 1.0.8802.1.1.2.1.5.32962.1.3.1.1.1
- lldpXdot1RemProtoVlanTable 1.0.8802.1.1.2.1.5.32962.1.3.2
    - lldpXdot1RemProtoVlanEntry 1.0.8802.1.1.2.1.5.32962.1.3.2.1
        - lldpXdot1RemProtoVlanId 1.0.8802.1.1.2.1.5.32962.1.3.2.1.1
        - lldpXdot1RemProtoVlanSupported 1.0.8802.1.1.2.1.5.32962.1.3.2.1.2
        - lldpXdot1RemProtoVlanEnabled 1.0.8802.1.1.2.1.5.32962.1.3.2.1.3
- lldpXdot1RemVlanNameTable 1.0.8802.1.1.2.1.5.32962.1.3.3
    - lldpXdot1RemVlanNameEntry 1.0.8802.1.1.2.1.5.32962.1.3.3.1
        - lldpXdot1RemVlanId 1.0.8802.1.1.2.1.5.32962.1.3.3.1.1
        - lldpXdot1RemVlanName 1.0.8802.1.1.2.1.5.32962.1.3.3.1.2
- lldpXdot1RemProtocolTable 1.0.8802.1.1.2.1.5.32962.1.3.4
    - lldpXdot1RemProtocolEntry 1.0.8802.1.1.2.1.5.32962.1.3.4.1
        - lldpXdot1RemProtocolIndex 1.0.8802.1.1.2.1.5.32962.1.3.4.1.1
        - lldpXdot1RemProtocolId 1.0.8802.1.1.2.1.5.32962.1.3.4.1.2
```

FIGURE 37 LLDP-EXT-DOT1-MIB hierarchy

lldpXdot1Config group

lldpXdot1ConfigPortVlanTable 1.0.8802.1.1.2.1.5.32962.1.1.1

A table that controls selection of LLDP Port VLAN-ID TLVs to be transmitted on individual ports.

lldpXdot1ConfigPortVlanEntry 1.0.8802.1.1.2.1.5.32962.1.1.1.1

The LLDP configuration information that controls the transmission of IEEE 802.1 organizationally defined Port VLAN-ID TLV on LLDP transmission capable ports.

lldpXdot1ConfigPortVlanTxEnable 1.0.8802.1.1.2.1.5.32962.1.1.1.1.1

The lldpXdot1ConfigPortVlanTxEnable, which is defined as a truth value and configured by the network management, determines whether the IEEE 802.1 organizationally defined port VLAN TLV transmission is allowed on a given LLDP transmission capable port. The value of this object must be restored from non-volatile storage after a re-initialization of the management system.

lldpXdot1ConfigVlanNameTable 1.0.8802.1.1.2.1.5.32962.1.1.2

The table that controls selection of LLDP VLAN name TLV instances to be transmitted on individual ports.

lldpXdot1ConfigVlanNameEntry 1.0.8802.1.1.2.1.5.32962.1.1.2.1

The LLDP configuration information that specifies the set of ports (represented as a PortList) on which the Local System VLAN name instance will be transmitted.

lldpXdot1ConfigVlanNameTxEnable 1.0.8802.1.1.2.1.5.32962.1.1.2.1.1

The boolean value that indicates whether the corresponding Local System VLAN name instance will be transmitted on the port defined by the given lldpXdot1LocVlanNameEntry. The value of this object must be restored from non-volatile storage after a re-initialization of the management system.

lldpXdot1ConfigProtoVlanTable 1.0.8802.1.1.2.1.5.32962.1.1.3

The table that controls selection of LLDP Port and Protocol VLAN ID TLV instances to be transmitted on individual ports.

lldpXdot1ConfigProtoVlanEntry 1.0.8802.1.1.2.1.5.32962.1.1.3.1

The LLDP configuration information that specifies the set of ports (represented as a PortList) on which the Local System Protocol VLAN instance will be transmitted.

lldpXdot1ConfigProtoVlanTxEnable 1.0.8802.1.1.2.1.5.32962.1.1.3.1.1

The boolean value that indicates whether the corresponding Local System Port and Protocol VLAN instance will be transmitted on the port defined by the given lldpXdot1LocProtoVlanEntry. The value of this object must be restored from non-volatile storage after a re-initialization of the management system.

lldpXdot1ConfigProtocolTable 1.0.8802.1.1.2.1.5.32962.1.1.4

The table that controls selection of LLDP Protocol TLV instances to be transmitted on individual ports.

lldpXdot1ConfigProtocolEntry 1.0.8802.1.1.2.1.5.32962.1.1.4.1

The LLDP configuration information that specifies the set of ports (represented as a PortList) on which the Local System Protocol instance will be transmitted.

lldpXdot1ConfigProtocolTxEnable 1.0.8802.1.1.2.1.5.32962.1.1.4.1.1

The boolean value that indicates whether the corresponding Local System Protocol Identity instance will be transmitted on the port defined by the given lldpXdot1LocProtocolEntry. The value of this object must be restored from non-volatile storage after a re-initialization of the management system.

lldpXdot1LocalData group

lldpXdot1LocTable 1.0.8802.1.1.2.1.5.32962.1.2.1

This table contains one row per port for IEEE 802.1 organizationally defined LLDP extension on the local system known to this agent.

lldpXdot1LocEntry 1.0.8802.1.1.2.1.5.32962.1.2.1.1

The information about IEEE 802.1 organizationally defined LLDP extension.

lldpXdot1LocPortVlanId 1.0.8802.1.1.2.1.5.32962.1.2.1.1.1

The integer value used to identify the port's VLAN identifier associated with the local system. A value of zero shall be used if the system either does not know the PVID or does not support port-based VLAN operation. This object displays zero although the TE interfaces are associated with VLANS.

lldpXdot1LocProtoVlanTable 1.0.8802.1.1.2.1.5.32962.1.2.2

This table contains one or more rows per Port and Protocol VLAN information about the local system.

lldpXdot1LocProtoVlanEntry 1.0.8802.1.1.2.1.5.32962.1.2.2.1

The port and protocol VLAN ID Information about a particular port component. There may be multiple port and protocol VLANs, identified by a particular lldpXdot1LocProtoVlanId, configured on the given port.

lldpXdot1LocProtoVlanId 1.0.8802.1.1.2.1.5.32962.1.2.2.1.1

The integer value used to identify the port and protocol VLANs associated with the given port associated with the local system. A value of zero shall be used if the system either does not know the protocol VLAN ID (PPVID) or does not support port and protocol VLAN operation.

lldpXdot1LocProtoVlanSupported 1.0.8802.1.1.2.1.5.32962.1.2.2.1.2

The truth value used to indicate whether the given port (associated with the local system) supports port and protocol VLANs.

lldpXdot1LocProtoVlanEnabled 1.0.8802.1.1.2.1.5.32962.1.2.2.1.3

The truth value used to indicate whether the port and protocol VLANs are enabled on the given port associated with the local system.

If *fcoeport* is configured then that interface supports protocol-based VLAN and lldpXdot1LocProtoVlanEnabled should return true (1). This is the local property of the interface and it does not depend on whether dot1-tlv is being advertised or not.

lldpXdot1LocVlanNameTable 1.0.8802.1.1.2.1.5.32962.1.2.3

This table contains one or more rows per IEEE 802.1Q VLAN name information on the local system known to this agent.

lldpXdot1LocVlanNameEntry 1.0.8802.1.1.2.1.5.32962.1.2.3.1

The VLAN name Information about a particular port component. There may be multiple VLANs, identified by a particular lldpXdot1LocVlanId, configured on the given port.

lldpXdot1LocVlanId 1.0.8802.1.1.2.1.5.32962.1.2.3.1.1

The integer value used to identify the IEEE 802.1Q VLAN IDs with which the given port is compatible.

lldpXdot1LocVlanName 1.0.8802.1.1.2.1.5.32962.1.2.3.1.2

The string value used to identify VLAN name identified by the VLAN ID associated with the given port on the local system.

lldpXdot1LocProtocolTable 1.0.8802.1.1.2.1.5.32962.1.2.4

This table contains one or more rows per protocol identity information on the local system known to this agent.

lldpXdot1LocProtocolEntry 1.0.8802.1.1.2.1.5.32962.1.2.4.1

The information about particular protocols that are accessible through the given port component.

lldpXdot1LocProtocolIndex 1.0.8802.1.1.2.1.5.32962.1.2.4.1.1

This object represents an arbitrary local integer value used by this agent to identify a particular protocol identity.

lldpXdot1LocProtocolId 1.0.8802.1.1.2.1.5.32962.1.2.4.1.2

The octet string value used to identify the protocols associated with the given port of the local system.

lldpXdot1RemoteData group

lldpXdot1RemTable 1.0.8802.1.1.2.1.5.32962.1.3.1

This table contains one or more rows per physical network connection known to this agent.

lldpXdot1RemEntry 1.0.8802.1.1.2.1.5.32962.1.3.1.1

The information about a particular port component.

lldpXdot1RemPortVlanId 1.0.8802.1.1.2.1.5.32962.1.3.1.1.1

The integer value used to identify the port's VLAN identifier associated with the remote system. if the remote system either does not know the PVID or does not support port-based VLAN operation, the value of lldpXdot1RemPortVlanId should be zero.

lldpXdot1RemProtoVlanTable 1.0.8802.1.1.2.1.5.32962.1.3.2

This table contains one or more rows per Port and Protocol VLAN information about the remote system, received on the given port.

lldpXdot1RemProtoVlanEntry 1.0.8802.1.1.2.1.5.32962.1.3.2.1

The port and protocol VLAN name Information about a particular port component.

lldpXdot1RemProtoVlanId 1.0.8802.1.1.2.1.5.32962.1.3.2.1.1

The integer value used to identify the port and protocol VLANs associated with the given port associated with the remote system.

If port and protocol VLANs are not supported on the given port associated with the remote system, or if the port is not enabled with any port and protocol VLAN, the value of lldpXdot1RemProtoVlanId should be zero.

lldpXdot1RemProtoVlanSupported 1.0.8802.1.1.2.1.5.32962.1.3.2.1.2

The truth value used to indicate whether the given port (associated with the remote system) is capable of supporting port and protocol VLANs.

lldpXdot1RemProtoVlanEnabled 1.0.8802.1.1.2.1.5.32962.1.3.2.1.3

The truth value used to indicate whether the port and protocol VLANs are enabled on the given port associated with the remote system.

lldpXdot1RemVlanNameTable 1.0.8802.1.1.2.1.5.32962.1.3.3

This table contains one or more rows per IEEE 802.1Q VLAN name information about the remote system, received on the given port.

lldpXdot1RemVlanNameEntry 1.0.8802.1.1.2.1.5.32962.1.3.3.1

The VLAN name Information about a particular port component.

lldpXdot1RemVlanId 1.0.8802.1.1.2.1.5.32962.1.3.3.1.1

The integer value used to identify the IEEE 802.1Q VLAN IDs with which the given port of the remote system is compatible.

lldpXdot1RemVlanName 1.0.8802.1.1.2.1.5.32962.1.3.3.1.2

The string value used to identify VLAN name identified by the VLAN ID associated with the remote system.

lldpXdot1RemProtocolTable 1.0.8802.1.1.2.1.5.32962.1.3.4

This table contains one or more rows per protocol information about the remote system, received on the given port.

lldpXdot1RemProtocolEntry 1.0.8802.1.1.2.1.5.32962.1.3.4.1

The protocol information about a particular port component.

lldpXdot1RemProtocolIndex 1.0.8802.1.1.2.1.5.32962.1.3.4.1.1

This object represents an arbitrary local integer value used by this agent to identify a particular protocol identity.

lldpXdot1RemProtocolId 1.0.8802.1.1.2.1.5.32962.1.3.4.1.2

The octet string value used to identify the protocols associated with the given port of remote system.

LLDP-EXT-DOT3-MIB

The LLDP Management Information Base extension module for IEEE 802.3 organizationally defined discovery information.

LLDP-EXT-DOT3-MIB organization

Figure 38 and Figure 39 depict the organization and structure of the LLDP-EXT-DOT3-MIB.

```
- iso
   - std
      - iso8802
         - ieee802dot1
            - ieee802dot1mibs
               - lldpMIB
                  - lldpObjects
                     - lldpExtensions
                        - lldpXdot3MIB
                           - lldpXdot3Objects
                              - lldpXdot3Config
                                 - lldpXdot3PortConfigTable
                              - lldpXdot3LocalData
                                 - lldpXdot3LocPortTable
                                 - lldpXdot3LocPowerTable
                                 - lldpXdot3LocLinkAggTable
                                 - lldpXdot3LocMaxFrameSizeTable
                              - lldpXdot3RemoteData
                                 - lldpXdot3RemPortTable
                                 - lldpXdot3RemLinkAggTable
                                 - lldpXdot3RemMaxFrameSizeTable
```

FIGURE 38 LLDP-EXT-DOT3-MIB overall tree structure

```
- lldpXdot3PortConfigTable 1.0.8802.1.1.2.1.5.4623.1.1.1
   - lldpXdot3PortConfigEntry 1.0.8802.1.1.2.1.5.4623.1.1.1.1
      - lldpXdot3PortConfigTLVsTxEnable 1.0.8802.1.1.2.1.5.4623.1.1.1.1.1
- lldpXdot3LocPortTable 1.0.8802.1.1.2.1.5.4623.1.2.1
   - lldpXdot3LocPortEntry 1.0.8802.1.1.2.1.5.4623.1.2.1.1
      - lldpXdot3LocPortAutoNegSupported 1.0.8802.1.1.2.1.5.4623.1.2.1.1.1
      - lldpXdot3LocPortAutoNegEnabled 1.0.8802.1.1.2.1.5.4623.1.2.1.1.2
      - lldpXdot3LocPortAutoNegAdvertisedCap 1.0.8802.1.1.2.1.5.4623.1.2.1.1.3
      - lldpXdot3LocPortOperMauType 1.0.8802.1.1.2.1.5.4623.1.2.1.1.4
- lldpXdot3LocLinkAggTable 1.0.8802.1.1.2.1.5.4623.1.2.3
   - lldpXdot3LocLinkAggEntry 1.0.8802.1.1.2.1.5.4623.1.2.3.1
      - lldpXdot3LocLinkAggStatus 1.0.8802.1.1.2.1.5.4623.1.2.3.1.1
      - lldpXdot3LocLinkAggPortId 1.0.8802.1.1.2.1.5.4623.1.2.3.1.2
- lldpXdot3LocMaxFrameSizeTable 1.0.8802.1.1.2.1.5.4623.1.2.4
   - lldpXdot3LocMaxFrameSizeEntry 1.0.8802.1.1.2.1.5.4623.1.2.4.1
      - lldpXdot3LocMaxFrameSize 1.0.8802.1.1.2.1.5.4623.1.2.4.1.1
- lldpXdot3RemPortTable 1.0.8802.1.1.2.1.5.4623.1.3.1
   - lldpXdot3RemPortEntry 1.0.8802.1.1.2.1.5.4623.1.3.1.1
      - lldpXdot3RemPortAutoNegSupported 1.0.8802.1.1.2.1.5.4623.1.3.1.1.1
      - lldpXdot3RemPortAutoNegEnabled 1.0.8802.1.1.2.1.5.4623.1.3.1.1.2
      - lldpXdot3RemPortAutoNegAdvertisedCap 1.0.8802.1.1.2.1.5.4623.1.3.1.1.3
      - lldpXdot3RemPortOperMauType 1.0.8802.1.1.2.1.5.4623.1.3.1.1.4
- lldpXdot3RemLinkAggTable 1.0.8802.1.1.2.1.5.4623.1.3.3
   - lldpXdot3RemLinkAggEntry 1.0.8802.1.1.2.1.5.4623.1.3.3.1
      - lldpXdot3RemLinkAggStatus 1.0.8802.1.1.2.1.5.4623.1.3.3.1.1
      - lldpXdot3RemLinkAggPortId 1.0.8802.1.1.2.1.5.4623.1.3.3.1.2
- lldpXdot3RemMaxFrameSizeTable 1.0.8802.1.1.2.1.5.4623.1.3.4
   - lldpXdot3RemMaxFrameSizeEntry 1.0.8802.1.1.2.1.5.4623.1.3.4.1
      - lldpXdot3RemMaxFrameSize 1.0.8802.1.1.2.1.5.4623.1.3.4.1.1
```

FIGURE 39 LLDP-EXT-DOT3-MIB hierarchy

lldpXdot3Config group

lldpXdot3PortConfigTable 1.0.8802.1.1.2.1.5.4623.1.1.1

A table that controls selection of LLDP TLVs to be transmitted on individual ports.

lldpXdot3PortConfigEntry 1.0.8802.1.1.2.1.5.4623.1.1.1.1

The LLDP configuration information that controls the transmission of IEEE 802.3 organizationally defined TLVs on LLDP transmission capable ports.

lldpXdot3PortConfigTLVsTxEnable 1.0.8802.1.1.2.1.5.4623.1.1.1.1.1

The lldpXdot3PortConfigTLVsTxEnable, defined as a bitmap, includes the IEEE 802.3 organizationally defined set of LLDP TLVs whose transmission is allowed on the local LLDP agent by the network management. Each bit in the bitmap corresponds to an IEEE 802.3 subtype associated with a specific IEEE 802.3 optional TLV.

lldpXdot3LocalData group

lldpXdot3LocPortTable 1.0.8802.1.1.2.1.5.4623.1.2.1

This table contains one row per port of Ethernet port information (as a part of the LLDP 802.3 organizational extension) on the local system known to this agent.

lldpXdot3LocPortEntry 1.0.8802.1.1.2.1.5.4623.1.2.1.1

The information about a particular port component.

lldpXdot3LocPortAutoNegSupported 1.0.8802.1.1.2.1.5.4623.1.2.1.1.1

The truth value used to indicate whether the given port (associated with the local system) supports Auto-negotiation.

lldpXdot3LocPortAutoNegEnabled 1.0.8802.1.1.2.1.5.4623.1.2.1.1.2

The truth value used to indicate whether port Auto-negotiation is enabled on the given port associated with the local system.

lldpXdot3LocPortAutoNegAdvertisedCap 1.0.8802.1.1.2.1.5.4623.1.2.1.1.3

This object contains the value (bitmap) of the ifMauAutoNegCapAdvertisedBits object (defined in IETF RFC 3636) which is associated with the given port on the local system.

lldpXdot3LocPortOperMauType 1.0.8802.1.1.2.1.5.4623.1.2.1.1.4

An integer value that indicates the operational MAU type of the given port on the local system.

lldpXdot3LocPowerTable 1.0.8802.1.1.2.1.5.4623.1.2.2

Not supported.

lldpXdot3LocLinkAggTable 1.0.8802.1.1.2.1.5.4623.1.2.3

This table contains one row per port of link aggregation information (as a part of the LLDP 802.3 organizational extension) on the local system known to this agent.

lldpXdot3LocLinkAggEntry 1.0.8802.1.1.2.1.5.4623.1.2.3.1

The Link aggregation information about a particular port component.

lldpXdot3LocLinkAggStatus 1.0.8802.1.1.2.1.5.4623.1.2.3.1.1

The bitmap value contains the link aggregation capabilities and the current aggregation status of the link.

lldpXdot3LocLinkAggPortId 1.0.8802.1.1.2.1.5.4623.1.2.3.1.2

This object contains the IEEE 802.3 aggregated port identifier, aAggPortID (IEEE 802.3-2002, 30.7.2.1.1), derived from the ifNumber of the ifIndex for the port component in link aggregation.

If the port is not in link aggregation state and if it does not support link aggregation, this value should be set to zero.

lldpXdot3LocMaxFrameSizeTable 1.0.8802.1.1.2.1.5.4623.1.2.4

This table contains one row per port of maximum frame size information (as a part of the LLDP 802.3 organizational extension) on the local system known to this agent.

lldpXdot3LocMaxFrameSizeEntry 1.0.8802.1.1.2.1.5.4623.1.2.4.1

The maximum frame size information about a particular port component.

lldpXdot3LocMaxFrameSize 1.0.8802.1.1.2.1.5.4623.1.2.4.1.1

An integer value indicating the maximum supported frame size in octets on the given port of the local system.

lldpXdot3RemoteData group

lldpXdot3RemPortTable 1.0.8802.1.1.2.1.5.4623.1.3.1

This table contains Ethernet port information (as a part of the LLDP 802.3 organizational extension) of the remote system.

lldpXdot3RemPortEntry 1.0.8802.1.1.2.1.5.4623.1.3.1.1

The information about a particular physical network connection.

lldpXdot3RemPortAutoNegSupported 1.0.8802.1.1.2.1.5.4623.1.3.1.1.1

The truth value used to indicate whether the given port (associated with remote system) supports Auto-negotiation.

lldpXdot3RemPortAutoNegEnabled 1.0.8802.1.1.2.1.5.4623.1.3.1.1.2

The truth value used to indicate whether port Auto-negotiation is enabled on the given port associated with the remote system.

lldpXdot3RemPortAutoNegAdvertisedCap 1.0.8802.1.1.2.1.5.4623.1.3.1.1.3

This object contains the value (bitmap) of the ifMauAutoNegCapAdvertisedBits object (defined in IETF RFC 3636) which is associated with the given port on the remote system.

lldpXdot3RemPortOperMauType 1.0.8802.1.1.2.1.5.4623.1.3.1.1.4

An integer value that indicates the operational MAU type of the sending device.

lldpXdot3RemLinkAggTable 1.0.8802.1.1.2.1.5.4623.1.3.3

This table contains port link aggregation information (as a part of the LLDP 802.3 organizational extension) of the remote system.

lldpXdot3RemLinkAggEntry 1.0.8802.1.1.2.1.5.4623.1.3.3.1

The Link Aggregation information about remote system's port component.

lldpXdot3RemLinkAggStatus 1.0.8802.1.1.2.1.5.4623.1.3.3.1.1

The bitmap value contains the link aggregation capabilities and the current aggregation status of the link.

lldpXdot3RemLinkAggPortId 1.0.8802.1.1.2.1.5.4623.1.3.3.1.2

This object contains the IEEE 802.3 aggregated port identifier, aAggPortID (IEEE 802.3-2002, 30.7.2.1.1), derived from the ifNumber of the ifIndex for the port component associated with the remote system.

If the remote port is not in link aggregation state and if it does not support link aggregation, this value should be zero.

lldpXdot3RemMaxFrameSizeTable 1.0.8802.1.1.2.1.5.4623.1.3.4

This table contains one row per port of maximum frame size information (as a part of the LLDP 802.3 organizational extension) of the remote system.

lldpXdot3RemMaxFrameSizeEntry 1.0.8802.1.1.2.1.5.4623.1.3.4.1

The maximum frame size information about a particular port component.

lldpXdot3RemMaxFrameSize 1.0.8802.1.1.2.1.5.4623.1.3.4.1.1

An integer value indicating the maximum supported frame size in octets on the port component associated with the remote system.

5 lldpXdot3RemMaxFrameSize 1.0.8802.1.1.2.1.5.4623.1.3.4.1.1

Chapter

6

IEEE 802.3 LAG MIB Objects

In this chapter

IEEE 802.3 LAG MIB overview

The descriptions of the MIB variables in this chapter come directly from the IEEE 802.3 LAG MIB. The notes that follow the descriptions typically pertain to Brocade-specific information as provided by Brocade.

Figure 40 through Figure 45 depict the organization and structure of the IEEE 802.3 LAG MIB.

```
- iso
    - member-body
        - us
            - ieee802dot3
                - snmpmibs
                    - lagMIB
                        - lagMIBObjects
                            - dot3adAgg
                                - dot3adAggTable
                                - dot3adAggPortListTable
                            - dot3adAggPort
                                - dot3adAggPortTable
                                - dot3adAggPortStatsTable
                                - dot3adAggPortDebugTable
                            - dot3adTablesLastChanged
```

FIGURE 40 IEEE 802.3 LAG MIB overall tree structure

```
- dot3adAggTable 1.2.840.10006.300.43.1.1.1
    - dot3adAggEntry 1.2.840.10006.300.43.1.1.1.1
        - dot3adAggIndex 1.2.840.10006.300.43.1.1.1.1.1
        - dot3adAggMACAddress 1.2.840.10006.300.43.1.1.1.1.2
        - dot3adAggActorSystemPriority 1.2.840.10006.300.43.1.1.1.1.3
        - dot3adAggActorSystemID 1.2.840.10006.300.43.1.1.1.1.4
        - dot3adAggAggregateOrIndividual 1.2.840.10006.300.43.1.1.1.1.5
        - dot3adAggActorAdminKey 1.2.840.10006.300.43.1.1.1.1.6
        - dot3adAggActorOperKey 1.2.840.10006.300.43.1.1.1.1.7
        - dot3adAggPartnerSystemID 1.2.840.10006.300.43.1.1.1.1.8
        - dot3adAggPartnerSystemPriority 1.2.840.10006.300.43.1.1.1.1.9
        - dot3adAggPartnerOperKey 1.2.840.10006.300.43.1.1.1.1.10
        - dot3adAggCollectorMaxDelay 1.2.840.10006.300.43.1.1.1.1.11
```

FIGURE 41 dot3adAggTable hierarchy

```
- dot3adAggPortListTable 1.2.840.10006.300.43.1.1.2
    - dot3adAggPortListEntry 1.2.840.10006.300.43.1.1.2.1
        - dot3adAggPortListPorts 1.2.840.10006.300.43.1.1.2.1.1
```

FIGURE 42 dot3adAggPortListTable hierarchy

```
- dot3adAggPortTable 1.2.840.10006.300.43.1.2.1
    - dot3adAggPortEntry 1.2.840.10006.300.43.1.2.1.1
        - dot3adAggPortIndex 1.2.840.10006.300.43.1.2.1.1.1
        - dot3adAggPortActorSystemPriority 1.2.840.10006.300.43.1.2.1.1.2
        - dot3adAggPortActorSystemID 1.2.840.10006.300.43.1.2.1.1.3
        - dot3adAggPortActorAdminKey 1.2.840.10006.300.43.1.2.1.1.4
        - dot3adAggPortActorOperKey 1.2.840.10006.300.43.1.2.1.1.5
        - dot3adAggPortPartnerAdminSystemPriority 1.2.840.10006.300.43.1.2.1.1.6
        - dot3adAggPortPartnerOperSystemPriority 1.2.840.10006.300.43.1.2.1.1.7
        - dot3adAggPortPartnerAdminSystemID 1.2.840.10006.300.43.1.2.1.1.8
        - dot3adAggPortPartnerOperSystemID 1.2.840.10006.300.43.1.2.1.1.9
        - dot3adAggPortPartnerAdminKey 1.2.840.10006.300.43.1.2.1.1.10
        - dot3adAggPortPartnerOperKey 1.2.840.10006.300.43.1.2.1.1.11
        - dot3adAggPortSelectedAggID 1.2.840.10006.300.43.1.2.1.1.12
        - dot3adAggPortAttachedAggID 1.2.840.10006.300.43.1.2.1.1.13
        - dot3adAggPortActorPort 1.2.840.10006.300.43.1.2.1.1.14
        - dot3adAggPortActorPortPriority 1.2.840.10006.300.43.1.2.1.1.15
        - dot3adAggPortPartnerAdminPort 1.2.840.10006.300.43.1.2.1.1.16
        - dot3adAggPortPartnerOperPort 1.2.840.10006.300.43.1.2.1.1.17
        - dot3adAggPortPartnerAdminPortPriority 1.2.840.10006.300.43.1.2.1.1.18
        - dot3adAggPortPartnerOperPortPriority 1.2.840.10006.300.43.1.2.1.1.19
        - dot3adAggPortActorAdminState 1.2.840.10006.300.43.1.2.1.1.20
        - dot3adAggPortActorOperState 1.2.840.10006.300.43.1.2.1.1.21
        - dot3adAggPortPartnerAdminState 1.2.840.10006.300.43.1.2.1.1.22
        - dot3adAggPortPartnerOperState 1.2.840.10006.300.43.1.2.1.1.23
        - dot3adAggPortAggregateOrIndividual 1.2.840.10006.300.43.1.2.1.1.24
```

FIGURE 43 dot3adAggPortTable hierarchy

```
- dot3adAggPortStatsTable 1.2.840.10006.300.43.1.2.2
    - dot3adAggPortStatsEntry 1.2.840.10006.300.43.1.2.2.1
        - dot3adAggPortStatsLACPDUsRx 1.2.840.10006.300.43.1.2.2.1.1
        - dot3adAggPortStatsMarkerPDUsRx 1.2.840.10006.300.43.1.2.2.1.2
        - dot3adAggPortStatsMarkerResponsePDUsRx 1.2.840.10006.300.43.1.2.2.1.3
        - dot3adAggPortStatsUnknownRx 1.2.840.10006.300.43.1.2.2.1.4
        - dot3adAggPortStatsIllegalRx 1.2.840.10006.300.43.1.2.2.1.5
        - dot3adAggPortStatsLACPDUsTx 1.2.840.10006.300.43.1.2.2.1.6
        - dot3adAggPortStatsMarkerPDUsTx 1.2.840.10006.300.43.1.2.2.1.7
        - dot3adAggPortStatsMarkerResponsePDUsTx 1.2.840.10006.300.43.1.2.2.1.8
```

FIGURE 44 dot3adAggPortStatsTable hierarchy

```
- dot3adAggPortDebugTable 1.2.840.10006.300.43.1.2.3
    - dot3adAggPortDebugEntry 1.2.840.10006.300.43.1.2.3.1
        - dot3adAggPortDebugRxState 1.2.840.10006.300.43.1.2.3.1.1
        - dot3adAggPortDebugLastRxTime 1.2.840.10006.300.43.1.2.3.1.2
        - dot3adAggPortDebugMuxState 1.2.840.10006.300.43.1.2.3.1.3
        - dot3adAggPortDebugMuxReason 1.2.840.10006.300.43.1.2.3.1.4
        - dot3adAggPortDebugActorChurnState 1.2.840.10006.300.43.1.2.3.1.5
        - dot3adAggPortDebugPartnerChurnState 1.2.840.10006.300.43.1.2.3.1.6
        - dot3adAggPortDebugActorChurnCount 1.2.840.10006.300.43.1.2.3.1.7
        - dot3adAggPortDebugPartnerChurnCount 1.2.840.10006.300.43.1.2.3.1.8
        - dot3adAggPortDebugActorSyncTransitionCount
1.2.840.10006.300.43.1.2.3.1.9
        - dot3adAggPortDebugPartnerSyncTransitionCount
1.2.840.10006.300.43.1.2.3.1.10
        - dot3adAggPortDebugActorChangeCount 1.2.840.10006.300.43.1.2.3.1.11
        - dot3adAggPortDebugPartnerChangeCount 1.2.840.10006.300.43.1.2.3.1.12
```

FIGURE 45 dot3adAggPortDebugTable hierarchy

dot3adAgg group

dot3adAggTable 1.2.840.10006.300.43.1.1.1

A table that contains information about every Aggregator that is associated with this System.

dot3adAggEntry 1.2.840.10006.300.43.1.1.1.1

A list of the Aggregator parameters. This is indexed by the ifIndex of the Aggregator.

dot3adAggIndex 1.2.840.10006.300.43.1.1.1.1.1

The unique identifier allocated to this Aggregator by the local System. This attribute identifies an Aggregator instance among the subordinate managed objects of the containing object. This value is read-only.

dot3adAggMACAddress 1.2.840.10006.300.43.1.1.1.1.2

A 6-octet read-only value carrying the individual MAC address assigned to the Aggregator.

The **show debug port-channel all** command returns the aggregator MAC address.

dot3adAggActorSystemPriority 1.2.840.10006.300.43.1.1.1.1.3

A 2-octet read-write value indicating the priority value associated with the Actor's System ID.

dot3adAggActorSystemID 1.2.840.10006.300.43.1.1.1.1.4

A 6-octet read-write MAC address value used as a unique identifier for the System that contains this Aggregator.

dot3adAggAggregateOrIndividual 1.2.840.10006.300.43.1.1.1.1.5

A read-only Boolean value indicating whether the Aggregator represents an Aggregate (TRUE) or an Individual link (FALSE).

dot3adAggActorAdminKey 1.2.840.10006.300.43.1.1.1.1.6

The current administrative value of the Key for the Aggregator.

dot3adAggActorOperKey 1.2.840.10006.300.43.1.1.1.1.7

The current operational value of the Key for the Aggregator.

dot3adAggPartnerSystemID 1.2.840.10006.300.43.1.1.1.1.8

A 6-octet read-only MAC address value consisting of the unique identifier for the current protocol Partner of this Aggregator. A value of zero indicates that there is no known Partner. If the aggregation is manually configured, this System ID value will be a value assigned by the local System.

dot3adAggPartnerSystemPriority 1.2.840.10006.300.43.1.1.1.1.9

A 2-octet read-only value that indicates the priority value associated with the Partner's System ID. If the aggregation is manually configured, this System Priority value will be a value assigned by the local System.

dot3adAggPartnerOperKey 1.2.840.10006.300.43.1.1.1.1.10

The current operational value of the Key for the Aggregator's current protocol Partner. This is a 16-bit, read-only value. If the aggregation is manually configured, this Key value will be a value assigned by the local System.

dot3adAggCollectorMaxDelay 1.2.840.10006.300.43.1.1.1.1.11

The value of this 16-bit read-write attribute defines the maximum delay, in tens of microseconds, that may be imposed by the Frame Collector between receiving a frame from an Aggregator Parser, and either delivering the frame to its MAC Client or discarding the frame.

dot3adAggPortListTable 1.2.840.10006.300.43.1.1.2

A table that contains a list of all the ports associated with each Aggregator.

dot3adAggPortListEntry 1.2.840.10006.300.43.1.1.2.1

A list of the ports associated with a given Aggregator.

dot3adAggPortListPorts 1.2.840.10006.300.43.1.1.2.1.1

The complete set of ports currently associated with this Aggregator. Each bit set in this list represents an Actor Port member of this Link Aggregation.

dot3adAggPort group

dot3adAggPortTable 1.2.840.10006.300.43.1.2.1

A table that contains Link Aggregation Control configuration information about every Aggregation Port associated with the device. A row appears in this table for each physical port.

dot3adAggPortEntry 1.2.840.10006.300.43.1.2.1.1

A list of Link Aggregation Control configuration parameters for each Aggregation Port on the device.

dot3adAggPortIndex 1.2.840.10006.300.43.1.2.1.1.1

The ifIndex of the port.

dot3adAggPortActorSystemPriority 1.2.840.10006.300.43.1.2.1.1.2

A 2-octet read-write value used to define the priority value associated with the Actor's System ID.

dot3adAggPortActorSystemID 1.2.840.10006.300.43.1.2.1.1.3

A 6-octet read-only MAC address value that defines the value of the System ID for the System that contains this Aggregation Port.

dot3adAggPortActorAdminKey 1.2.840.10006.300.43.1.2.1.1.4

The current administrative value of the Key for the Aggregation Port. This is a 16-bit, read-write value. The meaning of particular Key values is of local significance.

dot3adAggPortActorOperKey 1.2.840.10006.300.43.1.2.1.1.5

The current operational value of the Key for the Aggregation Port. This is a 16-bit, read-only value. The meaning of particular Key values is of local significance.

dot3adAggPortPartnerAdminSystemPriority 1.2.840.10006.300.43.1.2.1.1.6

A 2-octet read-write value used to define the administrative value of priority associated with the Partner's System ID. The assigned value is used, along with the value of aAggPortPartnerAdminSystemID, aAggPortPartnerAdminKey, aAggPortPartnerAdminPort, and aAggPortPartnerAdminPortPriority, in order to achieve manually configured aggregation.

dot3adAggPortPartnerOperSystemPriority 1.2.840.10006.300.43.1.2.1.1.7

A 2-octet read-only value indicating the operational value of priority associated with the Partner's System ID. The value of this attribute may contain the manually configured value carried in aAggPortPartnerAdminSystemPriority if there is no protocol Partner.

dot3adAggPortPartnerAdminSystemID 1.2.840.10006.300.43.1.2.1.1.8

A 6-octet read-write MACAddress value representing the administrative value of the Aggregation Port's protocol Partner's System ID. The assigned value is used, along with the value of aAggPortPartnerAdminSystemPriority, aAggPortPartnerAdminKey, aAggPortPartnerAdminPort, and aAggPortPartnerAdminPortPriority, in order to achieve manually configured aggregation.

dot3adAggPortPartnerOperSystemID 1.2.840.10006.300.43.1.2.1.1.9

A 6-octet read-only MACAddress value representing the current value of the Aggregation Port's protocol Partner's System ID. A value of zero indicates that there is no known protocol Partner. The value of this attribute may contain the manually configured value carried in aAggPortPartnerAdminSystemID if there is no protocol Partner.

dot3adAggPortPartnerAdminKey 1.2.840.10006.300.43.1.2.1.1.10

The current administrative value of the Key for the protocol Partner. This is a 16-bit, read-write value. The assigned value is used, along with the value of aAggPortPartnerAdminSystemPriority, aAggPortPartnerAdminSystemID, aAggPortPartnerAdminPort, and aAggPortPartnerAdminPortPriority, in order to achieve manually configured aggregation.

dot3adAggPortPartnerOperKey 1.2.840.10006.300.43.1.2.1.1.11

The current operational value of the Key for the protocol Partner. The value of this attribute may contain the manually configured value carried in aAggPortPartnerAdminKey if there is no protocol Partner. This is a 16-bit, read-only value.

dot3adAggPortSelectedAggID 1.2.840.10006.300.43.1.2.1.1.12

The identifier value of the Aggregator that this Aggregation Port has currently selected. Zero indicates that the Aggregation Port has not selected an Aggregator, either because it is in the process of detaching from an Aggregator or because there is no suitable Aggregator available for it to select. This value is read-only.

dot3adAggPortAttachedAggID 1.2.840.10006.300.43.1.2.1.1.13

The identifier value of the Aggregator that this Aggregation Port is currently attached to. Zero indicates that the Aggregation Port is not currently attached to an Aggregator. This value is read-only.

dot3adAggPortActorPort 1.2.840.10006.300.43.1.2.1.1.14

The port number locally assigned to the Aggregation Port. The port number is communicated in LACPDUs as the Actor_Port. This value is read-only.

dot3adAggPortActorPortPriority 1.2.840.10006.300.43.1.2.1.1.15

The priority value assigned to this Aggregation Port. This 16-bit value is read-write.

dot3adAggPortPartnerAdminPort 1.2.840.10006.300.43.1.2.1.1.16

The current administrative value of the port number for the protocol Partner. This is a 16-bit, read-write value. The assigned value is used, along with the value of aAggPortPartnerAdminSystemPriority, aAggPortPartnerAdminSystemID, aAggPortPartnerAdminKey, and aAggPortPartnerAdminPortPriority, in order to achieve manually configured aggregation.

dot3adAggPortPartnerOperPort 1.2.840.10006.300.43.1.2.1.1.17

The operational port number assigned to this Aggregation Port by the Aggregation Port's protocol Partner. The value of this attribute may contain the manually configured value carried in aAggPortPartnerAdminPort if there is no protocol Partner. This 16-bit value is read-only.

dot3adAggPortPartnerAdminPortPriority 1.2.840.10006.300.43.1.2.1.1.18

The current administrative value of the port priority for the protocol Partner. This is a 16-bit, read-write value. The assigned value is used, along with the value of aAggPortPartnerAdminSystemPriority, aAggPortPartnerAdminSystemID, aAggPortPartnerAdminKey, and aAggPortPartnerAdminPort, in order to achieve manually configured aggregation.

dot3adAggPortPartnerOperPortPriority 1.2.840.10006.300.43.1.2.1.1.19

The priority value assigned to this Aggregation Port by the Partner. The value of this attribute may contain the manually configured value carried in aAggPortPartnerAdminPortPriority if there is no protocol Partner. This 16-bit value is read-only.

dot3adAggPortActorAdminState 1.2.840.10006.300.43.1.2.1.1.20

A string of 8 bits, corresponding to the administrative values of Actor_State (43.4.2) as transmitted by the Actor in LACPDUs. This attribute value is read-only.

dot3adAggPortActorOperState 1.2.840.10006.300.43.1.2.1.1.21

A string of 8 bits, corresponding to the current operational values of Actor_State as transmitted by the Actor in LACPDUs. This attribute value is read-only.

dot3adAggPortPartnerAdminState 1.2.840.10006.300.43.1.2.1.1.22

A string of 8 bits, corresponding to the current administrative value of Actor_State for the protocol Partner. This attribute value is read-write.

dot3adAggPortPartnerOperState 1.2.840.10006.300.43.1.2.1.1.23

A string of 8 bits, corresponding to the current values of Actor_State in the most recently received LACPDU transmitted by the protocol Partner. This attribute value is read-only.

dot3adAggPortAggregateOrIndividual 1.2.840.10006.300.43.1.2.1.1.24

A read-only Boolean value indicating whether the Aggregation Port is able to Aggregate (TRUE) or is only able to operate as an Individual link (FALSE).

dot3adAggPortStatsTable 1.2.840.10006.300.43.1.2.2

A table that contains Link Aggregation information about every port that is associated with this device. A row appears in this table for each physical port.

dot3adAggPortStatsEntry 1.2.840.10006.300.43.1.2.2.1

A list of Link Aggregation Control Protocol statistics for each port on this device.

dot3adAggPortStatsLACPDUsRx 1.2.840.10006.300.43.1.2.2.1.1

The number of valid LACPDUs received on this Aggregation Port. This value is read-only.

dot3adAggPortStatsMarkerPDUsRx 1.2.840.10006.300.43.1.2.2.1.2

The number of valid Marker PDUs received on this Aggregation Port. This value is read-only.

dot3adAggPortStatsMarkerResponsePDUsRx 1.2.840.10006.300.43.1.2.2.1.3

The number of valid Marker Response PDUs received on this Aggregation Port. This value is read-only.

dot3adAggPortStatsUnknownRx 1.2.840.10006.300.43.1.2.2.1.4

The number of frames received that either carry the Slow Protocols Ethernet Type value (43B.4), but contain an unknown PDU, or addressed to the Slow Protocols group MAC Address (43B.4), but do not carry the Slow Protocols Ethernet Type. This value is read-only.

dot3adAggPortStatsIllegalRx 1.2.840.10006.300.43.1.2.2.1.5

The number of frames received that carry the Slow Protocols Ethernet Type value (43B.4), but contain a badly formed PDU or an illegal value of Protocol Subtype (43B.4). This value is read-only.

dot3adAggPortStatsLACPDUsTx 1.2.840.10006.300.43.1.2.2.1.6

The number of LACPDUs transmitted on this Aggregation Port. This value is read-only.

dot3adAggPortStatsMarkerPDUsTx 1.2.840.10006.300.43.1.2.2.1.7

The number of Marker PDUs transmitted on this Aggregation Port. This value is read-only.

dot3adAggPortStatsMarkerResponsePDUsTx 1.2.840.10006.300.43.1.2.2.1.8

The number of Marker Re sponse PDUs transmitted on this Aggregation Port. This value is read-only.

dot3adAggPortDebugTable 1.2.840.10006.300.43.1.2.3

A table that contains Link Aggregation debug information about every port that is associated with this device. A row appears in this table for each physical port.

dot3adAggPortDebugEntry 1.2.840.10006.300.43.1.2.3.1

A list of the debug parameters for a port.

dot3adAggPortDebugRxState 1.2.840.10006.300.43.1.2.3.1.1

This object represents the receive state machine for the Aggregation Port. This value is read-only.

Values

- current (1)
- expired (2)
- defaulted (3)
- initialize (4)
- lacpDisabled (5)
- portDisabled (6)

dot3adAggPortDebugLastRxTime 1.2.840.10006.300.43.1.2.3.1.2

The value of aTimeSinceSystemReset (F.2.1) when the last LACPDU was received by this Aggregation Port. This value is read-only.

dot3adAggPortDebugMuxState 1.2.840.10006.300.43.1.2.3.1.3

This object represents the Mux state machine for the Aggregation Port. This value is read-only.

Values

- detached (1)
- waiting (2)
- attached (3)
- collecting (4)
- distributing (5)
- collectingDistributing (6)

dot3adAggPortDebugMuxReason 1.2.840.10006.300.43.1.2.3.1.4

A human-readable text string indicating the reason for the most recent change of Mux machine state. This value is read-only.

dot3adAggPortDebugActorChurnState 1.2.840.10006.300.43.1.2.3.1.5

The state of the Actor Churn detection machine (43.4.17) for the Aggregation Port. This value is read-only.

Values

- noChurn - indicates that the state machine is in either the NO_ACTOR_CHURN or the ACTOR_CHURN_MONITOR state
- churn - indicates that the state machine is in the ACTOR_CHURN state.

dot3adAggPortDebugPartnerChurnState 1.2.840.10006.300.43.1.2.3.1.6

The state of the Partner Churn detec tion machine (43.4.17) for the Aggregation Port. This value is read-only.

Values

- noChurn - indicates that the state machine is in either the NO_PARTNER_CHURN or the PARTNER_CHURN_MONITOR state
- churn - indicates that the state machine is in the PARTNER_CHURN state.

dot3adAggPortDebugActorChurnCount 1.2.840.10006.300.43.1.2.3.1.7

The count of the number of times the Actor Churn state machine has entered the ACTOR_CHURN state. This value is read-only.

dot3adAggPortDebugPartnerChurnCount 1.2.840.10006.300.43.1.2.3.1.8

The count of the number of times the Partner Churn state machine has entered the PARTNER_CHURN state. This value is read-only.

dot3adAggPortDebugActorSyncTransitionCount 1.2.840.10006.300.43.1.2.3.1.9

The count of the number of times the Actor's Mux state machine (43.4.15) has entered the IN_SYNC state. This value is read-only.

dot3adAggPortDebugPartnerSyncTransitionCount 1.2.840.10006.300.43.1.2.3.1.10

The count of the number of times the Partner's Mux state machine (43.4.15) has entered the IN_SYNC state. This value is read-only.

dot3adAggPortDebugActorChangeCount 1.2.840.10006.300.43.1.2.3.1.11

The count of the number of times the Actor's perception of the LAG ID for this Aggregation Port has changed. This value is read-only.

dot3adAggPortDebugPartnerChangeCount 1.2.840.10006.300.43.1.2.3.1.12

The count of the number of times the Partner's perception of the LAG ID (see 43.3.6.1) for this Aggregation Port has changed. This value is read-only.

dot3adTablesLastChanged 1.2.840.10006.300.43.1.3

This object indicates the ti me of the most recent change to the dot3adAggTable, dot3adAggPortListTable, or dot3adAggPortTable.

Chapter

7

Bridge-MIB Objects

In this chapter

Bridge-MIB overview

The descriptions of the MIB variables in this chapter come directly from the MIB-II itself. The notes that follow the descriptions typically pertain to Brocade-specific information as provided by Brocade.

Figure 46 through Figure 50 depict the organization and structure of the Bridge-MIB.

```
- iso
    - org
        - dod
            - internet
                - directory
                    - mgmt
                        - mib-2
                            - dot1dBridge
                                - dot1dNotifications
                                - dot1dBase
                                - dot1dStp
                                - dot1dTp
                                - pBridgeMIB
                                - qBridgeMIB
                            - rstp
```

FIGURE 46 Bridge-MIB overall hierarchy

```
- dot1dBridge 1.3.6.1.2.1.17
    - dot1dNotifications 1.3.6.1.2.1.17.0
    - dot1dBase group
        - dot1dBaseBridgeAddress 1.3.6.1.2.1.17.1.1
        - dot1dBaseNumPorts 1.3.6.1.2.1.17.1.2
        - dot1dBaseType 1.3.6.1.2.1.17.1.3
    - dot1dStp group
        - dot1dStpProtocolSpecification 1.3.6.1.2.1.17.2.1
        - dot1dStpPriority 1.3.6.1.2.1.17.2.2
        - dot1dStpTimeSinceTopologyChange 1.3.6.1.2.1.17.2.3
        - dot1dStpTopChanges 1.3.6.1.2.1.17.2.4
        - dot1dStpDesignatedRoot 1.3.6.1.2.1.17.2.5
        - dot1dStpRootCost 1.3.6.1.2.1.17.2.6
        - dot1dStpRootPort 1.3.6.1.2.1.17.2.7
        - dot1dStpMaxAge 1.3.6.1.2.1.17.2.8
        - dot1dStpHelloTime 1.3.6.1.2.1.17.2.9
        - dot1dStpHoldTime 1.3.6.1.2.1.17.2.10
        - dot1dStpForwardDelay 1.3.6.1.2.1.17.2.11
        - dot1dStpBridgeMaxAge 1.3.6.1.2.1.17.2.12
        - dot1dStpBridgeHelloTime 1.3.6.1.2.1.17.2.13
        - dot1dStpBridgeForwardDelay 1.3.6.1.2.1.17.2.14
```

```
        - dot1dStpPortTable 1.3.6.1.2.1.17.2.15
            - dot1dStpPortEntry 1.3.6.1.2.1.17.2.15.1
                - dot1dStpPort 1.3.6.1.2.1.17.2.15.1.1
                - dot1dStpPortPriority 1.3.6.1.2.1.17.2.15.1.2
                - dot1dStpPortState 1.3.6.1.2.1.17.2.15.1.3
                - dot1dStpPortEnable 1.3.6.1.2.1.17.2.15.1.4
                - dot1dStpPortPathCost 1.3.6.1.2.1.17.2.15.1.5
                - dot1dStpPortDesignatedRoot 1.3.6.1.2.1.17.2.15.1.6
                - dot1dStpPortDesignatedCost 1.3.6.1.2.1.17.2.15.1.7
                - dot1dStpPortDesignatedBridge 1.3.6.1.2.1.17.2.15.1.8
                - dot1dStpPortDesignatedPort 1.3.6.1.2.1.17.2.15.1.9
                - dot1dStpPortForwardTransitions 1.3.6.1.2.1.17.2.15.1.10
                - dot1dStpPortPathCost32 1.3.6.1.2.1.17.2.15.1.11
    - dot1dTp
        - dot1dTpFdbTable 1.3.6.1.2.1.17.4.3
            - dot1dTpFdbEntry 1.3.6.1.2.1.17.4.3.1
                - dot1dTpFdbAddress 1.3.6.1.2.1.17.4.3.1.1
                - dot1dTpFdbPort 1.3.6.1.2.1.17.4.3.1.2
                - dot1dTpFdbStatus 1.3.6.1.2.1.17.4.3.1.3
        - dot1dTpPortTable 1.3.6.1.2.1.17.4.4
            - dot1dTpPortEntry 1.3.6.1.2.1.17.4.4.1
                - dot1dTpPort 1.3.6.1.2.1.17.4.4.1.1
                - dot1dTpPortMaxInfo 1.3.6.1.2.1.17.4.4.1.2
                - dot1dTpPortInFrames 1.3.6.1.2.1.17.4.4.1.3
                - dot1dTpPortOutFrames 1.3.6.1.2.1.17.4.4.1.4
                - dot1dTpPortInDiscards 1.3.6.1.2.1.17.4.4.1.5
```

FIGURE 47 Bridge-MIB hierarchy

```
- dot1dBridge 1.3.6.1.2.1.17
    - dot1dTp
        - dot1dTpPortOverflowTable 1.3.6.1.2.1.17.4.6
            - dot1dTpPortOverflowEntry 1.3.6.1.2.1.17.4.6.1
                - dot1dTpPortInOverflowFrames 1.3.6.1.2.1.17.4.6.1.1
                - dot1dTpPortOutOverflowFrames 1.3.6.1.2.1.17.4.6.1.2
                - dot1dTpPortInOverflowDiscards 1.3.6.1.2.1.17.4.6.1.3
    - pBridgeMIB
        - pBridgeMIBObjects
            - dot1dExtBase
                - dot1dDeviceCapabilities 1.3.6.1.2.1.17.6.1.1.1
                - dot1dTrafficClassesEnabled 1.3.6.1.2.1.17.6.1.1.2
                - dot1dGmrpStatus 1.3.6.1.2.1.17.6.1.1.3
                - dot1dPortCapabilitiesTable 1.3.6.1.2.1.17.6.1.1.4
                    - dot1dPortCapabilitiesEntry 1.3.6.1.2.1.17.6.1.1.4.1
                        - dot1dPortCapabilities 1.3.6.1.2.1.17.6.1.1.4.1.1
            - dot1dPriority
                - dot1dPortPriorityTable 1.3.6.1.2.1.17.6.1.2.1
                    - dot1dPortPriorityEntry 1.3.6.1.2.1.17.6.1.2.1.1
                        - dot1dPortDefaultUserPriority 1.3.6.1.2.1.17.6.1.2.1.1.1
                        - dot1dPortNumTrafficClasses 1.3.6.1.2.1.17.6.1.2.1.1.2
```

FIGURE 48 P-Bridge MIB hierarchy

```
- dot1dBridge 1.3.6.1.2.1.17
    - qBridgeMIB
        - qBridgeMIBObjects
            - dot1qBase
                - dot1qVlanVersionNumber 1.3.6.1.2.1.17.7.1.1.1
                - dot1qMaxVlanId 1.3.6.1.2.1.17.7.1.1.2
                - dot1qMaxSupportedVlans 1.3.6.1.2.1.17.7.1.1.3
                - dot1qNumVlans 1.3.6.1.2.1.17.7.1.1.4
                - dot1qGvrpStatus 1.3.6.1.2.1.17.7.1.1.5
            - dot1qTp
                    - dot1qFdbTable 1.3.6.1.2.1.17.7.1.2.1
                        - dot1qFdbEntry 1.3.6.1.2.1.17.7.1.2.1.1
                            - dot1qFdbId 1.3.6.1.2.1.17.7.1.2.1.1.1
                            - dot1qFdbDynamicCount 1.3.6.1.2.1.17.7.1.2.1.2
                    - dot1qTpFdbTable 1.3.6.1.2.1.17.7.1.2.2
                        - dot1qTpFdbEntry 1.3.6.1.2.1.17.7.1.2.2.1
                            - dot1qTpFdbAddress 1.3.6.1.2.1.17.7.1.2.2.1.1
                            - dot1qTpFdbPort 1.3.6.1.2.1.17.7.1.2.2.1.2
                            - dot1qTpFdbStatus 1.3.6.1.2.1.17.7.1.2.2.1.3
                    - dot1qTpGroupTable 1.3.6.1.2.1.17.7.1.2.3
                        - dot1qTpGroupEntry 1.3.6.1.2.1.17.7.1.2.3.1
                            - dot1qTpGroupAddress 1.3.6.1.2.1.17.7.1.2.3.1.1
                            - dot1qTpGroupEgressPorts 1.3.6.1.2.1.17.7.1.2.3.1.2
                            - dot1qTpGroupLearnt 1.3.6.1.2.1.17.7.1.2.3.1.3
                    - dot1qForwardAllTable 1.3.6.1.2.1.17.7.1.2.4
                        - dot1qForwardAllEntry 1.3.6.1.2.1.17.7.1.2.4.1
                            - dot1qForwardAllPorts 1.3.6.1.2.1.17.7.1.2.4.1.1
                            - dot1qForwardAllStaticPorts 1.3.6.1.2.1.17.7.1.2.4.1.2
                            - dot1qForwardAllForbiddenPorts 1.3.6.1.2.1.17.7.1.2.4.1.3
                    - dot1qForwardUnregisteredTable 1.3.6.1.2.1.17.7.1.2.5
                        - dot1qForwardUnregisteredEntry 1.3.6.1.2.1.17.7.1.2.5.1
                            - dot1qForwardUnregisteredPorts 1.3.6.1.2.1.17.7.1.2.5.1.1
                            - dot1qForwardUnregisteredStaticPorts 1.3.6.1.2.1.17.7.1.2.5.1.2
                            - dot1qForwardUnregisteredForbiddenPorts 1.3.6.1.2.1.17.7.1.2.5.1.3
            - dot1qStatic
                    - dot1qStaticUnicastTable 1.3.6.1.2.1.17.7.1.3.1
                        - dot1qStaticUnicastEntry 1.3.6.1.2.1.17.7.1.3.1.1
                            - dot1qStaticUnicastAddress 1.3.6.1.2.1.17.7.1.3.1.1.1
                            - dot1qStaticUnicastReceivePort 1.3.6.1.2.1.17.7.1.3.1.1.2
                            - dot1qStaticUnicastAllowedToGoTo 1.3.6.1.2.1.17.7.1.3.1.1.3
                            - dot1qStaticUnicastStatus 1.3.6.1.2.1.17.7.1.3.1.1.4
                    - dot1qStaticMulticastTable 1.3.6.1.2.1.17.7.1.3.2
                        - dot1qStaticMulticastEntry 1.3.6.1.2.1.17.7.1.3.2.1
                            - dot1qStaticMulticastAddress 1.3.6.1.2.1.17.7.1.3.2.1.1
                            - dot1qStaticMulticastReceivePort 1.3.6.1.2.1.17.7.1.3.2.1.2
                            - dot1qStaticMulticastStaticEgressPorts 1.3.6.1.2.1.17.7.1.3.2.1.3
                            - dot1qStaticMulticastForbiddenEgressPorts 1.3.6.1.2.1.17.7.1.3.2.1.4
                            - dot1qStaticMulticastStatus 1.3.6.1.2.1.17.7.1.3.2.1.5
```

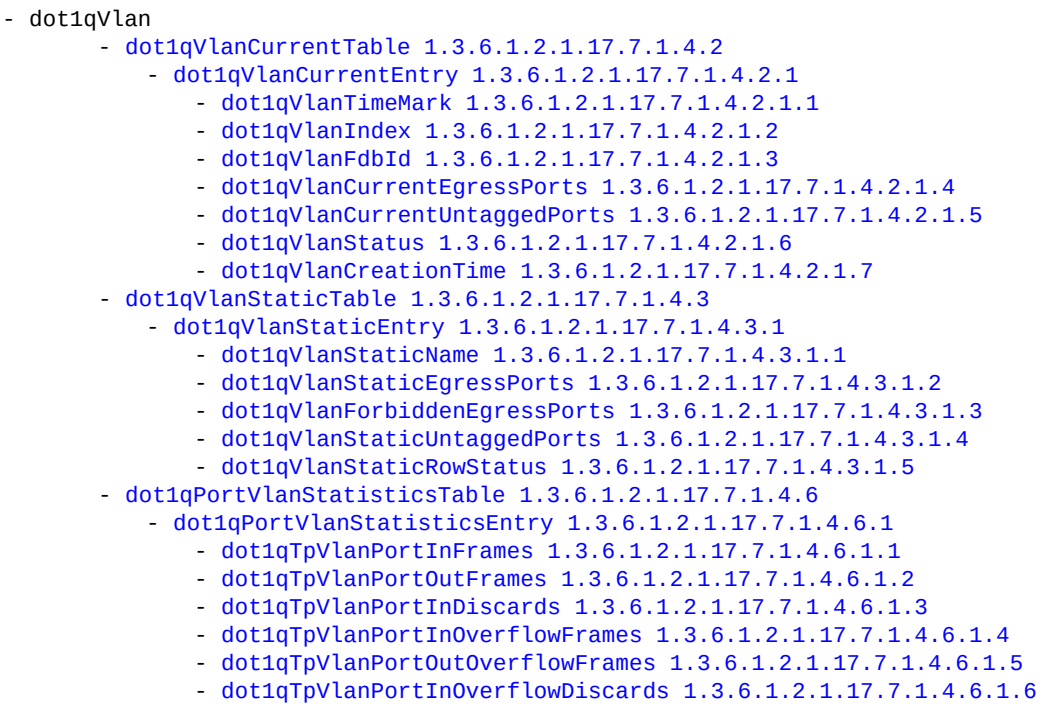

FIGURE 49 Q-Bridge MIB hierarchy

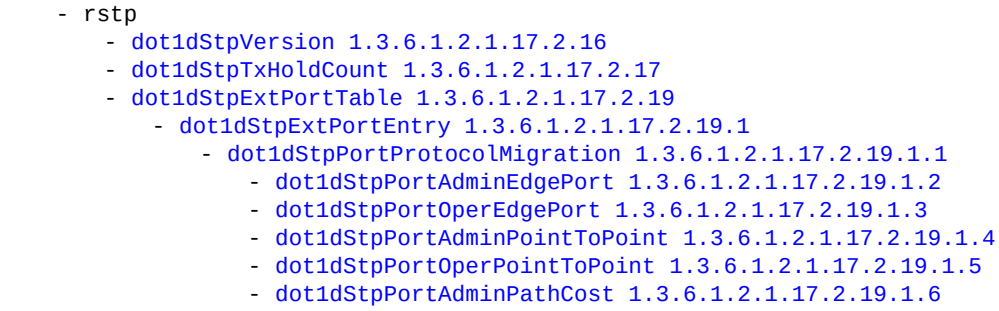

FIGURE 50 RSTP hierarchy

Bridge-MIB

The Bridge MIB module for managing devices that support IEEE 802.1D.

dot1dNotifications 1.3.6.1.2.1.17.0

Notifications for the Spanning Tree Protocol.

newRoot 1.3.6.1.2.1.17.0.1

This notification indicates that the sending agent is the new root of the Spanning Tree. It is sent by a bridge soon after its election as the new root.

topologyChange 1.3.6.1.2.1.17.0.2

This notification is sent by a bridge when any of its configured ports transits from Learning state to Forwarding state or from the Forwarding state to the Blocking state. It is not sent if a newRoot notification is sent for the same transition.

dot1dBase group

This contains the objects that are applicable to all types of bridges (support only for default VLAN).

dot1dBaseBridgeAddress 1.3.6.1.2.1.17.1.1

The MAC address used by this bridge when it must be referred in a unique fashion. It is recommended that this be the numerically smallest MAC address of all ports that belong to this bridge.

dot1dBaseNumPorts 1.3.6.1.2.1.17.1.2

The number of ports controlled by this bridging entity.

dot1dBaseType 1.3.6.1.2.1.17.1.3

This object indicates what type of bridging this bridge can perform. If a bridge is actually performing a certain type of bridging, this is indicated by the entries in the port table for the given type.

Values

- unknown (1)
- transparent-only (2)
- sourceroute-only (3)
- srt (4)

dot1dStp group

This contains objects that denote the bridge's state with respect to the Spanning Tree Protocol.

dot1dStpProtocolSpecification 1.3.6.1.2.1.17.2.1

An indication of what version of the Spanning Tree Protocol is being run.

Values
- unknown (1)
- decLb100 (2)
- ieee8021d (3)

dot1dStpPriority 1.3.6.1.2.1.17.2.2

The value of the write-able portion of the Bridge ID (that is, the first two octets of the (8 octet long) Bridge ID). The other (last) 6 octets of the Bridge ID are given by the value of dot1dBaseBridgeAddress.

On bridges supporting IEEE 802.1t or IEEE 802.1w, permissible values are 0-61440, in steps of 4096.

dot1dStpTimeSinceTopologyChange 1.3.6.1.2.1.17.2.3

The time (in hundredths of a second) since the last time a topology change was detected by the bridge entity. For RSTP, this reports the time since the tcWhile timer for any port on this Bridge was nonzero.

dot1dStpTopChanges 1.3.6.1.2.1.17.2.4

The total number of topology changes detected by this bridge since the management entity was last reset or initialized.

dot1dStpDesignatedRoot 1.3.6.1.2.1.17.2.5

The bridge identifier of the root of the spanning tree, as determined by the Spanning Tree Protocol, as executed by this node. This value is used as the Root Identifier parameter in all Configuration Bridge PDUs originated by this node.

dot1dStpRootCost 1.3.6.1.2.1.17.2.6

The cost of the path to the root as seen from this bridge.

dot1dStpRootPort 1.3.6.1.2.1.17.2.7

The port number of the port that offers the lowest cost path from this bridge to the root bridge.

dot1dStpMaxAge 1.3.6.1.2.1.17.2.8

The maximum age of Spanning Tree Protocol information learned from the network on any port before it is discarded, in units of hundredths of a second. This is the actual value that this bridge is currently using.

dot1dStpHelloTime 1.3.6.1.2.1.17.2.9

The amount of time between the transmission of configuration bridge PDUs by this node on any port when it is the root of the spanning tree, or trying to become so, in units of hundredths of a second. This is the actual value that this bridge is currently using.

dot1dStpHoldTime 1.3.6.1.2.1.17.2.10

This time value determines the interval length during which no more than two configuration bridge PDUs shall be transmitted by this node, in units of hundredths of a second.

dot1dStpForwardDelay 1.3.6.1.2.1.17.2.11

This time value, measured in units of hundredths of a second, controls how fast a port changes its spanning state when moving towards the Forwarding state. The value determines how long the port stays in each of the Listening and Learning states, which precede the Forwarding state. This value is also used when a topology change has been detected and is underway, to age all dynamic entries in the Forwarding database.

dot1dStpBridgeMaxAge 1.3.6.1.2.1.17.2.12

The value that all bridges use for MaxAge when this bridge is acting as the root. 802.1D-1998 specifies that the range for this parameter is related to the value of dot1dStpBridgeHelloTime. The granularity of this timer is specified by 802.1D-1998 to be 1 second. An agent may return a badValue error if a set is attempted to a value that is not a whole number of seconds.

dot1dStpBridgeHelloTime 1.3.6.1.2.1.17.2.13

The value that all bridges use for HelloTime when this bridge is acting as the root. The granularity of this timer is specified by 802.1D-1998 to be 1 second. An agent may return a badValue error if a set is attempted to a value that is not a whole number of seconds.

dot1dStpBridgeForwardDelay 1.3.6.1.2.1.17.2.14

The value that all bridges use for ForwardDelay when this bridge is acting as the root. 802.1D-1998 specifies that the range for this parameter is related to the value of ot1dStpBridgeMaxAge. The granularity of this timer is specified by 802.1D-1998 to be 1 second. An agent may return a badValue error if a set is attempted to a value that is not a whole number of seconds.

dot1dStpPortTable 1.3.6.1.2.1.17.2.15

A table that contains port-specific information for the Spanning Tree Protocol.

dot1dStpPortEntry 1.3.6.1.2.1.17.2.15.1

A list of information maintained by every port about the Spanning Tree Protocol state for that port.

dot1dStpPort 1.3.6.1.2.1.17.2.15.1.1

The port number of the port for which this entry contains Spanning Tree Protocol management information.

dot1dStpPortPriority 1.3.6.1.2.1.17.2.15.1.2

The value of the priority field that is contained in the first (in network byte order) octet of the (2 octet long) Port ID. The other octet of the Port ID is given by the value of dot1dStpPort.

On bridges supporting IEEE 802.1t or IEEE 802.1w, permissible values are 0-240, in steps of 16.

dot1dStpPortState 1.3.6.1.2.1.17.2.15.1.3

The port's current state, as defined by application of the Spanning Tree Protocol. This state controls what action a port takes on reception of a frame.

Values

- disabled (1)
- blocking (2)
- listening (3)
- learning (4)
- forwarding (5)
- broken (6)

dot1dStpPortEnable 1.3.6.1.2.1.17.2.15.1.4

The enabled or disabled status of the port.

Values

- enabled (1)
- disabled (2)

dot1dStpPortPathCost 1.3.6.1.2.1.17.2.15.1.5

The contribution of this port to the path cost of paths towards the spanning tree root which include this port. 802.1D-1998 recommends that the default value of this parameter be in inverse proportion to the speed of the attached LAN.

dot1dStpPortDesignatedRoot 1.3.6.1.2.1.17.2.15.1.6

The unique Bridge Identifier of the bridge recorded as the Root in the Configuration Bridge BPDUs transmitted by the Designated Bridge for the segment to which the port is attached.

dot1dStpPortDesignatedCost 1.3.6.1.2.1.17.2.15.1.7

The path cost of the Designated Port of the segment connected to this port. This value is compared to the Root Path Cost field in received bridge PDUs.

dot1dStpPortDesignatedBridge 1.3.6.1.2.1.17.2.15.1.8

The Bridge Identifier of the bridge that this port considers to be the Designated Bridge for this port's segment.

dot1dStpPortDesignatedPort 1.3.6.1.2.1.17.2.15.1.9

The Port Identifier of the port on the Designated Bridge for this port's segment.

dot1dStpPortForwardTransitions 1.3.6.1.2.1.17.2.15.1.10

The number of times this port has transitioned from the Learning state to the Forwarding state.

dot1dStpPortPathCost32 1.3.6.1.2.1.17.2.15.1.11

The contribution of this port to the path cost of paths towards the spanning tree root which include this port. 802.1D-1998 recommends that the default value of this parameter be in inverse proportion to the speed of the attached LAN. This object replaces dot1dStpPortPathCost to support IEEE 802.1t.

dot1dTp group

dot1dTpFdbTable 1.3.6.1.2.1.17.4.3

A table that contains information about unicast entries for which the bridge has forwarding and filtering information. This information is used by the transparent bridging function in determining how to propagate a received frame.

dot1dTpFdbEntry 1.3.6.1.2.1.17.4.3.1

Information about a specific unicast MAC address for which the bridge has some forwarding and filtering information.

dot1dTpFdbAddress 1.3.6.1.2.1.17.4.3.1.1

A unicast MAC address for which the bridge has forwarding or filtering information.

dot1dTpFdbPort 1.3.6.1.2.1.17.4.3.1.2

The port number of the port on which a frame having a source address equal to the value of the corresponding instance of dot1dTpFdbAddress has been seen. A value of 0 indicates that the port number has not been learned, but that the bridge does have some forwarding or filtering information about this address.

dot1dTpFdbStatus 1.3.6.1.2.1.17.4.3.1.3

The status of this entry.

dot1dTpPortTable 1.3.6.1.2.1.17.4.4

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

dot1dTpPortEntry 1.3.6.1.2.1.17.4.4.1

A list of information for each port of a transparent bridge.

dot1dTpPort 1.3.6.1.2.1.17.4.4.1.1

The port number of the port for which this entry contains Transparent bridging management information.

dot1dTpPortMaxInfo 1.3.6.1.2.1.17.4.4.1.2

The maximum size of the INFO (non-MAC) field that this port will receive or transmit.

dot1dTpPortInFrames 1.3.6.1.2.1.17.4.4.1.3

The number of frames that have been received by this port from its segment.

NOTE
A frame received on the interface corresponding to this port is only counted by this object if and only if it is for a protocol being processed by the local bridging function, including the bridge management frames.

dot1dTpPortOutFrames 1.3.6.1.2.1.17.4.4.1.4

The number of frames that have been transmitted by this port to its segment.

NOTE
A frame transmitted on the interface corresponding to this port is only counted by this object if and only if it is for a protocol being processed by the local bridging function, including the bridge management frames.

dot1dTpPortInDiscards 1.3.6.1.2.1.17.4.4.1.5

The count of received valid frames that were discarded (that is, filtered) by the forwarding process.

P-Bridge MIB

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

The following tables are not supported:

- dot1dTpHCPortTable
- dot1dUserPriorityRegenTable
- dot1dTrafficClassTable
- dot1dPortOutboundAccessPriorityTable
- dot1dPortGarpTable
- dot1dPortGmrpTable

dot1dTpPortOverflowTable 1.3.6.1.2.1.17.4.6

A table that contains the most-significant bits of statistics counters for ports that are associated with this transparent bridge that are on high-capacity interfaces, as defined in the conformance clauses for this table.

dot1dTpPortOverflowEntry 1.3.6.1.2.1.17.4.6.1

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

dot1dTpPortInOverflowFrames 1.3.6.1.2.1.17.4.6.1.1

The number of times the associated dot1dTpPortInFrames counter has overflowed.

dot1dTpPortOutOverflowFrames 1.3.6.1.2.1.17.4.6.1.2

The number of times the associated dot1dTpPortOutFrames counter has overflowed.

dot1dTpPortInOverflowDiscards 1.3.6.1.2.1.17.4.6.1.3

The number of times the associated dot1dTpPortInDiscards counter has overflowed.

dot1dExtBase group

dot1dDeviceCapabilities 1.3.6.1.2.1.17.6.1.1.1

Indicates the optional parts of IEEE 802.1D and 802.1Q that are implemented by the device and are manageable through this MIB. The capabilities that are allowed on a per-port basis are indicated in dot1dPortCapabilities.

dot1dTrafficClassesEnabled 1.3.6.1.2.1.17.6.1.1.2

The value true(1) indicates that traffic classes are enabled on this bridge. When false(2), the bridge operates with a single priority level for all traffic. The value of this object must be retained across re-initializations of the management system.

dot1dGmrpStatus 1.3.6.1.2.1.17.6.1.1.3

The administrative status requested by management for GMRP.

The value enabled(1) indicates that GMRP should be enabled on the device, in all VLANs, and on all ports for which it has not been specifically disabled.

When disabled(2), GMRP is disabled in all VLANs, on all ports, and all GMRP packets will be forwarded transparently.

dot1dPortCapabilitiesTable 1.3.6.1.2.1.17.6.1.1.4

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

dot1dPortCapabilitiesEntry 1.3.6.1.2.1.17.6.1.1.4.1

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

dot1dPortCapabilities 1.3.6.1.2.1.17.6.1.1.4.1.1

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

dot1dPriority group

dot1dPortPriorityTable 1.3.6.1.2.1.17.6.1.2.1

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

dot1dPortPriorityEntry 1.3.6.1.2.1.17.6.1.2.1.1

A list of default user priorities for each port of a transparent bridge. This is indexed by dot1dBasePort.

dot1dPortDefaultUserPriority 1.3.6.1.2.1.17.6.1.2.1.1.1

The default ingress user priority for this port. This only has effect on media, such as Ethernet, that do not support native user priority.

dot1dPortNumTrafficClasses 1.3.6.1.2.1.17.6.1.2.1.1.2

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

Q-Bridge MIB

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

The following tables are not supported:

- dot1qPortVlanTable
- dot1qPortVlanHCStatisticsTable
- dot1qLearningConstraintsTable
- dot1vProtocolGroupTable
- dot1vProtocolPortTable

dot1qBase group

dot1qVlanVersionNumber 1.3.6.1.2.1.17.7.1.1.1

The version number of IEEE 802.1Q that the device supports.

dot1qMaxVlanId 1.3.6.1.2.1.17.7.1.1.2

The maximum IEEE 802.1Q VLAN-ID that the device supports.

dot1qMaxSupportedVlans 1.3.6.1.2.1.17.7.1.1.3

The maximum number of IEEE 802.1Q VLANs that the device supports.

dot1qNumVlans 1.3.6.1.2.1.17.7.1.1.4

The current number of IEEE 802.1Q VLANs that are configured in the device.

dot1qGvrpStatus 1.3.6.1.2.1.17.7.1.1.5

The administrative status requested by management for GVRP.

The value enabled(1) indicates that GVRP should be enabled on the device, on all ports for which it has not been specifically disabled.

When disabled(2), GVRP is disabled on all ports, and all GVRP packets will be forwarded transparently.

dot1qTp group

dot1qFdbTable 1.3.6.1.2.1.17.7.1.2.1

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

dot1qFdbEntry 1.3.6.1.2.1.17.7.1.2.1.1

Information about a specific Filtering Database.

dot1qFdbId 1.3.6.1.2.1.17.7.1.2.1.1.1

The identity of this Filtering Database.

dot1qFdbDynamicCount 1.3.6.1.2.1.17.7.1.2.1.2

The current number of dynamic entries in this Filtering Database.

dot1qTpFdbTable 1.3.6.1.2.1.17.7.1.2.2

A table that contains information about unicast entries for which the device has forwarding or filtering information. This information is used by the transparent bridging function in determining how to propagate a received frame.

dot1qTpFdbEntry 1.3.6.1.2.1.17.7.1.2.2.1

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

dot1qTpFdbAddress 1.3.6.1.2.1.17.7.1.2.2.1.1

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

dot1qTpFdbPort 1.3.6.1.2.1.17.7.1.2.2.1.2

The port number of the port on which a frame having a source address equal to the value of the corresponding instance of dot1qTpFdbAddress has been seen. A value of 0 indicates that the port number has not been learned but that the device does have some forwarding or filtering information about this address (for example, in the dot1qStaticUnicastTable).

dot1qTpFdbStatus 1.3.6.1.2.1.17.7.1.2.2.1.3

The status of this entry.

Values

- other (1)
- invalid (2)
- learned (3)
- self (4)
- mgmt (5)

dot1qTpGroupTable 1.3.6.1.2.1.17.7.1.2.3

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

dot1qTpGroupEntry 1.3.6.1.2.1.17.7.1.2.3.1

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

dot1qTpGroupAddress 1.3.6.1.2.1.17.7.1.2.3.1.1

The destination Group MAC address in a frame to which this entry's filtering information applies.

dot1qTpGroupEgressPorts 1.3.6.1.2.1.17.7.1.2.3.1.2

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

dot1qTpGroupLearnt 1.3.6.1.2.1.17.7.1.2.3.1.3

The subset of ports in dot1qTpGroupEgressPorts that were learned by GMRP or some other dynamic mechanism, in this Filtering database.

dot1qForwardAllTable 1.3.6.1.2.1.17.7.1.2.4

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

dot1qForwardAllEntry 1.3.6.1.2.1.17.7.1.2.4.1

Forwarding information for a VLAN, specifying the set of ports to which all multicasts should be forwarded, configured statically by management or dynamically by GMRP.

dot1qForwardAllPorts 1.3.6.1.2.1.17.7.1.2.4.1.1

The complete set of ports in this VLAN to which all multicast group-addressed frames are to be forwarded. This includes ports for which this need has been determined dynamically by GMRP, or configured statically by management.

dot1qForwardAllStaticPorts 1.3.6.1.2.1.17.7.1.2.4.1.2

The set of ports configured by management in this VLAN to which all multicast group-addressed frames are to be forwarded.

dot1qForwardAllForbiddenPorts 1.3.6.1.2.1.17.7.1.2.4.1.3

The set of ports configured by management in this VLAN for which the Service Requirement attribute Forward All Multicast Groups may not be dynamically registered by GMRP.

dot1qForwardUnregisteredTable 1.3.6.1.2.1.17.7.1.2.5

A table containing forwarding information for each VLAN, specifying the set of ports to which forwarding of multicast group-addressed frames for which no more specific forwarding information applies.

dot1qForwardUnregisteredEntry 1.3.6.1.2.1.17.7.1.2.5.1

Forwarding information for a VLAN, specifying the set of ports to which all multicasts for which there is no more specific forwarding information shall be forwarded.

dot1qForwardUnregisteredPorts 1.3.6.1.2.1.17.7.1.2.5.1.1

The complete set of ports in this VLAN to which multicast group-addressed frames for which there is no more specific forwarding information will be forwarded.

dot1qForwardUnregisteredStaticPorts 1.3.6.1.2.1.17.7.1.2.5.1.2

The set of ports configured by management, in this VLAN, to which multicast group-addressed frames for which there is no more specific forwarding information are to be forwarded.

dot1qForwardUnregisteredForbiddenPorts 1.3.6.1.2.1.17.7.1.2.5.1.3

The set of ports configured by management in this VLAN for which the Service Requirement attribute Forward Unregistered Multicast Groups may not be dynamically registered by GMRP.

dot1qStatic group

dot1qStaticUnicastTable 1.3.6.1.2.1.17.7.1.3.1

A table containing filtering information for unicast MAC addresses for each Filtering Database, configured into the device by (local or network) management specifying the set of ports to which frames received from specific ports and containing specific unicast destination addresses are allowed to be forwarded.

dot1qStaticUnicastEntry 1.3.6.1.2.1.17.7.1.3.1.1

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

dot1qStaticUnicastAddress 1.3.6.1.2.1.17.7.1.3.1.1.1

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

dot1qStaticUnicastReceivePort 1.3.6.1.2.1.17.7.1.3.1.1.2

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

dot1qStaticUnicastAllowedToGoTo 1.3.6.1.2.1.17.7.1.3.1.1.3

The set of ports for which a frame with a specific unicast address will be flooded in the event that it has not been learned. It also specifies the set of ports on which a specific unicast address may be dynamically learned.

dot1qStaticUnicastStatus 1.3.6.1.2.1.17.7.1.3.1.1.4

This object indicates the status of this entry.

Values

- other (1)
- invalid (2)
- permanent (3)
- deleteOnReset (4)
- deleteOnTimeout (5)

dot1qStaticMulticastTable 1.3.6.1.2.1.17.7.1.3.2

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

dot1qStaticMulticastEntry 1.3.6.1.2.1.17.7.1.3.2.1

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

dot1qStaticMulticastAddress 1.3.6.1.2.1.17.7.1.3.2.1.1

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

dot1qStaticMulticastReceivePort 1.3.6.1.2.1.17.7.1.3.2.1.2

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

dot1qStaticMulticastStaticEgressPorts 1.3.6.1.2.1.17.7.1.3.2.1.3

The set of port s to which frames received from a specific port and destined for a specific multicast or broadcast MAC address must be forwarded, regardless of any dynamic information, for example, from GMRP.

dot1qStaticMulticastForbiddenEgressPorts 1.3.6.1.2.1.17.7.1.3.2.1.4

The set of ports to which frames received from a specific port and destined for a specific multicast or broadcast MAC address must not be forwarded, regardless of any dynamic information, for example, from GMRP.

dot1qStaticMulticastStatus 1.3.6.1.2.1.17.7.1.3.2.1.5

This object indicates the status of this entry.

Values

- other (1)
- invalid (2)
- permanent (3)
- deleteOnReset (4)
- deleteOnTimeout (5)

dot1qVlan group

dot1qVlanCurrentTable 1.3.6.1.2.1.17.7.1.4.2

A table containing current configuration information for each VLAN currently configured into the device by (local or network) management, or dynamically created as a result of GVRP requests received.

dot1qVlanCurrentEntry 1.3.6.1.2.1.17.7.1.4.2.1

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

dot1qVlanTimeMark 1.3.6.1.2.1.17.7.1.4.2.1.1

A time filter for this entry.

dot1qVlanIndex 1.3.6.1.2.1.17.7.1.4.2.1.2

The VLAN ID or other identifier referring to this VLAN.

dot1qVlanFdbId 1.3.6.1.2.1.17.7.1.4.2.1.3

The filtering database used by this VLAN.This is one of the dot1qFdbId values in the dot1qFdbTable. This value is allocated automatically by the device whenever the VLAN is created: either dynamically by GVRP, or by management, in dot1qVlanStaticTable.

dot1qVlanCurrentEgressPorts 1.3.6.1.2.1.17.7.1.4.2.1.4

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

dot1qVlanCurrentUntaggedPorts 1.3.6.1.2.1.17.7.1.4.2.1.5

The set of ports that are transmitting traffic for this VLAN as untagged frames.

dot1qVlanStatus 1.3.6.1.2.1.17.7.1.4.2.1.6

This object indicates the status of this entry.

Values

- other (1)
- permanent (2)
- dynamicGvrp (3)

dot1qVlanCreationTime 1.3.6.1.2.1.17.7.1.4.2.1.7

The value of sysUpTime when this VLAN was created.

dot1qVlanStaticTable 1.3.6.1.2.1.17.7.1.4.3

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

dot1qVlanStaticEntry 1.3.6.1.2.1.17.7.1.4.3.1

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

dot1qVlanStaticName 1.3.6.1.2.1.17.7.1.4.3.1.1

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

dot1qVlanStaticEgressPorts 1.3.6.1.2.1.17.7.1.4.3.1.2

The set of ports that are permanently assigned to the egress list for this VLAN by management.

dot1qVlanForbiddenEgressPorts 1.3.6.1.2.1.17.7.1.4.3.1.3

The set of ports that are prohibited by management from being included in the egress list for this VLAN.

dot1qVlanStaticUntaggedPorts 1.3.6.1.2.1.17.7.1.4.3.1.4

The set of ports that should transmit egress packets for this VLAN as untagged.

dot1qVlanStaticRowStatus 1.3.6.1.2.1.17.7.1.4.3.1.5

This object indicates the status of this entry.

dot1qPortVlanStatisticsTable 1.3.6.1.2.1.17.7.1.4.6

The table containing per-port, per-VLAN statistics for the traffic received.

dot1qPortVlanStatisticsEntry 1.3.6.1.2.1.17.7.1.4.6.1

The traffic statistics for a VLAN on an interface.

dot1qTpVlanPortInFrames 1.3.6.1.2.1.17.7.1.4.6.1.1

The number of valid frames received by this port from its segment that were classified as belonging to this VLAN.

NOTE
A frame received on this port is counted by this object only if it is for a protocol being processed by the local forwarding process for this VLAN.

This object includes the bridge management frames received from other devices that are classified as belonging to this VLAN (for example, GMRP, but not GVRP or STP).

dot1qTpVlanPortOutFrames 1.3.6.1.2.1.17.7.1.4.6.1.2

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

dot1qTpVlanPortInDiscards 1.3.6.1.2.1.17.7.1.4.6.1.3

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

dot1qTpVlanPortInOverflowFrames 1.3.6.1.2.1.17.7.1.4.6.1.4

The number of times the associated dot1qTpVlanPortInFrames counter has overflowed.

dot1qTpVlanPortOutOverflowFrames 1.3.6.1.2.1.17.7.1.4.6.1.5

The number of times the associated dot1qTpVlanPortOutFrames counter has overflowed.

dot1qTpVlanPortInOverflowDiscards 1.3.6.1.2.1.17.7.1.4.6.1.6

The number of times the associated dot1qTpVlanPortInDiscards counter has overflowed.

RSTP group

The Bridge MIB Extension module for managing devices that support the Rapid Spanning Tree Protocol defined by IEEE 802.1w.

dot1dStpVersion 1.3.6.1.2.1.17.2.16

The version of Spanning Tree Protocol that the bridge is currently running.

Values

- stpCompatible (0) - Indicates the Spanning Tree Protocol specified in IEEE 802.1D-1998.
- rstp (2) - Indicates the Rapid Spanning Tree Protocol specified in IEEE 802.1w and clause 17 of 802.1D-2004.

dot1dStpTxHoldCount 1.3.6.1.2.1.17.2.17

The value used by the port transmit state machine to limit the maximum transmission rate. The value of this object must be retained across reinitializations of the management system.

dot1dStpExtPortTable 1.3.6.1.2.1.17.2.19

A table that contains port-specific Rapid Spanning Tree information.

dot1dStpExtPortEntry 1.3.6.1.2.1.17.2.19.1

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

dot1dStpPortProtocolMigration 1.3.6.1.2.1.17.2.19.1.1

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.

dot1dStpPortAdminEdgePort 1.3.6.1.2.1.17.2.19.1.2

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.

dot1dStpPortOperEdgePort 1.3.6.1.2.1.17.2.19.1.3

The operational value of the Edge Port parameter. The object is initialized to the value of the corresponding instance of dot1dStpPortAdminEdgePort. When the corresponding instance of dot1dStpPortAdminEdgePort is set, this object will be changed as well. This object will also be changed to false on reception of a BPDU.

dot1dStpPortAdminPointToPoint 1.3.6.1.2.1.17.2.19.1.4

The administrative point-to-point status of the LAN segment attached to this port, using the enumeration values of the IEEE 802.1w clause. 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. Manipulating this object changes the underlying adminPortToPortMAC. The value of this object MUST be retained across reinitializations of the management system.

dot1dStpPortOperPointToPoint 1.3.6.1.2.1.17.2.19.1.5

The operational point-to-point status of the LAN segment attached to this port.

dot1dStpPortAdminPathCost 1.3.6.1.2.1.17.2.19.1.6

The administratively assigned value for the contribution of this port to the path cost of paths toward the spanning tree root.

Chapter

8

sFlow MIB Objects

In this chapter

sFlow MIB objects overview

The descriptions of the MIB variables in this chapter come directly from the sFlow MIB. The notes that follow the descriptions typically pertain to Brocade-specific information as provided by Brocade.

Figure 51 and Figure 52 depict the organization and structure of the sFlow MIB.

```
- iso
    - org
        - dod
            - internet
                - private
                    - enterprises
                        - enterprisesx4300
                            - sFlowMIB
                                - sFlowAgent
                                    - sFlowTable
```

FIGURE 51 sFlow MIB overall tree structure

```
- sFlowAgent
    - sFlowVersion 1.3.6.1.4.1.4300.1.1.1
    - sFlowAgentAddressType 1.3.6.1.4.1.4300.1.1.2
    - sFlowAgentAddress 1.3.6.1.4.1.4300.1.1.3
    - sFlowTable 1.3.6.1.4.1.4300.1.1.4
        - sFlowEntry 1.3.6.1.4.1.4300.1.1.4.1
            - sFlowDataSource 1.3.6.1.4.1.4300.1.1.4.1.1
            - sFlowOwner 1.3.6.1.4.1.4300.1.1.4.1.2
            - sFlowTimeout 1.3.6.1.4.1.4300.1.1.4.1.3
            - sFlowPacketSamplingRate 1.3.6.1.4.1.4300.1.1.4.1.4
            - sFlowCounterSamplingInterval 1.3.6.1.4.1.4300.1.1.4.1.5
            - sFlowMaximumHeaderSize 1.3.6.1.4.1.4300.1.1.4.1.6
            - sFlowMaximumDatagramSize 1.3.6.1.4.1.4300.1.1.4.1.7
            - sFlowCollectorAddressType 1.3.6.1.4.1.4300.1.1.4.1.8
            - sFlowCollectorAddress 1.3.6.1.4.1.4300.1.1.4.1.9
            - sFlowCollectorPort 1.3.6.1.4.1.4300.1.1.4.1.10
            - sFlowDatagramVersion 1.3.6.1.4.1.4300.1.1.4.1.11
```

FIGURE 52 sFlowAgent hierarchy

sFlow MIB

The MIB module for managing the generation and transportation of sFlow data records.

sFlowVersion 1.3.6.1.4.1.4300.1.1.1

Uniquely identifies the version and implementation of this MIB.

sFlowAgentAddressType 1.3.6.1.4.1.4300.1.1.2

The address type of the address associated with this agent. Only IPv4 and IPv6 address types are supported.

sFlowAgentAddress 1.3.6.1.4.1.4300.1.1.3

The IP address associated with this agent.

sFlowTable 1.3.6.1.4.1.4300.1.1.4

A table of the sFlow samplers within a device.

sFlowEntry 1.3.6.1.4.1.4300.1.1.4.1

The attributes of an sFlow sampler.

sFlowDataSource 1.3.6.1.4.1.4300.1.1.4.1.1

Identifies the source of the data for the sFlow sampler.

sFlowOwner 1.3.6.1.4.1.4300.1.1.4.1.2

The entity making use of this sFlow sampler.

sFlowTimeout 1.3.6.1.4.1.4300.1.1.4.1.3

The time (in seconds) remaining before the sampler is released and stops sampling.

sFlowPacketSamplingRate 1.3.6.1.4.1.4300.1.1.4.1.4

The statistical sampling rate for packet sampling from this source.

sFlowCounterSamplingInterval 1.3.6.1.4.1.4300.1.1.4.1.5

The maximum number of seconds between successive samples of the counters associated with this data source. A sampling interval of 0 disables counter sampling.

sFlowMaximumHeaderSize 1.3.6.1.4.1.4300.1.1.4.1.6

The maximum number of bytes that should be copied from a sampled packet. The agent may have internal maximum and minimum permissible sizes. If an attempt is made to set this value outside the permissible range, then the agent should adjust the value to the closest permissible value.

sFlowMaximumDatagramSize 1.3.6.1.4.1.4300.1.1.4.1.7

The maximum number of data bytes that can be sent in a single sample datagram. The manager should set this value to avoid fragmentation of the sFlow datagrams.

sFlowCollectorAddressType 1.3.6.1.4.1.4300.1.1.4.1.8

The type of sFlow Collector Address.

sFlowCollectorAddress 1.3.6.1.4.1.4300.1.1.4.1.9

The IP address of the sFlow collector. If the address is set to 0.0.0.0, all sampling is disabled.

sFlowCollectorPort 1.3.6.1.4.1.4300.1.1.4.1.10

The destination port for sFlow datagrams.

sFlowDatagramVersion 1.3.6.1.4.1.4300.1.1.4.1.11

The version of the sFlow datagrams that should be sent.

When set to a value not supported by the agent, the agent should adjust the value to the highest supported value less than the requested value, or return an error if no such value exists.

8 sFlowDatagramVersion 1.3.6.1.4.1.4300.1.1.4.1.11

Appendix

MIB OIDs and their Matching Object Names

A

This appendix provides a listing of the MIB object names and the corresponding MIB Object ID (OID) associated with each.

MIB OIDs

Table 6 allows you to identify a MIB object name according to its related OID.

TABLE 6 MIB object name/OID matrix

MIB object name	OID	Page no.
iso	1	page 8
std	1.0	page 85
iso8802	1.0.8802	page 85
ieee802dot1	1.0.8802.1	page 85
ieee802dot1mibs	1.0.8802.1.1	page 85
ieee8021paeMIB	1.0.8802.1.1.1	page 85
paeMIBObjects	1.0.8802.1.1.1.1	page 85
dot1xPaeSystem	1.0.8802.1.1.1.1.1	page 85
dot1xPaePortTable	1.0.8802.1.1.1.1.1.2	page 87
dot1xPaePortEntry	1.0.8802.1.1.1.1.1.2.1	page 87
dot1xPaePortNumber	1.0.8802.1.1.1.1.1.2.1.1	page 87
dot1xPaePortProtocolVersion	1.0.8802.1.1.1.1.1.2.1.2	page 87
dot1xPaePortCapabilities	1.0.8802.1.1.1.1.1.2.1.3	page 87
dot1xPaePortInitialize	1.0.8802.1.1.1.1.1.2.1.4	page 87
dot1xPaePortReauthenticate	1.0.8802.1.1.1.1.1.2.1.5	page 88
dot1xPaeAuthenticator	1.0.8802.1.1.1.1.2	page 85
dot1xAuthConfigTable	1.0.8802.1.1.1.1.2.1	page 88
dot1xAuthConfigEntry	1.0.8802.1.1.1.1.2.1.1	page 88
dot1xAuthPaeState	1.0.8802.1.1.1.1.2.1.1.1	page 88
dot1xAuthBackendAuthState	1.0.8802.1.1.1.1.2.1.1.2	page 88
dot1xAuthAdminControlledDirections	1.0.8802.1.1.1.1.2.1.1.3	page 89
dot1xAuthOperControlledDirections	1.0.8802.1.1.1.1.2.1.1.4	page 89
dot1xAuthAuthControlledPortStatus	1.0.8802.1.1.1.1.2.1.1.5	page 89
dot1xAuthAuthControlledPortControl	1.0.8802.1.1.1.1.2.1.1.6	page 89

TABLE 6 MIB object name/OID matrix (Continued)

MIB object name	OID	Page no.
dot1xAuthQuietPeriod	1.0.8802.1.1.1.1.2.1.1.7	page 89
dot1xAuthTxPeriod	1.0.8802.1.1.1.1.2.1.1.8	page 89
dot1xAuthSuppTimeout	1.0.8802.1.1.1.1.2.1.1.9	page 89
dot1xAuthServerTimeout	1.0.8802.1.1.1.1.2.1.1.10	page 89
dot1xAuthMaxReq	1.0.8802.1.1.1.1.2.1.1.11	page 90
dot1xAuthReAuthPeriod	1.0.8802.1.1.1.1.2.1.1.12	page 90
dot1xAuthReAuthEnabled	1.0.8802.1.1.1.1.2.1.1.13	page 90
dot1xAuthKeyTxEnabled	1.0.8802.1.1.1.1.2.1.1.14	page 90
dot1xAuthStatsTable	1.0.8802.1.1.1.1.2.2	page 90
dot1xAuthStatsEntry	1.0.8802.1.1.1.1.2.2.1	page 90
dot1xAuthEapolFramesRx	1.0.8802.1.1.1.1.2.2.1.1	page 90
dot1xAuthEapolFramesTx	1.0.8802.1.1.1.1.2.2.1.2	page 90
dot1xAuthEapolStartFramesRx	1.0.8802.1.1.1.1.2.2.1.3	page 90
dot1xAuthEapolLogoffFramesRx	1.0.8802.1.1.1.1.2.2.1.4	page 90
dot1xAuthEapolRespIdFramesRx	1.0.8802.1.1.1.1.2.2.1.5	page 91
dot1xAuthEapolRespFramesRx	1.0.8802.1.1.1.1.2.2.1.6	page 91
dot1xAuthEapolReqIdFramesTx	1.0.8802.1.1.1.1.2.2.1.7	page 91
dot1xAuthEapolReqFramesTx	1.0.8802.1.1.1.1.2.2.1.8	page 91
dot1xAuthInvalidEapolFramesRx	1.0.8802.1.1.1.1.2.2.1.9	page 91
dot1xAuthEapLengthErrorFramesRx	1.0.8802.1.1.1.1.2.2.1.10	page 91
dot1xAuthLastEapolFrameVersion	1.0.8802.1.1.1.1.2.2.1.11	page 91
dot1xAuthLastEapolFrameSource	1.0.8802.1.1.1.1.2.2.1.12	page 91
dot1xAuthDiagTable	1.0.8802.1.1.1.1.2.3	page 91
dot1xAuthDiagEntry	1.0.8802.1.1.1.1.2.3.1	page 91
dot1xAuthEntersConnecting	1.0.8802.1.1.1.1.2.3.1.1	page 92
dot1xAuthEapLogoffsWhileConnecting	1.0.8802.1.1.1.1.2.3.1.2	page 92
dot1xAuthEntersAuthenticating	1.0.8802.1.1.1.1.2.3.1.3	page 92
dot1xAuthAuthSuccessWhileAuthenticating	1.0.8802.1.1.1.1.2.3.1.4	page 92
dot1xAuthAuthTimeoutsWhileAuthenticating	1.0.8802.1.1.1.1.2.3.1.5	page 92
dot1xAuthAuthFailWhileAuthenticating	1.0.8802.1.1.1.1.2.3.1.6	page 92
dot1xAuthAuthReauthsWhileAuthenticating	1.0.8802.1.1.1.1.2.3.1.7	page 92
dot1xAuthAuthEapStartsWhileAuthenticating	1.0.8802.1.1.1.1.2.3.1.8	page 92
dot1xAuthAuthEapLogoffWhileAuthenticating	1.0.8802.1.1.1.1.2.3.1.9	page 93
dot1xAuthAuthReauthsWhileAuthenticated	1.0.8802.1.1.1.1.2.3.1.10	page 93
dot1xAuthAuthEapStartsWhileAuthenticated	1.0.8802.1.1.1.1.2.3.1.11	page 93
dot1xAuthAuthEapLogoffWhileAuthenticated	1.0.8802.1.1.1.1.2.3.1.12	page 93

TABLE 6 MIB object name/OID matrix (Continued)

MIB object name	OID	Page no.
dot1xAuthBackendResponses	1.0.8802.1.1.1.1.2.3.1.13	page 93
dot1xAuthBackendAccessChallenges	1.0.8802.1.1.1.1.2.3.1.14	page 93
dot1xAuthBackendOtherRequestsToSupplicant	1.0.8802.1.1.1.1.2.3.1.15	page 93
dot1xAuthBackendNonNakResponsesFromSupplicant	1.0.8802.1.1.1.1.2.3.1.16	page 94
dot1xAuthBackendAuthSuccesses	1.0.8802.1.1.1.1.2.3.1.17	page 94
dot1xAuthBackendAuthFails	1.0.8802.1.1.1.1.2.3.1.18	page 94
dot1xAuthSessionStatsTable	1.0.8802.1.1.1.1.2.4	page 94
dot1xAuthSessionStatsEntry	1.0.8802.1.1.1.1.2.4.1	page 94
dot1xAuthSessionOctetsRx	1.0.8802.1.1.1.1.2.4.1.1	page 94
dot1xAuthSessionOctetsTx	1.0.8802.1.1.1.1.2.4.1.2	page 94
dot1xAuthSessionFramesRx	1.0.8802.1.1.1.1.2.4.1.3	page 94
dot1xAuthSessionFramesTx	1.0.8802.1.1.1.1.2.4.1.4	page 95
dot1xAuthSessionId	1.0.8802.1.1.1.1.2.4.1.5	page 95
dot1xAuthSessionAuthenticMethod	1.0.8802.1.1.1.1.2.4.1.6	page 95
dot1xAuthSessionTime	1.0.8802.1.1.1.1.2.4.1.7	page 95
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