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Network OS

MIB Reference

Supporting Network OS v3.0.0

BROCADE

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Title	Publication number	Summary of changes	Date
<i>Network OS MIB Reference</i>	53-1002083-01	New document	December 2010
<i>Network OS MIB Reference</i>	53-1002342-01	Updated to support the Brocade VDX 6710-54, Brocade VDX 6730-32, and Brocade VDX 6730-76.	September 2011
<i>Network OS MIB Reference</i>	53-1002490-01	Updated to support FA-MIB objects, swFCPortScn, and SwStateChangeTrap traps.	December 2011
<i>Network OS MIB Reference</i>	53-1002560-01	Updated for NOS 3.0.0 release.	September 2012

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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 object types.
- [Chapter 3, “RMON MIB Objects,”](#) provides information for RMON MIB object types.
- [Chapter 4, “SW-MIB Objects,”](#) provides information for FC Switch MIB (SW-MIB) object types.
- [Chapter 5, “High-Availability MIB Objects,”](#) provides information for High-Availability MIB objecttypes.
- [Chapter 6, “FibreAlliance MIB Objects,”](#) provides information for FibreAlliance MIB (FCMGMT-MIB) object types.
- [Chapter 7, “IEEE 802.1x PAE MIB Objects,”](#) provides information on IEEE 802.1x PAE MIB object types.
- [Chapter 8, “LLDP MIB Objects,”](#) provides information on LLDP MIB object types.
- [Chapter 9, “IEEE 802.3 LAG MIB Objects,”](#) provides information on IEEE 802.3 LAG MIB object types.
- [Chapter 10, “Bridge-MIB Objects,”](#) provides information on Bridge-MIB object types.
- [Chapter 11, “sFlow MIB Objects,”](#) provides information on sFlow MIB object types.
- [Appendix A, “Frequently Asked Questions for MIB,”](#) provides answers to the questions on the MIB.

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 3.0.0 and the switches supporting this Network OS:

- Brocade VDX 6710-54
- Brocade VDX 6720-24
- Brocade VDX 6720-60
- Brocade VDX 6730-32
- Brocade VDX 6730-76
- Brocade VDX 8770
 - Brocade VDX 8770-4
 - Brocade VDX 8770-8
 - Brocade VDX 8770-16

What's new in this document

The following changes have been made since this document was last released:

- Information that was added:
 - Support for the FA-MIB objects
 - Support for the HA-MIB objects
 - Support for the HA-MIB traps
 - Support for agent capability MIBs

For further information about new features and documentation updates for this release, refer to the release notes.

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

<i>italic text</i>	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 all lowercase.

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 x 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>

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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

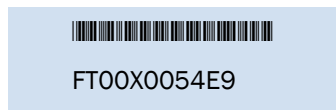
Contact your switch supplier for hardware, firmware, and software support, including product repairs and part ordering. To expedite your call, have the following information immediately available:

1. General Information

- Switch model
- Switch operating system version
- Software name and software version, if applicable
- Error numbers and messages received
- **copy support** command output
- 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 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 switch license ID (WWN) for the specified switch.

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.

Understanding Brocade SNMP

In this chapter

- [Understanding SNMP basics](#) 1
- [Loading Brocade MIBs](#) 4
- [Network OS commands for configuring SNMP](#) 7

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 the 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**, **get-next**, **get-bulk**, and **set**, 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.

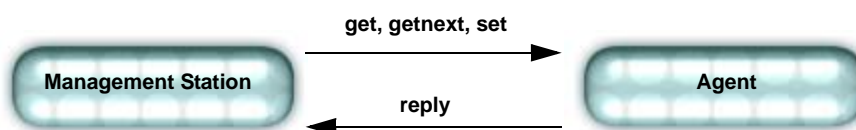


FIGURE 2 SNMP query

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.

1 Understanding SNMP basics



FIGURE 3 SNMP trap

The agent can receive queries from one or more management stations and can send traps to up to 12 management stations in which six can be SNMPv1 hosts and six can be SNMPv3 hosts.

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.

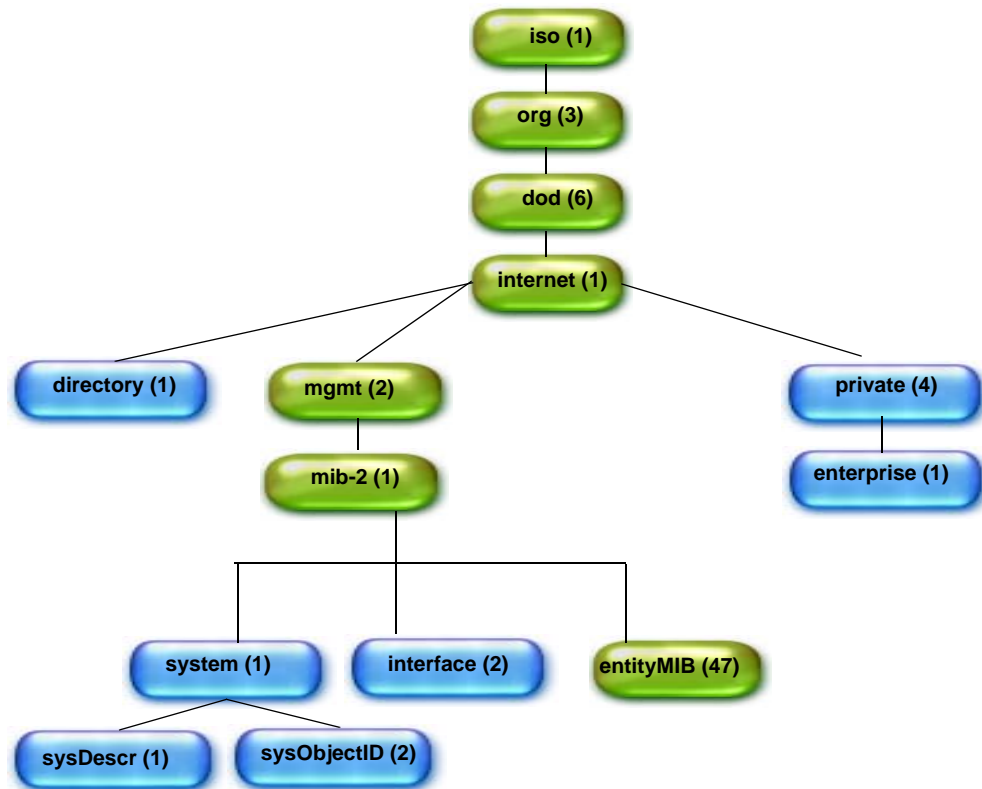


FIGURE 4 Brocade MIB tree location

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
- BROCADE-PRODUCTS-MIB.mib
- BROCADE-REG-MIB.mib
- BRCD_TC.mib
- SWBase.mib
- Resource.mib
- System.mib
- FA.mib
- HA.mib

Agent Capability MIBs

In SNMP, capability MIBs provide the implementation details for the associated MIBs. These MIBs, called AGENT-CAPABILITY MIBs, list supported conformance groups and any deviations from the MIBs as implemented in the associated software version. [Table 1](#) lists the Brocade supported capability MIBs.

TABLE 1 Agent Capabilities

Capability MIBs	Description
BROCADE-IEEE8021-PAE-CAPABILITY-MIB	Provides the implementation details for the IEEE8021-PAE-MIB
BROCADE-IEEE8023-LAG-CAPABILITY-MIB	Provides the implementation details for the IEEE8023-LAG-MIB
BROCADE-LLDP-CAPABILITY-MIB	Provides the implementation details for the LLDP-MIB
BROCADE-LLDP-EXT-DOT3-CAPABILITY-MIB	Provides the implementation details for the LLDP-EXT-DOT3-MIB

Standard MIBs

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

- IF-MIB
- LLDP-MIB
- BRIDGE-MIB
- IP-MIB
- LLDP-EXT-DOT3-MIB
- LLDP-EXT-DOT1-MIB
- RSTP-MIB
- RFC1213-MIB
- IEEE8023-LAG-MIB
- Q-BRIDGE-MIB
- IEEE8021-PAE-MIB
- P-BRIDGE-MIB
- RMON-MIB
- SFlow-MIB
- INET-ADDRESS-MIB
- IANAifType-MIB
- IANA-RTPROTO-MIB
- SNMPV2-MIB
- SNMP-FRAMEWORK-MIB
- IANA-ADDRESS-FAMILY-NUMBERS-MIB
- FC-MGMT-MIB

Before loading MIBs

Before loading the Brocade MIB files, ensure that you have the correct version of SNMP for the Brocade Network OS ([Table 2](#)).

TABLE 2 Network OS-supported SNMP versions

Firmware	SNMPv1	SNMPv2	SNMPv3
Network OS v2.0.0	Yes	Yes ¹	Yes
Network OS v2.1.0	Yes	Yes	Yes
Network OS v2.1.1	Yes	Yes	Yes
Network OS v3.0.0	Yes	Yes	Yes

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.

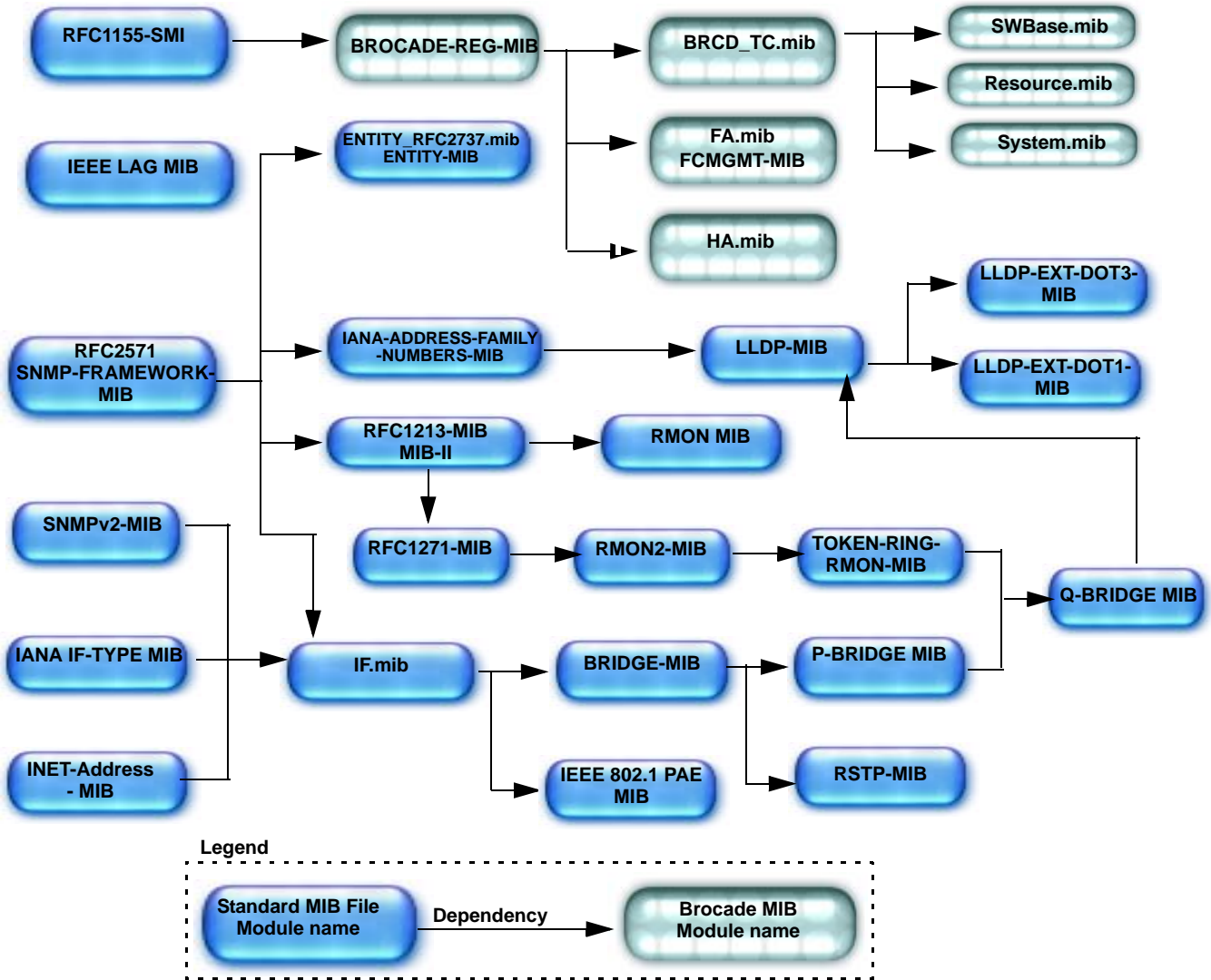


FIGURE 5 Brocade SNMP MIB dependencies and advised installation order

Network OS commands for configuring SNMP

Network OS v2.1.0 and later release supports SNMP versions 1, 2c, and 3. Use the following commands (Table 3) to configure SNMPv1, SNMPv2c, and SNMPv3 hosts.

TABLE 3 Commands for configuring SNMP

Command	Description
[no] snmp-server community <string> [ro rw]	<p>This command sets the community string that permits read-write or read-only access for each community.</p> <p>There are six community strings configured by default: three read-write strings and three read-only strings. The community strings on a read-write group are “Secret Code”, “OrigEquipMfr”, and “private”. The three read-only community strings are “public”, “common”, and “Converged Network”.</p> <p>To add a new community in a read-only group or read-write group, delete one of the entries from the respective group.</p> <p>Specify the access when adding a new community string, if not read-only access is provided to the string by default.</p> <p>Use the no form of the command to do the following:</p> <ul style="list-style-type: none"> • Remove the specified community string • Change the community string access from read-write to read-only
[no] snmp-server host {<ipv4 host> ipv6-host dns } [version {1 2c}] <community-string> [udp-port <port>] [severity-level <None,Debug,Info,Warning,Error,Critical>]	<p>This command sets the destination IP addresses, version, community string (for SNMP version 1 and version 2c), and destination port for the trap or inform. The severity level option is added to filter the traps based on severity.</p> <p>The no form of the command changes the SNMP server host configurations to the default value. It also removes the host entry based on the specified community string.</p>
[no] snmp-server location <string>	<p>This command sets the SNMP server location string.</p> <p>The no form of the command changes the location to the default value.</p>
[no] snmp-server contact <string>	<p>This command sets the SNMP server contact string.</p> <p>The no form of the command changes the contact to the default value.</p>
[no] snmp-server user <user-name> [groupname <group-name>] [auth] [md5 sha] [auth-password <string>] [priv] [DES AES128] [priv-password <string>]	<p>This command configures an SNMP user with authentication, privacy, and group options. The configured SNMP user is used to create a trap or inform recipient entry for the SNMPv3 host.</p> <p>By default six users are added. The three read-write users are “snmpadmin1”, “snmpadmin2”, and “snmpadmin3”. The three read-only users are “snmpuser1”, “snmpuser2”, and “snmpuser3”.</p> <p>To add a new user in a read-only group or read-write group, delete one of the entries from the respective group.</p> <p>Use the no form of the command to remove the authentication and privacy options for an user:</p> <ul style="list-style-type: none"> • If an user is created with auth and priv, use snmp-server user with noauth and nopriv options to remove the security and do not use the no form of the command. • If an user is created with auth only, use snmp-server user auth noauth or no snmp-server user auth command to remove the authentication. <p>Use the no form of the command to delete a user.</p>

1 Network OS commands for configuring SNMP

TABLE 3 Commands for configuring SNMP (Continued)

Command	Description
<code>[no] snmp-server sys-descr <string></code>	This command sets the system description of the object identifier to the specified string. Use the no form of the command to set the system description to the default value which is "Brocade VDX switch".
<code>[no] snmp-server v3host {ipv4-host ipv6-host dns}<username> [notifytype traps informs] [udp-port port] [engineID engineid-string]</code>	This command configures the IP address, destination port, user name, notification type, UPD port, and engine ID for the trap or inform for the SNMPv3 host. Use the no form of the command to remove the host entry based on the specified SNMP user.
<code>show running-config snmp-server</code>	This command displays the currently running user configuration for SNMP.

For more information about the commands, refer to the *Network OS Command Reference*. To configure SNMP on the Brocade switches, refer to the *Network OS Administrator's Guide*.

MIB-II (RFC1213-MIB)

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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 16 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
```

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

```
- 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 16 ifMIB hierarchy

Entity MIB system organization of MIB objects

Figure 17 through Figure 18 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 17 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 18 entityPhysical hierarchy

Objects and types imported

The following objects and types are imported from RFC 1155-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.

Object and OID	Access	Description
sysDescr 1.3.6.1.2.1.1.1	Read-only	<p>A textual description of the entity. This value must include the full name and version identification of the hardware type, software operating system, and networking software.</p> <p>This object must contain only printable ASCII characters.</p> <p>The default value is Brocade VDX switch.</p> <p>Set this value using the snmp-server sys-descr <string> command.</p>
sysObjectID 1.3.6.1.2.1.1.2	Read-only	<p>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.</p> <p>For example, if a vendor <i>NetYarn, Inc.</i> 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 <i>Knit Router</i>.</p> <p>The default values are:</p> <ul style="list-style-type: none"> • vdxCallisto24 for Brocade VDX 6720-24 • vdxCallisto60 for Brocade VDX 6720-60 • vdxCallistoF24 for Brocade VDX 6730-32 • vdxCallistoF60 for Brocade VDX 6730-76 • vdxCarme for Brocade VDX 6710 • vdx8770Slot4 for Brocade VDX 8770-4 • vdx8770Slot8 for Brocade VDX 8770-8 • vdx8770Slot16 for Brocade VDX 8770-16
sysUpTime 1.3.6.1.2.1.1.3	Read-only	<p>The time (in hundredths of a second) since the network management portion of the system was last re-initialized.</p>
sysContact 1.3.6.1.2.1.1.4	Read-write	<p>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 four characters.</p> <p>The default is Field Support.</p> <p>Set this value using the snmp-server contact <string> command.</p>
sysName 1.3.6.1.2.1.1.5	Read-write	<p>An administratively assigned name for this managed node. By convention, this is the node's fully qualified domain name. The default is the preassigned name of the logical switch.</p>

Object and OID	Access	Description
sysLocation 1.3.6.1.2.1.1.6	Read-write	The physical location of this node (for example, telephone closet, third floor). The minimum length of the string must be four. The default is End User Premise. Set this value using the snmp-server location <string> command.
sysServices 1.3.6.1.2.1.1.7	Read-only	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 ($2^{4-1} + 2^{7-1}$). In the context of the Internet suite of protocols, values must be calculated accordingly: Layer functionality: <ul style="list-style-type: none"> • 1 = physical (for example, repeaters) • 2 = datalink or 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.

Object and OID	Access	Description
ifNumber 1.3.6.1.2.1.2.1	Read-only	The number of network interfaces present on this system, regardless of their current state.
ifTable 1.3.6.1.2.1.2.2	Not accessible	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 must not be confused with <i>subnet</i> , which refers to an addressing partitioning scheme used in the Internet suite of protocols.
ifEntry 1.3.6.1.2.1.2.2.1	Not accessible	An interface entry containing objects at the subnetwork layer and below, for a particular interface.
ifIndex 1.3.6.1.2.1.2.2.1.1	Read-only	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 re-initialization of the entity's network management system to the next re-initialization.
ifDescr 1.3.6.1.2.1.2.2.1.2	Read-only	A textual string containing information about the interface.
ifType 1.3.6.1.2.1.2.2.1.3	Read-only	The type of interface, designated by the physical link protocols immediately below the network layer in the protocol stack.

2 Interfaces group

Object and OID	Access	Description
ifMtu 1.3.6.1.2.1.2.2.1.4	Read-only	The size of the largest datagram that can be sent or received on the interface, specified in octets. 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.
ifSpeed 1.3.6.1.2.1.2.2.1.5	Read-only	An estimate (in bits per second) of the current bandwidth of the interface. For interfaces that do not vary in bandwidth or interfaces for which no accurate estimation can be made, this object must contain the nominal bandwidth. If the bandwidth of the interface is greater than the maximum value reportable by this object then this object must report its maximum value (4,294,967,295) and ifHighSpeed must be used to report the interface speed. For a sub-layer which has no concept of bandwidth, this object must be zero.
ifPhysAddress 1.3.6.1.2.1.2.2.1.6	Read-only	The address of the interface at the protocol layer immediately below the network layer in the protocol stack. For interfaces that do not have such an address (for example, a serial line), this object must contain an octet string of zero length.
ifAdminStatus 1.3.6.1.2.1.2.2.1.7	Read-write	The desired state of the interface. Valid values: <ul style="list-style-type: none"> • up (1) • down (2) • testing (3)
ifOperStatus 1.3.6.1.2.1.2.2.1.8	Read-only	The current operational state of the interface. Valid values: <ul style="list-style-type: none"> • up (1) • down (2) • testing (3) • unknown (4) • dormant (5) • notPresent (6) <p>NOTE: The testing (3) state indicates that no operational packets can be passed.</p>
ifLastChange 1.3.6.1.2.1.2.2.1.9	Read-only	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	Read-only	The total number of octets received on the interface, including framing characters. This value is the number of 4-byte words received and multiplied by four.
ifInUcastPkts 1.3.6.1.2.1.2.2.1.11	Read-only	The number of subnetwork-unicast packets delivered to a higher-layer protocol.
ifInNUcastPkts 1.3.6.1.2.1.2.2.1.12	Read-only	The number of nonunicast packets (for example, subnetwork-broadcast or subnetwork-multicast) delivered to a higher-layer protocol.
ifInDiscards 1.3.6.1.2.1.2.2.1.13	Read-only	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	Read-only	The number of inbound packets that contained errors, which thereby prevented them from being deliverable to a higher-layer protocol.

Object and OID	Access	Description
ifInUnknownPkts 1.3.6.1.2.1.2.2.1.15	Read-only	The number of packets received by way of the interface that were discarded because of an unknown or unsupported protocol.
ifOutOctets 1.3.6.1.2.1.2.2.1.16	Read-only	The total number of octets transmitted out of the interface, including framing characters. This value is the number of 4-byte words transmitted and multiplied by four.
ifOutUcastPkts 1.3.6.1.2.1.2.2.1.17	Read-only	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	Read-only	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.
ifOutDiscards 1.3.6.1.2.1.2.2.1.19	Read-only	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	Read-only	The number of outbound packets that could not be transmitted because of errors.
ifOutQLen 1.3.6.1.2.1.2.2.1.21	Read-only	The length of the output packet queue (in packets). NOTE: This object is not supported.
ifSpecific 1.3.6.1.2.1.2.2.1.22	Read-only	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 conformant implementation of ASN.1 and BER must be able to generate and recognize this value.

AT group

Implementation of the Address Translation (AT) 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.

2 IP group

Object and OID	Access	Description
atTable 1.3.6.1.2.1.3.1	Not accessible	<p>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 <i>physical address</i>.</p> <p>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.</p> <p>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.</p>
atEntry 1.3.6.1.2.1.3.1.1	Not accessible	Each entry contains one network address to physical address equivalence.
atIfIndex 1.3.6.1.2.1.3.1.1.1	Read-write	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	Read-write	The media-dependent physical address.
atNetAddress 1.3.6.1.2.1.3.1.1.3	Read-write	The network address (for example, the IP address) corresponding to the media-dependent physical address.

IP group

Implementation of the Internet Protocol (IP) group is mandatory for all systems.

Object and OID	Access	Description
ipForwarding 1.3.6.1.2.1.4.1	Read-write	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	Read-write	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	Read-only	The total number of input datagrams received from interfaces, including those received in error.
ipInHdrErrors 1.3.6.1.2.1.4.4	Read-only	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	Read-only	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.

Object and OID	Access	Description
ipForwDatagrams 1.3.6.1.2.1.4.6	Read-only	The number of input datagrams for which this entity was not the 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	Read-only	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	Read-only	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	Read-only	The total number of input datagrams successfully delivered to IP user protocols (including ICMP).
ipOutRequests 1.3.6.1.2.1.4.10	Read-only	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	Read-only	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	Read-only	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	Read-only	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	Read-only	The number of IP fragments received that must be reassembled at this entity.
ipReasmOKs 1.3.6.1.2.1.4.15	Read-only	The number of IP datagrams successfully reassembled.
ipReasmFails 1.3.6.1.2.1.4.16	Read-only	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	Read-only	The number of IP datagrams that have been successfully fragmented at this entity.
ipFragFails 1.3.6.1.2.1.4.18	Read-only	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	Read-only	The number of IP datagram fragments that have been generated as a result of fragmentation at this entity.

Object and OID	Access	Description
ipAddrTable 1.3.6.1.2.1.4.20	Not accessible	The table of addressing information relevant to the IP addresses of this entity.
ipAddrEntry 1.3.6.1.2.1.4.20.1	Not accessible	The addressing information for one of the IP addresses of this entity.
ipAdEntAddr 1.3.6.1.2.1.4.20.1.1	Read-only	The IP address to which the addressing information of this entry pertains.
ipAdEntIfIndex 1.3.6.1.2.1.4.20.1.2	Read-only	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	Read-only	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	Read-only	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 is 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	Read-only	The size of the largest IP datagram that this entity can reassemble from incoming IP fragmented datagrams received on this interface. NOTE: This object is not supported.
ipRouteTable 1.3.6.1.2.1.4.21	Not accessible	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	Not accessible	A route to a particular destination.
ipRouteDest 1.3.6.1.2.1.4.21.1.1	Read-write	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	Read-write	The index value that uniquely identifies the local interface through which the next hop of this route must 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	Read-write	The primary routing metric for this route. The semantics of this metric are determined by the routing protocol specified in the ipRouteProto value of the route. If this metric is not used, its value must be set to -1.
ipRouteMetric2 1.3.6.1.2.1.4.21.1.4	Read-write	An alternate routing metric for this route. The semantics of this metric are determined by the routing protocol specified in the ipRouteProto value of the route. If this metric is not used, its value must be set to -1.
ipRouteMetric3 1.3.6.1.2.1.4.21.1.5	Read-write	An alternate routing metric for this route. The semantics of this metric are determined by the routing protocol specified in the ipRouteProto value of the route. If this metric is not used, its value must be set to -1.

Object and OID	Access	Description								
ipRouteMetric4 1.3.6.1.2.1.4.21.1.6	Read-write	An alternate routing metric for this route. The semantics of this metric are determined by the routing protocol specified in the ipRouteProto value of the route. If this metric is not used, its value must be set to -1.								
ipRouteNextHop 1.3.6.1.2.1.4.21.1.7	Read-write	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	Read-write	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 disassociates 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. Valid values: <ul style="list-style-type: none"> • 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 or network or subnetwork The values direct (3) and indirect (4) refer to the notion of direct and indirect routing in the IP architecture.								
ipRouteProto 1.3.6.1.2.1.4.21.1.9	Read-only	The routing mechanism by which this route was learned. Inclusion of values for gateway routing protocols is not intended to imply that hosts must support those protocols.								
ipRouteAge 1.3.6.1.2.1.4.21.1.10	Read-write	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. NOTE: This object is not supported.								
ipRouteMask 1.3.6.1.2.1.4.21.1.11	Read-write	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 belongs to a class-A, -B, or -C network, and then using one of the following masks: <table border="0" style="margin-left: 40px;"> <thead> <tr> <th>mask</th> <th>network</th> </tr> </thead> <tbody> <tr> <td>255.0.0.0</td> <td>class-A</td> </tr> <tr> <td>255.255.0.0</td> <td>class-B</td> </tr> <tr> <td>255.255.255.0</td> <td>class-C</td> </tr> </tbody> </table> 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.	mask	network	255.0.0.0	class-A	255.255.0.0	class-B	255.255.255.0	class-C
mask	network									
255.0.0.0	class-A									
255.255.0.0	class-B									
255.255.255.0	class-C									
ipRouteMetric5 1.3.6.1.2.1.4.21.1.12	Read-write	An alternate routing metric for this route. The semantics of this metric are determined by the routing protocol specified in the ipRouteProto value of the route. If this metric is not used, its value must be set to -1.								

2 ICMP group

Object and OID	Access	Description
ipRouteInfo 1.3.6.1.2.1.4.21.1.13	Read-only	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 ipRouteProto value of the route. If this information is not present, its value must be set to the Object Identifier {0 0}, which is a syntactically valid object identifier; any conformer implementation of ASN.1 and BER must be able to generate and recognize this value.
ipNetToMediaTable 1.3.6.1.2.1.4.22	Not accessible	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	Not accessible	Each entry contains one IP address to physical address equivalence.
ipNetToMediaIfIndex 1.3.6.1.2.1.4.22.1.1	Read-write	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	Read-write	The media-dependent physical address.
ipNetToMediaNetAddress 1.3.6.1.2.1.4.22.1.3	Read-write	The IP address corresponding to the media-dependent physical address.
ipNetToMediaType 1.3.6.1.2.1.4.22.1.4	Read-write	The type of mapping.
ipRoutingDiscards 1.3.6.1.2.1.4.23	Read-only	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. NOTE: This object is not supported.

ICMP group

Implementation of the Internet Control Message Protocol (ICMP) group is mandatory for all systems.

Object and OID	Access	Description
icmplnMsgs 1.3.6.1.2.1.5.1	Read-only	The total number of ICMP messages that the entity received. This counter includes all ICMP messages counted by icmplnErrors.
icmplnErrors 1.3.6.1.2.1.5.2	Read-only	The number of ICMP messages that the entity received but determined to have ICMP-specific errors (bad ICMP checksums, bad length, and so on).
icmplnDestUnreachs 1.3.6.1.2.1.5.3	Read-only	The number of ICMP Destination Unreachable messages received.
icmplnTimeExcds 1.3.6.1.2.1.5.4	Read-only	The number of ICMP Time Exceeded messages received.

Object and OID	Access	Description
icmpInParmProbs 1.3.6.1.2.1.5.5	Read-only	The number of ICMP Parameter Problem messages received.
icmpInSrcQuenchs 1.3.6.1.2.1.5.6	Read-only	The number of ICMP Source Quench messages received.
icmpInRedirects 1.3.6.1.2.1.5.7	Read-only	The number of ICMP Redirect messages received.
icmpInEchos 1.3.6.1.2.1.5.8	Read-only	The number of ICMP Echo (request) messages received.
icmpInEchoReps 1.3.6.1.2.1.5.9	Read-only	The number of ICMP Echo Reply messages received.
icmpInTimestamps 1.3.6.1.2.1.5.10	Read-only	The number of ICMP Timestamp (request) messages received.
icmpInTimestampReps 1.3.6.1.2.1.5.11	Read-only	The number of ICMP Timestamp Reply messages received.
icmpInAddrMasks 1.3.6.1.2.1.5.12	Read-only	The number of ICMP Address Mask Request messages received.
icmpInAddrMaskReps 1.3.6.1.2.1.5.13	Read-only	The number of ICMP Address Mask Reply messages received.
icmpOutMsgs 1.3.6.1.2.1.5.14	Read-only	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	Read-only	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 the value of this counter.
icmpOutDestUnreachs 1.3.6.1.2.1.5.16	Read-only	The number of ICMP Destination Unreachable messages sent.
icmpOutTimeExcds 1.3.6.1.2.1.5.17	Read-only	The number of ICMP Time Exceeded messages sent.
icmpOutParmProbs 1.3.6.1.2.1.5.18	Read-only	The number of ICMP Parameter Problem messages sent.
icmpOutSrcQuenchs 1.3.6.1.2.1.5.19	Read-only	The number of ICMP Source Quench messages sent.
icmpOutRedirects 1.3.6.1.2.1.5.20	Read-only	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	Read-only	The number of ICMP Echo (request) messages sent.
icmpOutEchoReps 1.3.6.1.2.1.5.22	Read-only	The number of ICMP Echo Reply messages sent.
icmpOutTimestamps 1.3.6.1.2.1.5.23	Read-only	The number of ICMP Timestamp (request) messages sent.

Object and OID	Access	Description
icmpOutTimestampReps 1.3.6.1.2.1.5.24	Read-only	The number of ICMP Timestamp Reply messages sent.
icmpOutAddrMasks 1.3.6.1.2.1.5.25	Read-only	The number of ICMP Address Mask Request messages sent.
icmpOutAddrMaskReps 1.3.6.1.2.1.5.26	Read-only	The number of ICMP Address Mask Reply messages sent.

TCP group

Implementation of the Transmission Control Protocol (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.

Object and OID	Access	Description
tcpRtoAlgorithm 1.3.6.1.2.1.6.1	Read-only	The algorithm used to determine the time-out value used for retransmitting unacknowledged octets.
tcpRtoMin 1.3.6.1.2.1.6.2	Read-only	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 rsre (3), 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	Read-only	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 rsre (3), 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	Read-only	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 must contain the value -1.
tcpActiveOpens 1.3.6.1.2.1.6.5	Read-only	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	Read-only	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	Read-only	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	Read-only	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.

Object and OID	Access	Description
tcpCurrEstab 1.3.6.1.2.1.6.9	Read-only	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	Read-only	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	Read-only	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	Read-only	The total number of segments retransmitted; that is, the number of TCP segments transmitted containing one or more previously transmitted octets.
tcpConnTable 1.3.6.1.2.1.6.13	Not accessible	A table containing TCP connection-specific information.
tcpConnEntry 1.3.6.1.2.1.6.13.1	Not accessible	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.
tcpConnState 1.3.6.1.2.1.6.13.1.1	Read-write	<p>The state of this TCP connection.</p> <p>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.</p> <p>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.</p> <p>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).</p> <p>Valid values:</p> <ul style="list-style-type: none"> • closed (1) • listen (2) • 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	Read-only	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	Read-only	The local port number for this TCP connection.
tcpConnRemAddress 1.3.6.1.2.1.6.13.1.4	Read-only	The remote IP address for this TCP connection.
tcpConnRemPort 1.3.6.1.2.1.6.13.1.5	Read-only	The remote port number for this TCP connection.

2 UDP group

Object and OID	Access	Description
tcpInErrs 1.3.6.1.2.1.6.14	Read-only	The total number of segments received in error (for example, bad TCP checksums).
tcpOutRsts 1.3.6.1.2.1.6.15	Read-only	The number of TCP segments sent containing the RST flag.

UDP group

Implementation of the User Datagram Protocol (UDP) group is mandatory for all systems that implement the UDP.

Object and OID	Access	Description
udpInDatagrams 1.3.6.1.2.1.7.1	Read-only	The total number of UDP datagrams delivered to UDP users.
udpNoPorts 1.3.6.1.2.1.7.2	Read-only	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	Read-only	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	Read-only	The total number of UDP datagrams sent from this entity.
udpTable 1.3.6.1.2.1.7.5	Not accessible	The UDP listener table contains information about this entity's UDP endpoints on which a local application is currently accepting datagrams.
udpEntry 1.3.6.1.2.1.7.5.1	Not accessible	Information about a particular current UDP listener.
udpLocalAddress 1.3.6.1.2.1.7.5.1.1	Read-only	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	Read-only	The local port number for this UDP listener.

EGP group

Brocade does not support the Exterior Gateway Protocol (EGP) group. This section is not applicable. For complete information regarding the EGP group, refer to RFC 1213.

Transmission group

Brocade does not support the Transmission group. This section is not applicable. For complete information regarding the Transmission group, refer to RFC 1213.

SNMP group

Implementation of the Simple Network Management Protocol (SNMP) group is mandatory for all systems that support an SNMP 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).

Object and OID	Access	Description
snmplnPkts 1.3.6.1.2.1.11.1	Read-only	The total number of messages delivered to the SNMP entity from the transport service.
snmpOutPkts 1.3.6.1.2.1.11.2	Read-only	The total number of SNMP messages that were passed from the SNMP entity to the transport service.
snmplnBadVersions 1.3.6.1.2.1.11.3	Read-only	The total number of SNMP messages that were delivered to the SNMP entity and were for an unsupported SNMP version.
snmplnBadCommunityNames 1.3.6.1.2.1.11.4	Read-only	The total number of SNMP messages delivered to the SNMP entity that used a SNMP community name not known to said entity.
snmplnBadCommunityUses 1.3.6.1.2.1.11.5	Read-only	The total number of SNMP messages delivered to the SNMP entity that represented an SNMP operation that was not allowed by the SNMP community named in the message.
snmplnASNParseErrs 1.3.6.1.2.1.11.6	Read-only	The total number of ASN.1 or BER errors encountered by the SNMP entity when decoding received SNMP messages.
snmplnTooBig 1.3.6.1.2.1.11.8	Read-only	The total number of SNMP PDUs that were delivered to the SNMP entity and for which the value of the error-status field is "tooBig."
snmplnNoSuchNames 1.3.6.1.2.1.11.9	Read-only	The total number of SNMP PDUs that were delivered to the SNMP entity and for which the value of the error-status field is "noSuchName."
snmplnBadValues 1.3.6.1.2.1.11.10	Read-only	The total number of SNMP PDUs that were delivered to the SNMP entity and for which the value of the error-status field is badValue.
snmplnReadOnly 1.3.6.1.2.1.11.11	Read-only	The total number valid SNMP PDUs that were delivered to the SNMP entity and for which the value of the error-status field is read-only.
snmplnGenErrs 1.3.6.1.2.1.11.12	Read-only	The total number of SNMP PDUs that were delivered to the SNMP entity and for which the value of the error-status field is "genErr."
snmplnTotalReqVars 1.3.6.1.2.1.11.13	Read-only	The total number of MIB objects that have been retrieved successfully by the SNMP entity as the result of receiving valid SNMP Get-Request and Get-Next PDUs.
snmplnTotalSetVars 1.3.6.1.2.1.11.14	Read-only	The total number of MIB objects that have been altered successfully by the SNMP entity as the result of receiving valid SNMP Set-Request PDUs.
snmplnGetRequests 1.3.6.1.2.1.11.15	Read-only	The total number of SNMP Get-Request PDUs that have been accepted and processed by the SNMP entity.
snmplnGetNexts 1.3.6.1.2.1.11.16	Read-only	The total number of SNMP Get-Next PDUs that have been accepted and processed by the SNMP entity.
snmplnSetRequests 1.3.6.1.2.1.11.17	Read-only	The total number of SNMP Set-Request PDUs that have been accepted and processed by the SNMP entity.

Object and OID	Access	Description
snmpInGetResponses 1.3.6.1.2.1.11.18	Read-only	The total number of SNMP Get-Response PDUs that have been accepted and processed by the SNMP entity.
snmpInTraps 1.3.6.1.2.1.11.19	Read-only	The total number of SNMP Trap PDUs that have been accepted and processed by the SNMP entity.
snmpOutTooBig 1.3.6.1.2.1.11.20	Read-only	The total number of SNMP PDUs that were generated by the SNMP entity and for which the value of the error-status field is too large.
snmpOutNoSuchNames 1.3.6.1.2.1.11.21	Read-only	The total number of SNMP PDUs that were generated by the SNMP entity and for which the value of the error-status field is "noSuchName."
snmpOutBadValues 1.3.6.1.2.1.11.22	Read-only	The total number of SNMP PDUs that were generated by the SNMP entity and for which the value of the error-status field is "badValue."
snmpOutGenErrs 1.3.6.1.2.1.11.24	Read-only	The total number of SNMP PDUs that were generated by the SNMP entity and for which the value of the error-status field is "genErr."
snmpOutGetRequests 1.3.6.1.2.1.11.25	Read-only	The total number of SNMP Get-Request PDUs that have been generated by the SNMP entity.
snmpOutGetNexts 1.3.6.1.2.1.11.26	Read-only	The total number of SNMP Get-Next PDUs that have been generated by the SNMP entity.
snmpOutSetRequests 1.3.6.1.2.1.11.27	Read-only	The total number of SNMP Set-Request PDUs that have been generated by the SNMP entity.
snmpOutGetResponses 1.3.6.1.2.1.11.28	Read-only	The total number of SNMP Get-Response PDUs that have been generated by the SNMP entity.
snmpOutTraps 1.3.6.1.2.1.11.29	Read-only	The total number of SNMP Trap PDUs that have been generated by the SNMP entity.
snmpEnableAuthenTraps 1.3.6.1.2.1.11.30	Read-only	<p>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.</p> <p>Possible values:</p> <ul style="list-style-type: none"> • enabled (1) • disabled (2) <p>This object is stored in nonvolatile memory so that it remains constant between re-initialization of the switch.</p>
snmpSilentDrops 1.3.6.1.2.1.11.31	Read-only	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	Read-only	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.

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.

Object and OID	Access	Description
ifXTable 1.3.6.1.2.1.31.1.1	Not accessible	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	Not accessible	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	Read-only	The textual name of the interface. The value of this object must be the name of the interface as assigned by the local device and must 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 has the same value of ifName. Note that for an agent that responds to SNMP queries concerning an interface on some other (proxied) device, then the value of ifName for such an interface is the proxied device's 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	Read-only	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.
ifInBroadcastPkts 1.3.6.1.2.1.31.1.1.1.3	Read-only	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.
ifOutMulticastPkts 1.3.6.1.2.1.31.1.1.1.4	Read-only	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.
ifOutBroadcastPkts 1.3.6.1.2.1.31.1.1.1.5	Read-only	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.

Object and OID	Access	Description
ifHCInOctets 1.3.6.1.2.1.31.1.1.1.6	Read-only	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. This value is the number of 4-byte words received and multiplied by four.
ifHCInUcastPkts 1.3.6.1.2.1.31.1.1.1.7	Read-only	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	Read-only	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.
ifHCInBroadcastPkts 1.3.6.1.2.1.31.1.1.1.9	Read-only	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.
ifHCOctets 1.3.6.1.2.1.31.1.1.1.10	Read-only	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. This value is the number of 4-byte words transmitted and multiplied by four.
ifHCOUcastPkts 1.3.6.1.2.1.31.1.1.1.11	Read-only	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.
ifHCOMulticastPkts 1.3.6.1.2.1.31.1.1.1.12	Read-only	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.

Object and OID	Access	Description
ifHCOutBroadcastPkts 1.3.6.1.2.1.31.1.1.1.13	Read-only	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.
ifLinkUpDownTrapEnable 1.3.6.1.2.1.31.1.1.1.14	Read-write	Indicates whether linkUp or linkDown traps must be generated for this interface. By default, this object must 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	Read-only	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. If this object reports a value of n then the speed of the interface is in the range of $n-500,000$ to $n+499,999$. For 1 Gbps, the value is 1000. For 2 Gbps, the value is 2000. For 4 Gbps, 8 Gbps, 10 Gbps, and 16 Gbps, the value is 16000.
ifPromiscuousMode 1.3.6.1.2.1.31.1.1.1.16	Read-write	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	Read-only	Set to true when media is connected, otherwise false. For virtual FC ports, it is always false.

2 Generic traps

Object and OID	Access	Description
ifAlias 1.3.6.1.2.1.31.1.1.1.18	Read-write	<p>This object is an alias name for the interface as specified by a network manager, and provides a nonvolatile 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 interface's 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 nonvolatile 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.</p> <p>NOTE: This object is not supported.</p>
ifCounterDiscontinuityTime 1.3.6.1.2.1.31.1.1.1.17	Read-only	<p>The value of sysUpTime on the most recent occasion at which any one or more of this interface's 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.</p> <p>NOTE: This object is not supported.</p>

Generic traps

Trap name and OID	Description
coldStart 1.3.6.1.6.3.1.1.5.1	<p>A coldStart trap signifies that the sending protocol entity is re-initializing itself such that the configuration of the agent or the protocol entity implementation may be altered.</p> <p>This trap is generated for the following switch events:</p> <ul style="list-style-type: none">• reboot• fastboot
warmStart 1.3.6.1.6.3.1.1.5.2	<p>A warmStart trap signifies that the sending protocol entity is re-initializing itself such that neither the agent configuration nor the protocol entity implementation is altered.</p> <p>NOTE: This trap is not supported on Network OS v2.0.0 or later.</p>

Trap name and OID	Description
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 configuration of the agent. Varbinds for this trap are as follows: <ul style="list-style-type: none"> • ifIndex • ifAdminStatus • ifOperStatus
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 configuration of the agent has come up. Variable bindings for this trap are as follows: <ul style="list-style-type: none"> • ifIndex • ifAdminStatus • ifOperStatus

Entity MIB

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

Definitions for Entity MIB

[Table 4](#) lists the objects or definitions that are imported into the Entity MIB and the modules from which they are imported.

TABLE 4 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

Table 5 lists the textual conventions for Entity MIB.

TABLE 5 Textual conventions for Entity MIB

Type definition	Value	Description
PhysicalIndex	Integer of size 1 to 2147483647	Arbitrary value that uniquely identifies the physical entity. Value must be a small positive integer; index values for different physical entities are not necessarily contiguous.
PhysicalClass	Integer	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. Table 6 lists the possible values for PhysicalClass.
SnmpEngineIdOrNone	Octet string of size 32	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). 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 and port number along with the private enterprise number and algorithm type used. An example of this type of snmpEngineID is 00.00.06.34.00.00.00.A1.0A.20.93.CA (hex).

Table 6 lists the possible values for PhysicalClass.

TABLE 6 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 or 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 must be modeled within a container entity, such as field-replaceable modules, fans, or power supplies. Note that all known containers, including empty containers, must 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.

TABLE 6 Possible values for PhysicalClass (Continued)

Values	Description
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 must be modeled within a container entity; otherwise, it must 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 must not be modeled within any other physical entities, but a stack might be contained within another stack. Only chassis entities must be contained within a stack.

Entity MIB objects

The Entity MIB objects are divided into the following groups:

- “Physical entity group” on page 39
- “Logical entity group” on page 43
- “Entity mapping group” on page 43
- “General group” on page 43

The following sections list the MIBs in each group.

Physical entity group

Object and OID	Access	Description
entityPhysical 1.3.6.1.2.1.47.1.1	Not accessible	Physical entity group.
entPhysicalTable 1.3.6.1.2.1.47.1.1.1	Not accessible	Table 7 contains one row per physical entity (Figure 19). 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 and later, it is marked as an FRU.
entPhysicalEntry 1.3.6.1.2.1.47.1.1.1.1	Not accessible	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.
entPhysicalIndex 1.3.6.1.2.1.47.1.1.1.1.1	Not accessible	The index for this entry.

Object and OID	Access	Description
entPhysicalDescr 1.3.6.1.2.1.47.1.1.1.1.2	Read-only	<p>A textual description of the physical entity (physical name of the entity, such as chassis, blade, port, and so on). This object must contain a string that identifies the entity manufacturer's name and must 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).</p>
entPhysicalVendorType 1.3.6.1.2.1.47.1.1.1.1.3	Read-only	<p>An indication of the vendor-specific hardware type of the physical entity. Note that this is different from the definition of MIB-II sysObjectID.</p> <p>An agent must 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.</p> <p>If no vendor-specific registration identifier exists for this physical entity, or if the value is unknown by this agent, then the object returns {0, 0}. Currently, NULL OID {0, 0} is returned.</p>
entPhysicalContainedIn 1.3.6.1.2.1.47.1.1.1.1.4	Read-only	<p>The value of entPhysicalIndex for the physical entity that contains this physical entity. A value of zero 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 must identify the containing entity with the lowest value of entPhysicalIndex.</p> <p>Value 0 for chassis entry. All containers have ContainedIn set to one. All FRUs are contained in their respective slot container entries.</p>
entPhysicalClass 1.3.6.1.2.1.47.1.1.1.1.5	Read-only	<p>An indication of the general hardware type of the physical entity.</p> <p>An agent must 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.</p> <p>If no appropriate standard registration identifier exists for this physical entity, then the object returns the value other (1). If the value is unknown by this agent, then the object returns the value unknown (2).</p>
entPhysicalParentRelPos 1.3.6.1.2.1.47.1.1.1.1.6	Read-only	<p>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.</p> <p>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.</p> <p>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).</p> <p>If the agent cannot determine the parent-relative position for some reason, or if the associated value of entPhysicalContainedIn is 0, then the object returns the value -1; otherwise, the object returns a non-negative integer, indicating the parent-relative position of this physical entity.</p>

Object and OID	Access	Description
entPhysicalName 1.3.6.1.2.1.47.1.1.1.1.7	Read-only	<p>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 is the name of the component as assigned by the local device and must 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.</p> <p>If there is no local name, or this object is otherwise not applicable, then this object contains a zero-length string.</p> <p>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).</p> <p>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).</p>
entPhysicalHardwareRev 1.3.6.1.2.1.47.1.1.1.1.8	Read-only	<p>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).</p> <p>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.</p> <p>If no specific hardware revision string is associated with the physical component, or if this information is unknown to the agent, then this object contains a zero-length string.</p> <p>Set to an empty string.</p>
entPhysicalFirmwareRev 1.3.6.1.2.1.47.1.1.1.1.9	Read-only	<p>The vendor-specific firmware revision string for the physical entity.</p> <p>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.</p> <p>If no specific firmware programs are associated with the physical component, or if this information is unknown to the agent, then this object contains a zero-length string.</p>
entPhysicalSoftwareRev 1.3.6.1.2.1.47.1.1.1.1.10	Read-only	<p>The vendor-specific software revision string for the physical entity.</p> <p>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.</p> <p>If no specific software programs are associated with the physical component, or if this information is unknown to the agent, then this object contains a zero-length string.</p>
entPhysicalSerialNum 1.3.6.1.2.1.47.1.1.1.1.11	Read-write	<p>The vendor-specific serial number string for the physical entity. The preferred value is the serial number actually printed on the component (if present).</p>

Object and OID	Access	Description
entPhysicalMfgName 1.3.6.1.2.1.47.1.1.1.1.12	Read-only	<p>The name of the manufacturer of this physical component. The preferred value is the name actually printed on the component (if present).</p> <p>The comparisons between instances of the entPhysicalModelName, entPhysicalFirmwareRev, entPhysicalSoftwareRev, and the entPhysicalSerialNum objects are meaningful only amongst entPhysicalEntries with the same value of entPhysicalMfgName.</p> <p>If the manufacturer name string associated with the physical component is unknown to the agent, then this object contains a zero-length string.</p>
entPhysicalModelName 1.3.6.1.2.1.47.1.1.1.1.13	Read-only	<p>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.</p> <p>If the model name string associated with the physical component is unknown to the agent, then this object contains a zero-length string.</p> <p>Set to serial number and part number (if available) respectively.</p>
entPhysicalAlias 1.3.6.1.2.1.47.1.1.1.1.14	Read-write	<p>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.</p> <p>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.</p> <p>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 re-initializations or reboots of the network management system, including those that result in a change of the physical entity's entPhysicalIndex value.</p>
entPhysicalAssetID 1.3.6.1.2.1.47.1.1.1.1.15	Read-write	<p>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.</p> <p>If no asset tracking information is associated with the physical component, then this object contains a zero-length string.</p>
entPhysicalIsFRU 1.3.6.1.2.1.47.1.1.1.1.16	Read-only	<p>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) must be returned for this object.</p> <p>Set to True (1) for FRU entries (port blades, CPs, sensors, power supplies, and fans; False (2) for container and chassis type entries.</p>

Table 7 lists the entPhysicalTable entries for Brocade switches.

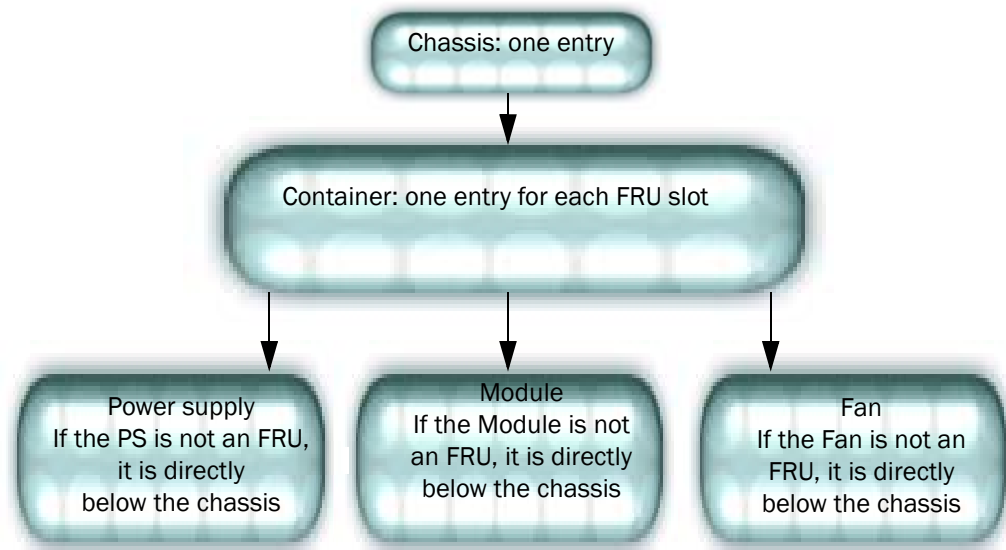
TABLE 7 entPhysicalTable entries for Brocade switches

Platform	Blades	Fans	Power supply	WWN card
Brocade VDX 6710-54	Standalone	2 FRUs	2 PS	1 WWN unit
Brocade VDX 6720-24	Standalone	2 FRUs	2 PS	1 WWN unit
Brocade VDX 6720-60	Standalone	3 FRUs	2 PS	1 WWN unit

TABLE 7 entPhysicalTable entries for Brocade switches (Continued)

Platform	Blades	Fans	Power supply	WWN card
Brocade VDX 6730-32	Standalone	2 FRUs	2 PS	1 WWN unit
Brocade VDX 6730-72	Standalone	3 FRUs	2 PS	1 WWN unit

Figure 19 shows the hierarchy of the physical objects.

**FIGURE 19** entPhysicalTable containment hierarchy (entPhysicalContainsTable)

Logical entity group

This group is not supported.

Entity mapping group

This group is not supported.

General group

This group is not supported.

Entity MIB trap

Entity MIB trap is not supported.

2 Entity MIB

RMON MIB Objects

In this chapter

- RMON MIB overview 45
- RMON group 48
- RMON traps 48
- Statistics group 48
- History group 50
- Alarm group 52
- Event group 53

RMON MIB overview

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

RMON MIB object hierarchy

Figure 20 through Figure 25 depict the organization and structure of RMON MIB.

```

- iso
  - org
    - dod
      - internet
        - directory
          - mgmt
            - mib-2
              - rmon
                - statistics
                - history
                - alarm
                - event

```

FIGURE 20 RMON MIB overall hierarchy

```

- 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

```

FIGURE 21 RMON traps hierarchy

```

- 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

```

FIGURE 22 Statistics hierarchy

```

- 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

```

FIGURE 23 History hierarchy

```

- 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

```

FIGURE 24 Alarm hierarchy

```

- 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 25 Event hierarchy

Textual conventions for RMON MIB

Table 8 lists the textual conventions used for RMON MIB.

TABLE 8 RMON MIB textual conventions

Type definition	Value	Description
OwnerString	Octet String of size 0 to 127	The data type used to model an administratively assigned name of the owner of a resource.
EntryStatus	Integer	The status of a table entry: <ul style="list-style-type: none"> • valid (1) • createRequest (2) • underCreation (3) • invalid (4)

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, history, alarm, and event.

RMON traps

Trap name and OID	Variables	Description
rmonEventsV2 1.3.6.1.2.1.16.0		Definition point for RMON notifications.
risingAlarm 1.3.6.1.2.1.16.0.1	"alarmIndex" "alarmVariable" "alarmSampleType" "alarmValue" "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	"alarmIndex" "alarmVariable" "alarmSampleType" "alarmValue" "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 group

Object and OID	Access	Description
statistics 1.3.6.1.2.1.16.1	Not accessible	A collection of statistics kept for a particular Ethernet interface. 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	Not accessible	A list of Ethernet statistics entries.
etherStatsEntry 1.3.6.1.2.1.16.1.1.1	Not accessible	A collection of statistics kept for a particular Ethernet interface.
etherStatsIndex 1.3.6.1.2.1.16.1.1.1.1	Read-only	The value of this object uniquely identifies this etherStats entry.
etherStatsDataSource 1.3.6.1.2.1.16.1.1.1.2	Read-write	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 identifies the instance of the ifIndex object, defined in RFC 1213 and RFC 1573, for the desired interface.
etherStatsDropEvents 1.3.6.1.2.1.16.1.1.1.3	Read-only	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.

Object and OID	Access	Description
etherStatsOctets 1.3.6.1.2.1.16.1.1.1.4	Read-only	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	Read-only	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	Read-only	The total number of good packets received that were directed to the broadcast address. NOTE: This number does not include multicast packets.
etherStatsMulticastPkts 1.3.6.1.2.1.16.1.1.1.7	Read-only	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	Read-only	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: <ul style="list-style-type: none"> 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	Read-only	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	Read-only	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	Read-only	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: <ul style="list-style-type: none"> 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	Read-only	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: <ul style="list-style-type: none"> 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	Read-only	The best estimate of the total number of collisions on this Ethernet segment. The value returned depends on the location of the RMON probe.
etherStatsPkts64Octets 1.3.6.1.2.1.16.1.1.1.14	Read-only	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	Read-only	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	Read-only	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).

3 History group

Object and OID	Access	Description
etherStatsPkts256to511Octets 1.3.6.1.2.1.16.1.1.1.17	Read-only	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	Read-only	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).
etherStatsPkts1024to1518Octets 1.3.6.1.2.1.16.1.1.1.19	Read-only	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	Read-write	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	Read-write	The status of this etherStats entry.

History group

History control group

Object and OID	Access	Description
history 1.3.6.1.2.1.16.2	Not accessible	A list of parameters that set up a periodic sampling of statistics. 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	Not accessible	A list of history control entries.
historyControlEntry 1.3.6.1.2.1.16.2.1.1	Not accessible	A list of parameters that set up a periodic sampling of statistics.
historyControlIndex 1.3.6.1.2.1.16.2.1.1.1	Read-only	An index that uniquely identifies an entry in the historyControl table. Each 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	Read-write	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 the device.
historyControlBucketsRequested 1.3.6.1.2.1.16.2.1.1.3	Read-write	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	Read-only	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	Read-write	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.

Object and OID	Access	Description
historyControlOwner 1.3.6.1.2.1.16.2.1.1.6	Read-write	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	Read-write	The status of this historyControl entry.

Ethernet history group

Object and OID	Access	Description
etherHistoryTable 1.3.6.1.2.1.16.2.2	Not accessible	A list of Ethernet history entries.
etherHistoryEntry 1.3.6.1.2.1.16.2.2.1	Not accessible	An historical sample of Ethernet statistics on a particular Ethernet interface.
etherHistoryIndex 1.3.6.1.2.1.16.2.2.1.1	Read-only	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	Read-only	An index that uniquely identifies a particular sample this entry represents among all the 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	Read-only	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	Read-only	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	Read-only	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	Read-only	The number of packets (including bad packets) received during this sampling interval.
etherHistoryBroadcastPkts 1.3.6.1.2.1.16.2.2.1.7	Read-only	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	Read-only	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.
etherHistoryCRCAAlignErrors 1.3.6.1.2.1.16.2.2.1.9	Read-only	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 either had 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	Read-only	The number of packets received during this sampling interval that were less than 64 octets (excluding framing bits but including FCS octets) but were otherwise well formed.

3 Alarm group

Object and OID	Access	Description
etherHistoryOversizePkts 1.3.6.1.2.1.16.2.2.1.11	Read-only	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	Read-only	The total number of packets received during this sampling interval that were less than 64 octets (excluding framing bits but including FCS octets) and either had 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	Read-only	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	Read-only	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	Read-only	The best estimate of the mean physical layer network utilization on this interface during this sampling interval, in hundredths of a percent.

Alarm group

Object and OID	Access	Description
alarm 1.3.6.1.2.1.16.3	Not accessible	A list of alarm entries. A list of parameters that set up a periodic checking for alarm conditions. An alarm is created using the rmon alarm <alarm-id> command.
alarmTable 1.3.6.1.2.1.16.3.1	Not accessible	A list of alarm entries.
alarmEntry 1.3.6.1.2.1.16.3.1.1	Not accessible	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	Read-only	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	Read-write	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	Read-write	The object identifier of the particular variable to be sampled.
alarmSampleType 1.3.6.1.2.1.16.3.1.1.4	Read-write	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 is 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 is 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	Read-only	The value of the statistic during the last sampling period.

Object and OID	Access	Description
alarmStartupAlarm 1.3.6.1.2.1.16.3.1.1.6	Read-write	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	Read-write	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 is generated. After a rising event is generated, another such event is not 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	Read-write	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 is generated. After a falling event is generated, another such event is not 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	Read-write	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	Read-write	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	Read-write	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	Read-write	The status of this alarm entry.

Event group

Object and OID	Access	Description
event 1.3.6.1.2.1.16.9	Not accessible	A set of parameters that describe an event to be generated when certain conditions are met. An event is created using the rmon event <event-id> command.
eventTable 1.3.6.1.2.1.16.9.1	Not accessible	A list of events to be generated.
eventEntry 1.3.6.1.2.1.16.9.1.1	Not accessible	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	Read-only	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	Read-write	A comment describing this event entry.
eventType 1.3.6.1.2.1.16.9.1.1.3	Read-write	The type of notification that the probe makes 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	Read-write	If an SNMP trap is to be sent, it is sent to the SNMP community specified by this octet string.

3 Event group

Object and OID	Access	Description
eventLastTimeSent 1.3.6.1.2.1.16.9.1.1.5	Read-write	The value of sysUpTime at the time this event entry last generated an event. If this entry has not generated any events, this value is zero.
eventOwner 1.3.6.1.2.1.16.9.1.1.6	Read-write	The entity that configured this entry and is therefore using the resources assigned to it. If this object contains a string starting with <i>monitor</i> and has associated entries in the log table, all connected management stations must 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	Read-write	The status of this event entry. If this object is not equal to valid (1), all associated log entries are deleted by the agent.
logTable 1.3.6.1.2.1.16.9.2	Not accessible	A set of data describing an event that has been logged.
logEntry 1.3.6.1.2.1.16.9.2.1	Not accessible	A set of data describing an event that has been logged.
logEventIndex 1.3.6.1.2.1.16.9.2.1.1	Read-only	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	Read-only	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	Read-only	The value of sysUpTime when this log entry was created.
logDescription 1.3.6.1.2.1.16.9.2.1.4	Read-only	An implementation-dependent description of the event that activated this log entry.

SW-MIB Objects

In this chapter

- [SW-MIB overview](#) 55
- [Switch base MIB](#) 58
- [Switch system MIB](#) 58
- [Switch resource MIB](#) 66

SW-MIB overview

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

SW-MIB system organization of MIB objects

[Figure 26](#) through [Figure 32](#) depict the organization and structure of SW-MIB.

```

- iso
  - org
    - dod
      - internet
        - private
          - enterprises
            - bsci
              - commDev
                - fibreChannel
                  - fcSwitch
                    - sw
                      - swTrapsV2
                      - swSystem
                      - swFabric
                      - swFCport
                      - swEvent
                      - swCpuorMemoryUsage
            - bsciReg
              - bsciModules
                - bcsiModculeTC
                - swMibModule

```

FIGURE 26 SW-MIB overall tree structure

- **swTrapsV2**
 - swFCPortScn 1.3.6.1.4.1.1588.2.1.1.1.0.3
 - swEventTrap 1.3.6.1.4.1.1588.2.1.1.1.0.4
 - swStateChangeTrap 1.3.6.1.4.1.1588.2.1.1.1.0.12

FIGURE 27 swTrapsV2 hierarchy

- swSystem 1.3.6.1.4.1.1588.2.1.1.1.1
 - swCurrentDate 1.3.6.1.4.1.1588.2.1.1.1.1.1
 - swBootDate 1.3.6.1.4.1.1588.2.1.1.1.1.2
 - swFWLastUpdated 1.3.6.1.4.1.1588.2.1.1.1.1.3
 - swFlashLastUpdated 1.3.6.1.4.1.1588.2.1.1.1.1.4
 - swBootPromLastUpdated 1.3.6.1.4.1.1588.2.1.1.1.1.5
 - swFirmwareVersion 1.3.6.1.4.1.1588.2.1.1.1.1.6
 - swOperStatus 1.3.6.1.4.1.1588.2.1.1.1.1.7
 - swSsn 1.3.6.1.4.1.1588.2.1.1.1.1.10
 - swFlashDLOperStatus 1.3.6.1.4.1.1588.2.1.1.1.1.11
 - swFlashDLAdmStatus 1.3.6.1.4.1.1588.2.1.1.1.1.12
 - swBeaconOperStatus 1.3.6.1.4.1.1588.2.1.1.1.1.18
 - swBeaconAdmStatus 1.3.6.1.4.1.1588.2.1.1.1.1.19
 - swDiagResult 1.3.6.1.4.1.1588.2.1.1.1.1.20
 - swNumSensors 1.3.6.1.4.1.1588.2.1.1.1.1.21
 - swSensorTable 1.3.6.1.4.1.1588.2.1.1.1.1.22
 - swSensorEntry 1.3.6.1.4.1.1588.2.1.1.1.1.22.1
 - swSensorIndex 1.3.6.1.4.1.1588.2.1.1.1.1.22.1.1
 - swSensorType 1.3.6.1.4.1.1588.2.1.1.1.1.22.1.2
 - swSensorStatus 1.3.6.1.4.1.1588.2.1.1.1.1.22.1.3
 - swSensorValue 1.3.6.1.4.1.1588.2.1.1.1.1.22.1.4
 - swSensorInfo 1.3.6.1.4.1.1588.2.1.1.1.1.22.1.5
 - swEtherIPAddress 1.3.6.1.4.1.1588.2.1.1.1.1.25
 - swEtherIPMask 1.3.6.1.4.1.1588.2.1.1.1.1.26
 - swIPv6Address 1.3.6.1.4.1.1588.2.1.1.1.1.29
 - swIPv6Status 1.3.6.1.4.1.1588.2.1.1.1.1.30

FIGURE 28 swSystem hierarchy

- swFabric 1.3.6.1.4.1.1588.2.1.1.1.2
 - swVfId 1.3.6.1.4.1.1588.2.1.1.1.2.15

FIGURE 29 swFabric hierarchy

```

- swFCport 1.3.6.1.4.1.1588.2.1.1.1.6
  - swFCPortTable 1.3.6.1.4.1.1588.2.1.1.1.6.2
    - swFCPortEntry 1.3.6.1.4.1.1588.2.1.1.1.6.2.1
      - swFCPortIndex 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.1
      - swFCPortType 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.2
      - swFCPortPhyState 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.3
      - swFCPortOpStatus 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.4
      - swFCPortAdmStatus 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.5
      - swFCPortLinkState 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.6
      - swFCPortTxType 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.7
      - swFCPortTxWords 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.11
      - swFCPortRxWords 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.12
      - swFCPortTxFrames 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.13
      - swFCPortRxFrames 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.14
      - swFCPortRxC2Frames 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.15
      - swFCPortRxC3Frames 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.16
      - swFCPortRxC3Lcs 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.17
      - swFCPortRxC3Mcasts 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.18
      - swFCPortTooManyRdys 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.19
      - swFCPortNoTxCredits 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.20
      - swFCPortRxEncInFrs 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.21
      - swFCPortRxCrcs 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.22
      - swFCPortRxTruncs 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.23
      - swFCPortRxTooLongs 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.24
      - swFCPortRxBadEofs 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.25
      - swFCPortRxEncOutFrs 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.26
      - swFCPortRxBadOs 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.27
      - swFCPortC3Discards 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.28
      - swFCPortMcastTimedOuts 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.29
      - swFCPortTxMcasts 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.30
      - swFCPortLipIns 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.31
      - swFCPortLipOuts 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.32
      - swFCPortLipLastAlpa 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.33
      - swFCPortWwn 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.34
      - swFCPortSpeed 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.35
      - swFCPortName 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.36
      - swFCPortSpecifier 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.37
      - swFCPortFlag 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.38
      - swFCPortBrcdType 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.39

```

FIGURE 30 swFCport hierarchy

```

- swEvent 1.3.6.1.4.1.1588.2.1.1.1.8
  - swEventTable 1.3.6.1.4.1.1588.2.1.1.1.8.5
    - swEventEntry 1.3.6.1.4.1.1588.2.1.1.1.8.5.1
      - swEventIndex 1.3.6.1.4.1.1588.2.1.1.1.8.5.1.1
      - swEventTimeInfo 1.3.6.1.4.1.1588.2.1.1.1.8.5.1.2
      - swEventLevel 1.3.6.1.4.1.1588.2.1.1.1.8.5.1.3
      - swEventRepeatCount 1.3.6.1.4.1.1588.2.1.1.1.8.5.1.4
      - swEventDescr 1.3.6.1.4.1.1588.2.1.1.1.8.5.1.5
      - swEventVfid 1.3.6.1.4.1.1588.2.1.1.1.8.5.1.6

```

FIGURE 31 swEvent hierarchy

4 Switch base MIB

- swCpuorMemoryUsage 1.3.6.1.4.1.1588.2.1.1.1.26
- swCpuUsage 1.3.6.1.4.1.1588.2.1.1.1.26.1
- swCpuNoOfRetries 1.3.6.1.4.1.1588.2.1.1.1.26.2
- swCpuUsageLimit 1.3.6.1.4.1.1588.2.1.1.1.26.3
- swCpuPollingInterval 1.3.6.1.4.1.1588.2.1.1.1.26.4
- swCpuAction 1.3.6.1.4.1.1588.2.1.1.1.26.5
- swMemUsage 1.3.6.1.4.1.1588.2.1.1.1.26.6
- swMemNoOfRetries 1.3.6.1.4.1.1588.2.1.1.1.26.7
- swMemUsageLimit 1.3.6.1.4.1.1588.2.1.1.1.26.8
- swMemPollingInterval 1.3.6.1.4.1.1588.2.1.1.1.26.9
- swMemAction 1.3.6.1.4.1.1588.2.1.1.1.26.10

FIGURE 32 Switch resource MIB hierarchy

Switch base MIB

The MIB module for the Brocade switch.

Object and OID	Access	Description
sw 1.3.6.1.4.1.1588.2.1.1.1	Not accessible	The OID sub-tree for the Brocade Silkworm Series of Fibre Channel Switches.

Switch system MIB

This MIB holds the switch system-related information.

System group

Object and OID	Access	Description
swSystem 1.3.6.1.4.1.1588.2.1.1.1.1	Not accessible	The MIB module is for system information.
swCurrentDate 1.3.6.1.4.1.1588.2.1.1.1.1.1	Read-only	The object displays the current date in textual format.
swBootDate 1.3.6.1.4.1.1588.2.1.1.1.1.2	Read-only	The date and time when the system last booted.
swFWLastUpdated 1.3.6.1.4.1.1588.2.1.1.1.1.3	Read-only	The date when the firmware was last updated to the switch.
swFlashLastUpdated 1.3.6.1.4.1.1588.2.1.1.1.1.4	Read-only	The date and time when the flash was last updated.
swBootPromLastUpdated 1.3.6.1.4.1.1588.2.1.1.1.1.5	Read-only	The date and time when the Boot PROM was last updated.
swFirmwareVersion 1.3.6.1.4.1.1588.2.1.1.1.1.6	Read-only	The current version of the firmware.

Object and OID	Access	Description
swOperStatus 1.3.6.1.4.1.1588.2.1.1.1.1.7	Read-only	The current operational status of the switch. Possible values: <ul style="list-style-type: none"> • online (1) - The switch is accessible by an external FC port. • offline (2) - The switch is not accessible. • testing (3) - The switch is in a built-in test mode and is not accessible by an external Fibre Channel port. • faulty (4) - The switch is not operational.
swSsn 1.3.6.1.4.1.1588.2.1.1.1.1.10	Read-only	The soft serial number of the switch.
Flash administration		
The next five objects are related to firmware or configuration file management.		
swFlashDLOperStatus 1.3.6.1.4.1.1588.2.1.1.1.1.11	Read-only	The operational status of the flash. Possible values: <ul style="list-style-type: none"> • unknown (0) - Indicates that the operational status of the flash is unknown. • swCurrent (1) - Indicates that the flash contains the current firmware image or configuration file. • swFwUpgraded (2) - Indicates that the flash contains the upgraded image from the swFlashDLHost.0. • swCfUploaded (3) - Indicates that the switch configuration file has been uploaded to the host. • swCfDownloaded (4) - Indicates that the switch configuration file has been downloaded from the host. • swFwCorrupted (5) - Indicates that the firmware in the flash of the switch is corrupted.
swFlashDLAdmStatus 1.3.6.1.4.1.1588.2.1.1.1.1.12	Read-write	The state of the flash. Possible values: <ul style="list-style-type: none"> • swCurrent (1) - The flash contains the current firmware image or configuration file. • swFwUpgrade (2) - The firmware in the flash is to be upgraded from the host specified. • swCfUpload (3) - The switch configuration file is to be uploaded to the host specified. • swCfDownload (4) - The switch configuration file is to be downloaded from the host specified. • swFwCorrupted (5) - The firmware in the flash is corrupted. This value is for informational purposes only; however, setting swFlashDLAdmStatus to this value is not allowed.
swBeaconOperStatus 1.3.6.1.4.1.1588.2.1.1.1.1.18	Read-only	The current operational status of the switch beacon. Possible values: <ul style="list-style-type: none"> • on (1) - The LEDs on the front panel of the switch run alternately from left to right and right to left. The color is yellow. • off (2) - Each LED is in its regular status, indicating color and state.

4 Switch system MIB

Object and OID	Access	Description
swBeaconAdmStatus 1.3.6.1.4.1.1588.2.1.1.1.1.19	Read-write	The desired status of the switch beacon. Possible values: <ul style="list-style-type: none"> on (1) - The LEDs on the front panel of the switch run alternately from left to right and right to left. Set the color to yellow. off (2) - Set each LED to its regular status, indicating color and state.
swDiagResult 1.3.6.1.4.1.1588.2.1.1.1.1.20	Read-only	The result of the power-on startup test (POST) diagnostics. Possible values: <ul style="list-style-type: none"> sw-ok (1) - The switch is okay. sw-faulty (2) - The switch has experienced an unknown fault. sw-embedded-port-fault (3) - The switch has experienced an embedded port fault.
swNumSensors 1.3.6.1.4.1.1588.2.1.1.1.1.21	Read-only	The number of sensors inside the switch.
swSensorTable 1.3.6.1.4.1.1588.2.1.1.1.1.22	Not accessible	The table of sensor entries.
swSensorEntry 1.3.6.1.4.1.1588.2.1.1.1.1.22.1	Not accessible	An entry of the sensor information.
swSensorIndex 1.3.6.1.4.1.1588.2.1.1.1.1.22.1.1	Read-only	The index of the sensor.
swSensorType 1.3.6.1.4.1.1588.2.1.1.1.1.22.1.2	Read-only	The type of sensor. Possible values: <ul style="list-style-type: none"> temperature (1) fan (2) power-supply (3)
swSensorStatus 1.3.6.1.4.1.1588.2.1.1.1.1.22.1.3	Read-only	The current status of the sensor. Possible values: <ul style="list-style-type: none"> unknown (1) faulty (2) below-min (3) - The sensor value is below the minimal threshold. nominal (4) above-max (5) - The sensor value is above the maximum threshold. absent (6) - The sensor is missing.
swSensorValue 1.3.6.1.4.1.1588.2.1.1.1.1.22.1.4	Read-only	The current value (reading) of the sensor. The unknown value -2147483648 indicates the maximum value of integer value; it also means that the sensor does not have the capability to measure the actual value. In Network OS v2.0 and later, the temperature sensor value is in Celsius, the fan value is in RPM (revolutions per minute), and the power supply sensor reading is unknown.
swSensorInfo 1.3.6.1.4.1.1588.2.1.1.1.1.22.1.5	Read-only	Additional information on the sensor. It contains the sensor type and number, in textual format; for example: Temp 3, Fan 6, and so on.
swEtherIPAddress 1.3.6.1.4.1.1588.2.1.1.1.1.25	Read-only	The IP address of the Ethernet interface of this logical switch.

Object and OID	Access	Description
swEtherIPMask 1.3.6.1.4.1.1588.2.1.1.1.1.26	Read-only	The IP mask of the Ethernet interface of this logical switch.
swIPv6Address 1.3.6.1.4.1.1588.2.1.1.1.1.29	Not accessible	The IPv6 address.
swIPv6Status 1.3.6.1.4.1.1588.2.1.1.1.1.30	Not accessible	The current status of the IPv6 address. Possible values: <ul style="list-style-type: none"> • tentative (1) • preferred (2) • ipdeprecated (3) • inactive (4)

Switch fabric group

Object and OID	Access	Description
swFabric 1.3.6.1.4.1.1588.2.1.1.1.2	Not accessible	The OID sub-tree for the switch fabric group.
swVfld 1.3.6.1.4.1.1588.2.1.1.1.2.15	Read-only	The Virtual Fabric ID of the switch.

FC port group

This group contains information about the physical state, operational status, performance, and error statistics of each Fibre Channel (FC) port on the switch. An FC port is one that supports the FC protocol such as F_Port, E_Port, or FL_Port.

Object and OID	Access	Description
swFCport 1.3.6.1.4.1.1588.2.1.1.1.6	Not accessible	The OID sub-tree for FC port group.
swFCPortTable 1.3.6.1.4.1.1588.2.1.1.1.6.2	Not accessible	A table that contains one entry for each switch port, configuration, and service parameters of the port.
swFCPortEntry 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1	Not accessible	An entry containing the configuration and service parameters of the switch port.
swFCPortIndex 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.1	Read only	This object identifies the switch port index. NOTE: The value of a port index is the port number labeled on the front panel plus one. For example, the port index 1 corresponds to port number 0.

Object and OID	Access	Description
swFCPortType 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.2	Read only	This object identifies the type of the switch port. Possible values are: <ul style="list-style-type: none"> • stitch (1) • flannel (2) • loom (3) • bloom (4) • rdbloom (5) • wormhole (6) • other (7) • unknown (8)
swFCPortPhyState 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.3	Read only	This object identifies the physical state of the port. Possible values are: <ul style="list-style-type: none"> • noCard (1) - No card is present in this switch slot. • noTransceiver (2) - No Transceiver module in this port (Transceiver is the generic name for GBIC, SFP, and so on). • laserFault (3) - The module is signaling a laser fault (defective Transceiver). • noLight (4) - The module is not receiving light. • noSync (5) - The module is receiving light but is out of sync. • inSync (6) - The module is receiving light and is in sync. • portFault (7) - The port is marked faulty (defective Transceiver, cable, or device). • diagFault (8) - The port failed diagnostics (defective G_Port or FL_Port card or motherboard). • lockRef (9) - The port is locking to the reference signal. • validating (10) - The module is being validated. • invalidModule (11) - The module is invalid. • unknown (255) - The module is unknown.
swFCPortOpStatus 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.4	Read only	This object identifies the operational status of the port. Possible values are: <ul style="list-style-type: none"> • unknown (0) - The port module is physically absent. • online (1) - User frames can be passed. • offline (2) - No user frames can be passed. • testing (3) - No user frames can be passed. • faulty (4) - The port module is physically faulty.
swFCPortAdmStatus 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.5	Read-write	This object identifies the desired state of the port. A management station might place the port in a desired state by setting this object accordingly.
swFCPortLinkState 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.6	Read-write	This object indicates the link state of the port. When the link state of the port changes, the operational status of the port (swFCPortOpStatus) is affected. Possible values are: <ul style="list-style-type: none"> • enabled (1) - The port is allowed to participate in the FC-PH protocol with its attached port (or ports if it is in an FC-AL loop). • disabled (2) - The port is not allowed to participate in the FC-PH protocol with its attached ports. • loopback (3) - The port might transmit frames through an internal path to verify the health of the transmitter and receiver path.

Object and OID	Access	Description
swFCPortTxType 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.7	Read only	This object indicates the media transmitter type of the port. Possible values are: <ul style="list-style-type: none"> unknown (1) - Cannot determine the port driver. lw (2) - Long wave laser. sw (3) - Short wave laser. ld (4) - Long wave LED. cu (5) - Copper (electrical).
swFCPortTxWords 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.11	Read only	This object counts the number of FC words that the port has transmitted.
swFCPortRxWords 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.12	Read only	This object counts the number of FC words that the port has received.
swFCPortTxFrames 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.13	Read only	This object counts the number of FC frames that the port has transmitted.
swFCPortRxFrames 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.14	Read only	This object counts the number of FC frames that the port has received.
swFCPortRxC2Frames 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.15	Read only	This object counts the number of Class 2 frames that the port has received.
swFCPortRxC3Frames 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.16	Read only	This object counts the number of Class 3 frames that the port has received.
swFCPortRxCs 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.17	Read only	This object counts the number of link control frames that the port has received.
swFCPortRxMcasts 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.18	Read only	This object counts the number of multicast frames that the port has received.
swFCPortTooManyRdys 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.19	Read only	This object counts the number of times that RDYs exceeds the frames received.
swFCPortNoTxCredits 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.20	Read only	This object counts the number of times that the transmit credit has reached 0.
swFCPortRxEncInFrs 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.21	Read only	This object counts the number of encoding error or disparity error inside frames received.
swFCPortRxCrcs 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.22	Read only	This object counts the number of CRC errors detected for frames received.
swFCPortRxTruncs 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.23	Read only	This object counts the number of truncated frames that the port has received.

4 Switch system MIB

Object and OID	Access	Description
swFCPortRxTooLongs 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.24	Read only	This object counts the number of received frames that are too long.
swFCPortRxBadEofs 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.25	Read only	This object counts the number of received frames that have bad EOF delimiters.
swFCPortRxEncOutFrs 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.26	Read only	This object counts the number of encoding error or disparity error outside frames received.
swFCPortRxBadOs 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.27	Read only	This object counts the number of invalid ordered sets received.
swFCPortC3Discards 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.28	Read only	This object counts the number of Class 3 frames that the port has discarded.
swFCPortMcastTimedOuts 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.29	Read only	This object counts the number of multicast frames that have been timed out.
swFCPortTxMcasts 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.30	Read only	This object counts the number of multicast frames that have been transmitted.
swFCPortLipIns 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.31	Read only	This object counts the number of loop initializations that have been initiated by loop devices attached.
swFCPortLipOuts 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.32	Read only	This object counts the number of loop initializations that have been initiated by the port.
swFCPortLipLastAlpa 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.33	Read only	This object indicates the physical address (AL_PA) of the loop device that initiated the last loop initialization.
swFCPortWwn 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.34	Read only	This object indicates the World Wide Name (WWN) of the FC port. The contents of an instance are in IEEE extended format, as specified in FC-PH; the 12-bit port identifier represents the port number within the switch.
swFCPortSpeed 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.35	Read-write	This object indicates the desired baud rate for the port. Possible values: <ul style="list-style-type: none"> • one-GB (1) • two-GB (2) • auto-Negotiate (3) • four-GB (4) • eight-GB (5) • ten-GB (6) • unknown (7)
swFCPortName 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.36	Read only	This object represents a string that indicates the name of the addressed port. NOTE: The names must be persistent across switch reboots. Port names do not have to be unique within a switch or a fabric.

Object and OID	Access	Description
swFCPortSpecifier 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.37	Read only	This string indicates the physical port number of the addressed port. The format of the string is: <slot/>port, where slot is present only for the blade systems.
swFCPortFlag 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.38	Read only	This string is a bit map of the port status flags, including the port type. <ul style="list-style-type: none"> • physical (0) • virtual (1)
swFCPortBrodType 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.39	Read only	This object indicates the Brocade port type. Valid values: <ul style="list-style-type: none"> • unknown(1) • other(2) • fl-port(3) • f-port(4) • e-port(5) • g-port(6) • ex-port(7)

Switch event group

Object and OID	Access	Description
swEvent 1.3.6.1.4.1.1588.2.1.1.1.8	Not accessible	The OID sub-tree for the switch event group.
swEventTable 1.3.6.1.4.1.1588.2.1.1.1.8.5	Not accessible	The table of event entries. NOTE: This table is defined to gather event information for the trap. SNMP get and set operations are not supported on this table.
swEventEntry 1.3.6.1.4.1.1588.2.1.1.1.8.5.1	Not accessible	An entry of the event table.
swEventIndex 1.3.6.1.4.1.1588.2.1.1.1.8.5.1.1	Read-only	This object identifies the event entry.
swEventTimeInfo 1.3.6.1.4.1.1588.2.1.1.1.8.5.1.2	Read-only	The date and time that this event occurred.
swEventLevel 1.3.6.1.4.1.1588.2.1.1.1.8.5.1.3	Read-only	The severity level of this event entry. Possible values: <ul style="list-style-type: none"> • critical (1) • error (2) • warning (3) • informational (4) • debug (5)
swEventRepeatCount 1.3.6.1.4.1.1588.2.1.1.1.8.5.1.4	Read-only	This object indicates the number of times this particular event has occurred.
swEventDescr 1.3.6.1.4.1.1588.2.1.1.1.8.5.1.5	Read-only	A textual description of the event.
swEventVfid 1.3.6.1.4.1.1588.2.1.1.1.8.5.1.6	Read-only	This object identifies the Virtual Fabric ID.

Switch trap

Trap name and OID	Variables	Description
swFcPortScn 1.3.6.1.4.1.1588.2.1.1.1 .0.3	swFCPortIndex swFCPortOpStatus swFCPortName swFCPortFlag swSsn swVfld	This trap is sent whenever the operational status or the type of an FC port changes. The events that trigger this trap are as follows: <ul style="list-style-type: none"> Port goes to online or offline Port type changes to E_port, F_port, or FL_port swFCPortName and swSsn are optional varbind in the trap PDU. swSsn is optional varbind sent when swExtTrap is also enabled. swVfld is optional if VF is enabled.
swEventTrap 1.3.6.1.4.1.1588.2.1.1.1 .0.4	swEventIndex swEventTimelInfo swEventLevel swEventRepeatCount swEventDescr swSsn swVfld	This trap is generated when an event occurs with a level that is at or below swEventTrapLevel.
SwStateChangeTrap 1.3.6.1.4.1.1588.2.1.1.1 .0.12	swOperStatus swVfld	This trap is sent when the switch changes its state to online or offline.

Switch resource MIB

This MIB holds the current CPU and memory utilization values of the switch.

Object and OID	Access	Description
swCpuOrMemoryUsage 1.3.6.1.4.1.1588.2.1.1.1.26	Not accessible	The object identifier sub-tree for the CPU or memory usage group.
swCpuUsage 1.3.6.1.4.1.1588.2.1.1.1.26.1	Read-only	The object indicates the CPU usage of the system.
swCpuNoOfRetries 1.3.6.1.4.1.1588.2.1.1.1.26.2	Read-only	The number of times the system takes a CPU utilization sample before sending the CPU utilization trap.
swCpuUsageLimit 1.3.6.1.4.1.1588.2.1.1.1.26.3	Read-only	The CPU usage limit.
swCpuPollingInterval 1.3.6.1.4.1.1588.2.1.1.1.26.4	Read-only	The time interval between two memory samples.
swCpuAction 1.3.6.1.4.1.1588.2.1.1.1.26.5	Read-only	The action to be taken if system resources exceed the specified threshold limit.
swMemUsage 1.3.6.1.4.1.1588.2.1.1.1.26.6	Read-only	The system's memory usage.
swMemNoOfRetries 1.3.6.1.4.1.1588.2.1.1.1.26.7	Read-only	The number of times the system must take a memory usage sample before sending the memory usage trap.
swMemUsageLimit 1.3.6.1.4.1.1588.2.1.1.1.26.8	Read-only	The memory usage limit.

Object and OID	Access	Description
swMemPollingInterval 1.3.6.1.4.1.1588.2.1.1.1.26.9	Read-only	The time interval between two memory samples.
swMemAction 1.3.6.1.4.1.1588.2.1.1.1.26.10	Read-only	The action to be taken if system resources exceed the specified threshold limit.

4 Switch resource MIB

High-Availability MIB Objects

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HA-MIB overview

The HA-MIB provides information about the High-Availability features of Network OS. The descriptions of each of the MIB variables in this chapter come directly from the HA-MIB itself.

The object types in HA-MIB are organized into the following groups:

- High-Availability group
- HA-MIB traps

[Figure 33](#) and [Figure 34](#) depict the organization and structure of the HA-MIB file system.

```

- iso
  - org
    - dod
      - internet
        - private
          - enterprises
            - bsci
              - commDev
                - fibreChannel
                  - haMIB
                    - highAvailability
                    - haMIBTraps

```

FIGURE 33 HA-MIB overall tree structure

- haMIB (1.3.6.1.4.1.1588.2.1.2)
 - highAvailability (1.3.6.1.4.1.1588.2.1.2.1)
 - haStatus 1.3.6.1.4.1.1588.2.1.2.1.1
 - fruTable 1.3.6.1.4.1.1588.2.1.2.1.5
 - fruEntry 1.3.6.1.4.1.1588.2.1.2.1.5.1
 - fruClass 1.3.6.1.4.1.1588.2.1.2.1.5.1.1
 - fruStatus 1.3.6.1.4.1.1588.2.1.2.1.5.1.2
 - fruObjectNum 1.3.6.1.4.1.1588.2.1.2.1.5.1.3
 - fruSupplierId 1.3.6.1.4.1.1588.2.1.2.1.5.1.4
 - fruSupplierPartNum 1.3.6.1.4.1.1588.2.1.2.1.5.1.5
 - fruSupplierSerialNum 1.3.6.1.4.1.1588.2.1.2.1.5.1.6
 - fruSupplierRevCode 1.3.6.1.4.1.1588.2.1.2.1.5.1.7
 - fruPowerConsumption 1.3.6.1.4.1.1588.2.1.2.1.5.1.8
 - fruHistoryTable 1.3.6.1.4.1.1588.2.1.2.1.6
 - fruHistoryEntry 1.3.6.1.4.1.1588.2.1.2.1.6.1
 - fruHistoryIndex 1.3.6.1.4.1.1588.2.1.2.1.6.1.1
 - fruHistoryClass 1.3.6.1.4.1.1588.2.1.2.1.6.1.2
 - fruHistoryObjectNum 1.3.6.1.4.1.1588.2.1.2.1.6.1.3
 - fruHistoryEvent 1.3.6.1.4.1.1588.2.1.2.1.6.1.4
 - fruHistoryTime 1.3.6.1.4.1.1588.2.1.2.1.6.1.5
 - fruHistoryFactoryPartNum 1.3.6.1.4.1.1588.2.1.2.1.6.1.6
 - fruHistoryFactorySerialNum 1.3.6.1.4.1.1588.2.1.2.1.6.1.7
 - cpTable 1.3.6.1.4.1.1588.2.1.2.1.7
 - cpEntry 1.3.6.1.4.1.1588.2.1.2.1.7.1
 - cpStatus 1.3.6.1.4.1.1588.2.1.2.1.7.1.1
 - cpIpAddress 1.3.6.1.4.1.1588.2.1.2.1.7.1.2
 - cpIpMask 1.3.6.1.4.1.1588.2.1.2.1.7.1.3
 - cpIpGateway 1.3.6.1.4.1.1588.2.1.2.1.7.1.4
 - cpLastEvent 1.3.6.1.4.1.1588.2.1.2.1.7.1.5
- haMIBTraps
 - haMIBTrapPrefix (1.3.6.1.4.1.1588.2.1.2.2.0)
 - fruStatusChanged 1.3.6.1.4.1.1588.2.1.2.2.0.1
 - cpStatusChanged 1.3.6.1.4.1.1588.2.1.2.2.0.2
 - fruHistoryTrap 1.3.6.1.4.1.1588.2.1.2.2.0.3

FIGURE 34 haMIB and haMIBTraps hierarchy

Table 9 lists the objects or definitions that are imported into the HA-MIB and the modules from which they are imported.

TABLE 9 Objects imported into the HA-MIB

Object	Imported from this module
MODULE-IDENTITY	SNMPv2-SMI
OBJECT-TYPE	
NOTIFICATION-TYPE	
TimeTicks	
Integer32	
IpAddress	
mib-2	
fibrenchannel	Brocade-REG-MIB
swID	SYSTEM-MIB
swSsn	

TABLE 9 Objects imported into the HA-MIB (Continued)

Object	Imported from this module
entPhysicalIndex	ENTITY-MIB
entPhysicalName	
DisplayString	SNMPv2-TC

High-Availability group

This section describes the MIB objects in the High-Availability group.

Object and OID	Access	Description
haStatus 1.3.6.1.4.1.1588.2.1.2.1.1	Read only	Indicates whether the system is redundant.

FRU table

Object and OID	Access	Description
fruTable 1.3.6.1.4.1.1588.2.1.2.1.5	Not accessible	This table inventories the available FRU slots. This table contains an entry for each entry in the entPhysicalTable that has entPhysicalClass set to "Container (5)" and has a child entry having entPhysicalsFRU set to "true (1)".
fruEntry 1.3.6.1.4.1.1588.2.1.2.1.5.1	Not accessible	An entry for FRU slot in the fruTable.
fruClass 1.3.6.1.4.1.1588.2.1.2.1.5.1.1	Read only	The type of the FRU object that this slot can hold.
fruStatus 1.3.6.1.4.1.1588.2.1.2.1.5.1.2	Read only	The current status of the FRU object in the slot.
fruObjectNum 1.3.6.1.4.1.1588.2.1.2.1.5.1.3	Read only	The slot number of the blade and the unit number for everything else.
fruSupplierId 1.3.6.1.4.1.1588.2.1.2.1.5.1.4	Read only	The supplier ID.
fruSupplierPartNum 1.3.6.1.4.1.1588.2.1.2.1.5.1.5	Read only	The supplier part number.
fruSupplierSerialNum 1.3.6.1.4.1.1588.2.1.2.1.5.1.6	Read only	The supplier serial number.
fruSupplierRevCode 1.3.6.1.4.1.1588.2.1.2.1.5.1.7	Read only	The supplier revision code.
fruPowerConsumption 1.3.6.1.4.1.1588.2.1.2.1.5.1.8	Read only	The power consumption of the switch blades. This object has values only for core and switch blades. For other FRUs, this object returns zero.

FRU history table

Object and OID	Access	Description
fruHistoryTable 1.3.6.1.4.1.1588.2.1.2.1.6	Not accessible	This table gives the contents of the entire history log of the FRU events.
fruHistoryEntry 1.3.6.1.4.1.1588.2.1.2.1.6.1	Not accessible	An entry in this table represents a particular FRU event.
fruHistoryIndex 1.3.6.1.4.1.1588.2.1.2.1.6.1.1	Read only	Index of the FRU event in the history table.
fruHistoryClass 1.3.6.1.4.1.1588.2.1.2.1.6.1.2	Read only	The type of the FRU object related to the event.
fruHistoryObjectNum 1.3.6.1.4.1.1588.2.1.2.1.6.1.3	Read only	The slot number of the blade and the unit number for everything else.
fruHistoryEvent 1.3.6.1.4.1.1588.2.1.2.1.6.1.4	Read only	The type of the FRU event.
fruHistoryTime 1.3.6.1.4.1.1588.2.1.2.1.6.1.5	Read only	The time this event happened.
fruHistoryFactoryPartNum 1.3.6.1.4.1.1588.2.1.2.1.6.1.6	Read only	The factory part number of the FRU object.
fruHistoryFactorySerialNum 1.3.6.1.4.1.1588.2.1.2.1.6.1.7	Read only	The factory serial number of the FRU object.

CP table

Object and OID	Access	Description
cpTable 1.3.6.1.4.1.1588.2.1.2.1.7	Not accessible	This table lists all the control cards in the system.
cpEntry 1.3.6.1.4.1.1588.2.1.2.1.7.1	Not accessible	An entry represents a single control card in the system.
cpStatus 1.3.6.1.4.1.1588.2.1.2.1.7.1.1	Read only	The current status of the control card.
cpIpAddress 1.3.6.1.4.1.1588.2.1.2.1.7.1.2	Read only	The IP address of the Ethernet interface of this control card.
cpIpMask 1.3.6.1.4.1.1588.2.1.2.1.7.1.3	Read only	The IP mask of the Ethernet interface of this control card.
cpIpGateway 1.3.6.1.4.1.1588.2.1.2.1.7.1.4	Read only	The IP address of the IP gateway for this control card.
cpLastEvent 1.3.6.1.4.1.1588.2.1.2.1.7.1.5	Read only	The last event related to this control card.

HA-MIB traps

This section lists the HA-MIB traps.

Trap name and OID	Variables	Description
fruStatusChanged 1.3.6.1.4.1.1588.2.1.2.2.0.1	entPhysicalName fruStatus fruClass fruObjectNum	This trap is sent when the status of any FRU object is changed.
cpStatusChanged 1.3.6.1.4.1.1588.2.1.2.2.0.2	cpStatus cpLastEvent swID swSsn	This trap is sent when the status of any control card object is changed.
fruHistoryTrap 1.3.6.1.4.1.1588.2.1.2.2.0.3	fruHistoryClass fruHistoryObjectNum fruHistoryEvent fruHistoryTime fruHistoryFactoryPartNum fruHistoryFactorySerialNum	This trap is sent when an FRU is added or removed.

5 HA-MIB traps

FibreAlliance MIB Objects

In this chapter

- [FibreAlliance MIB overview](#) 75
- [Connectivity unit group](#) 81
- [Statistics group](#) 91
- [Service group](#) 95

FibreAlliance MIB overview

The descriptions of each of the MIB variables in this chapter come from the FCMGMT-MIB. The notes that follow the descriptions typically pertain to Brocade-specific information and are provided by Brocade.

- Service Set

FCMGMT-MIB system organization of MIB objects

[Figure 35](#) and [Figure 42](#) depict the high level organization of the FCMGMT-MIB.

```

- iso
  - org
    - dod
      - internet
        - experimental
          - fcmgmt

```

FIGURE 35 FCMGMT-MIB high level hierarchy

```
- connUnitTable 1.3.6.1.3.94.1.6
  - connUnitEntry 1.3.6.1.3.94.1.6.1
    - connUnitId 1.3.6.1.3.94.1.6.1.1
    - connUnitGlobalId 1.3.6.1.3.94.1.6.1.2
    - connUnitType 1.3.6.1.3.94.1.6.1.3
    - connUnitNumports 1.3.6.1.3.94.1.6.1.4
    - connUnitState 1.3.6.1.3.94.1.6.1.5
    - connUnitStatus 1.3.6.1.3.94.1.6.1.6
    - connUnitProduct 1.3.6.1.3.94.1.6.1.7
    - connUnitSn 1.3.6.1.3.94.1.6.1.8
    - connUnitUpTime 1.3.6.1.3.94.1.6.1.9
    - connUnitUrl 1.3.6.1.3.94.1.6.1.10
    - connUnitDomainId 1.3.6.1.3.94.1.6.1.11
    - connUnitProxyMaster 1.3.6.1.3.94.1.6.1.12
    - connUnitPrincipal 1.3.6.1.3.94.1.6.1.13
    - connUnitNumSensors 1.3.6.1.3.94.1.6.1.14
    - connUnitStatusChangeTime 1.3.6.1.3.94.1.6.1.15
    - connUnitConfigurationChangeTime 1.3.6.1.3.94.1.6.1.16
    - connUnitNumRevs 1.3.6.1.3.94.1.6.1.17
    - connUnitNumZones 1.3.6.1.3.94.1.6.1.18
    - connUnitModuleId 1.3.6.1.3.94.1.6.1.19
    - connUnitName 1.3.6.1.3.94.1.6.1.20
    - connUnitInfo 1.3.6.1.3.94.1.6.1.21
    - connUnitControl 1.3.6.1.3.94.1.6.1.22
    - connUnitContact 1.3.6.1.3.94.1.6.1.23
    - connUnitLocation 1.3.6.1.3.94.1.6.1.24
    - connUnitEventFilter 1.3.6.1.3.94.1.6.1.25
    - connUnitNumEvents 1.3.6.1.3.94.1.6.1.26
    - connUnitMaxEvents 1.3.6.1.3.94.1.6.1.27
    - connUnitEventCurrID 1.3.6.1.3.94.1.6.1.28
```

FIGURE 36 ConnUnitTable hierarchy

```
- connUnitRevsTable 1.3.6.1.3.94.1.7
  - connUnitRevsEntry 1.3.6.1.3.94.1.7.1
    - connUnitRevsUnitId 1.3.6.1.3.94.1.7.1.1
    - connUnitRevsIndex 1.3.6.1.3.94.1.7.1.2
    - connUnitRevsRevId 1.3.6.1.3.94.1.7.1.3
    - connUnitRevsDescription 1.3.6.1.3.94.1.7.1.4
```

FIGURE 37 ConnUnitRevsTable hierarchy

```
- connUnitSensorTable 1.3.6.1.3.94.1.8
  - connUnitSensorEntry 1.3.6.1.3.94.1.8.1
    - connUnitSensorUnitId 1.3.6.1.3.94.1.8.1.1
    - connUnitSensorIndex 1.3.6.1.3.94.1.8.1.2
    - connUnitSensorName 1.3.6.1.3.94.1.8.1.3
    - connUnitSensorStatus 1.3.6.1.3.94.1.8.1.4
    - connUnitSensorInfo 1.3.6.1.3.94.1.8.1.5
    - connUnitSensorMessage 1.3.6.1.3.94.1.8.1.6
    - connUnitSensorType 1.3.6.1.3.94.1.8.1.7
    - connUnitSensorCharacteristic 1.3.6.1.3.94.1.8.1.8
```

FIGURE 38 ConnUnitSensorTable hierarchy


```

- connUnitPortTable 1.3.6.1.3.94.1.10
  - connUnitPortEntry 1.3.6.1.3.94.1.10.1
    - connUnitPortUnitId 1.3.6.1.3.94.1.10.1.1
    - connUnitPortIndex 1.3.6.1.3.94.1.10.1.2
    - connUnitPortType 1.3.6.1.3.94.1.10.1.3
    - connUnitPortFCClassCap 1.3.6.1.3.94.1.10.1.4
    - connUnitPortFCClassOp 1.3.6.1.3.94.1.10.1.5
    - connUnitPortState 1.3.6.1.3.94.1.10.1.6
    - connUnitPortStatus 1.3.6.1.3.94.1.10.1.7
    - connUnitPortTransmitterType 1.3.6.1.3.94.1.10.1.8
    - connUnitPortModuleType 1.3.6.1.3.94.1.10.1.9
    - connUnitPortWwn 1.3.6.1.3.94.1.10.1.10
    - connUnitPortFCId 1.3.6.1.3.94.1.10.1.11
    - connUnitPortSn 1.3.6.1.3.94.1.10.1.12
    - connUnitPortRevision 1.3.6.1.3.94.1.10.1.13
    - connUnitPortVendor 1.3.6.1.3.94.1.10.1.14
    - connUnitPortSpeed 1.3.6.1.3.94.1.10.1.15
    - connUnitPortControl 1.3.6.1.3.94.1.10.1.16
    - connUnitPortName 1.3.6.1.3.94.1.10.1.17
    - connUnitPortPhysicalNumber 1.3.6.1.3.94.1.10.1.18
    - connUnitPortStatObject 1.3.6.1.3.94.1.10.1.19
    - connUnitPortProtocolCap 1.3.6.1.3.94.1.10.1.20
    - connUnitPortProtocolOp 1.3.6.1.3.94.1.10.1.21
    - connUnitPortNodeWwn 1.3.6.1.3.94.1.10.1.22
    - connUnitPortHWState 1.3.6.1.3.94.1.10.1.23

```

FIGURE 39 ConnUnitPortTable hierarchy

```

- connUnitEventTable 1.3.6.1.3.94.1.11
  - connUnitEventEntry 1.3.6.1.3.94.1.11.1
    - connUnitEventUnitId 1.3.6.1.3.94.1.11.1.1
    - connUnitEventIndex 1.3.6.1.3.94.1.11.1.2
    - connUnitEventId 1.3.6.1.3.94.1.11.1.3
    - connUnitREventTime 1.3.6.1.3.94.1.11.1.4
    - connUnitSEventTime 1.3.6.1.3.94.1.11.1.5
    - connUnitEventSeverity 1.3.6.1.3.94.1.11.1.6
    - connUnitEventType 1.3.6.1.3.94.1.11.1.7
    - connUnitEventObject 1.3.6.1.3.94.1.11.1.8
    - connUnitEventDescr 1.3.6.1.3.94.1.11.1.9

```

FIGURE 40 ConnUnitEventTable hierarchy

6 FibreAlliance MIB overview

```
- connUnitLinkTable 1.3.6.1.3.94.1.12
  - connUnitLinkEntry 1.3.6.1.3.94.1.12.1
    - connUnitLinkUnitId 1.3.6.1.3.94.1.12.1.1
    - connUnitLinkIndex 1.3.6.1.3.94.1.12.1.2
    - connUnitLinkNodeIdX 1.3.6.1.3.94.1.12.1.3
    - connUnitLinkPortNumberX 1.3.6.1.3.94.1.12.1.4
    - connUnitLinkPortWwnX 1.3.6.1.3.94.1.12.1.5
    - connUnitLinkNodeIdY 1.3.6.1.3.94.1.12.1.6
    - connUnitLinkPortNumberY 1.3.6.1.3.94.1.12.1.7
    - connUnitLinkPortWwnY 1.3.6.1.3.94.1.12.1.8
    - connUnitLinkAgentAddressY 1.3.6.1.3.94.1.12.1.9
    - connUnitLinkAgentAddressTypeY 1.3.6.1.3.94.1.12.1.10
    - connUnitLinkAgentPortY 1.3.6.1.3.94.1.12.1.11
    - connUnitLinkUnitTypeY 1.3.6.1.3.94.1.12.1.12
    - connUnitLinkConnIdY 1.3.6.1.3.94.1.12.1.13
    - connUnitLinkCurrIndex 1.3.6.1.3.94.1.12.1.14
```

FIGURE 41 ConnUnitLinkTable hierarchy

```

- connUnitPortStatTable 1.3.6.1.3.94.4.5
  - connUnitPortStatEntry 1.3.6.1.3.94.4.5.1
    - connUnitPortStatUnitId 1.3.6.1.3.94.4.5.1.1
    - connUnitPortStatIndex 1.3.6.1.3.94.4.5.1.2
    - connUnitPortStatCountError 1.3.6.1.3.94.4.5.1.3
    - connUnitPortStatCountTxObjects 1.3.6.1.3.94.4.5.1.4
    - connUnitPortStatCountRxObjects 1.3.6.1.3.94.4.5.1.5
    - connUnitPortStatCountTxElements 1.3.6.1.3.94.4.5.1.6
    - connUnitPortStatCountRxElements 1.3.6.1.3.94.4.5.1.7
    - connUnitPortStatCountBBCreditZero 1.3.6.1.3.94.4.5.1.8
    - connUnitPortStatCountInputBuffersFull 1.3.6.1.3.94.4.5.1.9
    - connUnitPortStatCountFBSYFrames 1.3.6.1.3.94.4.5.1.10
    - connUnitPortStatCountPBSYFrames 1.3.6.1.3.94.4.5.1.11
    - connUnitPortStatCountFRJTFrames 1.3.6.1.3.94.4.5.1.12
    - connUnitPortStatCountPRJTFrames 1.3.6.1.3.94.4.5.1.13
    - connUnitPortStatCountClass1RxFrames 1.3.6.1.3.94.4.5.1.14
    - connUnitPortStatCountClass1TxFrames 1.3.6.1.3.94.4.5.1.15
    - connUnitPortStatCountClass1FBSYFrames 1.3.6.1.3.94.4.5.1.16
    - connUnitPortStatCountClass1PBSYFrames 1.3.6.1.3.94.4.5.1.17
    - connUnitPortStatCountClass1FRJTFrames 1.3.6.1.3.94.4.5.1.18
    - connUnitPortStatCountClass1PRJTFrames 1.3.6.1.3.94.4.5.1.19
    - connUnitPortStatCountClass2RxFrames 1.3.6.1.3.94.4.5.1.20
    - connUnitPortStatCountClass2TxFrames 1.3.6.1.3.94.4.5.1.21
    - connUnitPortStatCountClass2FBSYFrames 1.3.6.1.3.94.4.5.1.22
    - connUnitPortStatCountClass2PBSYFrames 1.3.6.1.3.94.4.5.1.23
    - connUnitPortStatCountClass2FRJTFrames 1.3.6.1.3.94.4.5.1.24
    - connUnitPortStatCountClass2PRJTFrames 1.3.6.1.3.94.4.5.1.25
    - connUnitPortStatCountClass3RxFrames 1.3.6.1.3.94.4.5.1.26
    - connUnitPortStatCountClass3TxFrames 1.3.6.1.3.94.4.5.1.27
    - connUnitPortStatCountClass3Discards 1.3.6.1.3.94.4.5.1.28
    - connUnitPortStatCountRxMulticastObjects 1.3.6.1.3.94.4.5.1.29
    - connUnitPortStatCountTxMulticastObjects 1.3.6.1.3.94.4.5.1.30
    - connUnitPortStatCountRxBroadcastObjects 1.3.6.1.3.94.4.5.1.31
    - connUnitPortStatCountTxBroadcastObjects 1.3.6.1.3.94.4.5.1.32
    - connUnitPortStatCountRxLinkResets 1.3.6.1.3.94.4.5.1.33
    - connUnitPortStatCountTxLinkResets 1.3.6.1.3.94.4.5.1.34
    - connUnitPortStatCountNumberLinkResets 1.3.6.1.3.94.4.5.1.35
    - connUnitPortStatCountRxOfflineSequences 1.3.6.1.3.94.4.5.1.36
    - connUnitPortStatCountTxOfflineSequences 1.3.6.1.3.94.4.5.1.37
    - connUnitPortStatCountNumberOfflineSequences 1.3.6.1.3.94.4.5.1.38
    - connUnitPortStatCountLinkFailures 1.3.6.1.3.94.4.5.1.39
    - connUnitPortStatCountInvalidCRC 1.3.6.1.3.94.4.5.1.40
    - connUnitPortStatCountInvalidTxWords 1.3.6.1.3.94.4.5.1.41
    - connUnitPortStatCountPrimitiveSequenceProtocolErrors
      1.3.6.1.3.94.4.5.1.42
        - connUnitPortStatCountLossOfSignal 1.3.6.1.3.94.4.5.1.43
        - connUnitPortStatCountLossOfSynchronization 1.3.6.1.3.94.4.5.1.44
        - connUnitPortStatCountInvalidOrderedSets 1.3.6.1.3.94.4.5.1.45
        - connUnitPortStatCountFramesTooLong 1.3.6.1.3.94.4.5.1.46
        - connUnitPortStatCountFramesTruncated 1.3.6.1.3.94.4.5.1.47
        - connUnitPortStatCountAddressErrors 1.3.6.1.3.94.4.5.1.48
        - connUnitPortStatCountDelimiterErrors 1.3.6.1.3.94.4.5.1.49
        - connUnitPortStatCountEncodingDisparityErrors 1.3.6.1.3.94.4.5.1.50

```

FIGURE 42 ConnUnitPortStatTable hierarchy

```

- connUnitServiceSet
  - connUnitServiceTables
    - connUnitSnsTable 1.3.6.1.3.94.5.2.1
      - connUnitSnsEntry 1.3.6.1.3.94.5.2.1.1
        - connUnitSnsId 1.3.6.1.3.94.5.2.1.1.1
        - connUnitSnsPortIndex 1.3.6.1.3.94.5.2.1.1.2
        - connUnitSnsPortIdentifier 1.3.6.1.3.94.5.2.1.1.3
        - connUnitSnsPortName 1.3.6.1.3.94.5.2.1.1.4
        - connUnitSnsNodeName 1.3.6.1.3.94.5.2.1.1.5
        - connUnitSnsClassOfSvc 1.3.6.1.3.94.5.2.1.1.6
        - connUnitSnsNodeIPAddress 1.3.6.1.3.94.5.2.1.1.7
        - connUnitSnsProcAssoc 1.3.6.1.3.94.5.2.1.1.8
        - connUnitSnsFC4Type 1.3.6.1.3.94.5.2.1.1.9
        - connUnitSnsPortType 1.3.6.1.3.94.5.2.1.1.10
        - connUnitSnsPortIPAddress 1.3.6.1.3.94.5.2.1.1.11
        - connUnitSnsFabricPortName 1.3.6.1.3.94.5.2.1.1.12
        - connUnitSnsHardAddress 1.3.6.1.3.94.5.2.1.1.13
        - connUnitSnsSymbolicPortName 1.3.6.1.3.94.5.2.1.1.14
        - connUnitSnsSymbolicNodeName 1.3.6.1.3.94.5.2.1.1.15

```

FIGURE 43 ConnUnitSnsTable hierarchy

Definitions for FCMGMT-MIB

Table 10 lists the definitions used for FCMGMT-MIB.

TABLE 10 Definitions for FCMGMT-MIB

Type definition	Value	Description
FcNameId	Octet String of size 8	The port name for this entry in the SNS table.
FcGlobalId	Octet String of size 16	An optional global-scope identifier for this connectivity unit. It must be a WWN for this connectivity unit or 16 octets of value zero.
FcAddressId	Octet String of size 3	The port identifier for this entry in the SNS table.

TABLE 10 Definitions for FCMGMT-MIB (Continued)

Type definition	Value	Description
FcEventSeverity	Integer	1 (unknown) - not known. 2 (emergency) - Emergency status. 3 (alert) - Alert status. 4 (critical) - Critical status. 5 (error) - Error status. 6 (warning) - Warning status. 7 (notify) - Notification status. 8 (info) - Informational status. 9 (debug) - Debug status. 10 (mark) - All messages logged.
FcUnitType	Integer	1 (unknown) - not known. 2 (other) - None of 3–14. 3 (hub) - Passive connectivity unit supporting loop protocol. 4 (switch) - Active connectivity unit supporting multiple protocols. 5 (gateway) - Unit that not only converts the interface but also encapsulates the frame into another protocol. The assumption is that there are always two gateways connected together: for example, FC <-> ATM. 6 (converter) - Unit that converts from one interface to another: for example, FC <-> SCSI. 7 (hba) - Host bus adapter. 8 (proxy-agent) - Software proxy agent. 9 (storage-device) - Disk, CD, tape, and so on. 10 (host) - Host computer. 11 (storage-subsystem) - For example, RAID and library. 12 (module) - Subcomponent of a system. 13 (swdriver) - Software driver. 14 (storage-access-device) - Provides storage management and access for heterogeneous hosts and heterogeneous devices.

Connectivity unit group

Implementation of the connectivity group is mandatory for all systems.

Object and OID	Access	Description
uNumber 1.3.6.1.3.94.1.1	Read only	The number of connectivity units present on this system (represented by this agent). It can be a count of the boards in a chassis or the number of full boxes in a rack.
systemURL 1.3.6.1.3.94.1.2	Read only	The top-level URL of the system; if it does not exist, the value is an empty string. The URL format is implementation dependant and can have keywords embedded that are preceded by a percent sign (for example, %USER). The following are the defined keywords that are recognized and replaced with data during a launch: <ul style="list-style-type: none"> • USER: Replace with username • PASSWORD: Replace with password • GLOBALID: Replace with global ID • SERIALNO: Replace with serial number
connUnitTable 1.3.6.1.3.94.1.6	Not accessible	A list of units under a single SNMP agent. The number of entries is given by the value of uNumber. The value is 1 for stand-alone system.

6 Connectivity unit group

Object and OID	Access	Description
connUnitEntry 1.3.6.1.3.94.1.6.1	Not accessible	A connectivity unit entry containing objects for a particular unit.
connUnitId 1.3.6.1.3.94.1.6.1.1	Read only	The unique identification for this connectivity unit among those within this proxy domain. The value must be unique within the proxy domain because it is the index variable for connUnitTable. The value assigned to a given connectivity unit must be persistent across agent and unit resets. It must be the same as connUnitGlobalId if connUnitGlobalId is known and stable.
connUnitGlobalId 1.3.6.1.3.94.1.6.1.2	Read only	<p>An optional global-scope identifier for this connectivity unit. It must be a WWN for this connectivity unit or 16 octets of value 0.</p> <p>The following characteristics are required:</p> <ul style="list-style-type: none"> • WWN formats requiring fewer than 16 octets must be extended to 16 octets with trailing 0 octets. • If a WWN is used for connUnitId, the same WWN must be used for connUnitGlobalId. <p>When a non-zero value is provided, the following characteristics are strongly recommended:</p> <ul style="list-style-type: none"> • It must be persistent across agent and unit resets. • It must be globally unique. • It must be one of these FC-PH/PH3 formats: <ul style="list-style-type: none"> • IEEE (NAA=1) • IEEE Extended (NAA=2) • IEEE Registered (NAA=5) • IEEE Registered Extended (NAA=6) <p>Use of the IEEE formats allows any IEEE-registered vendor to assure global uniqueness independently. The following are some references on IEEE WWN formats:</p> <p>http://standards.ieee.org/regauth/oui/tutorials/fibreformat.html</p> <p>http://standards.ieee.org/regauth/oui/tutorials/fibrecomp_id.html</p> <p>If one or more WWNs are associated with the connUnit through other management methods, one of them must be used for connUnitGlobalId. If a WWN is not assigned specifically to the connUnit, there is some merit to using a WWN assigned to (one of) its permanently attached FC/LAN interfaces. This cannot risk uniqueness, though.</p> <p>As a counterexample, if your agent runs in a host and the host has an HBA, it is quite possible that agent, host, and HBA are all distinct connUnits, so the host and agent cannot use the WWN of the HBA. If your hub has a built-in Ethernet port, it might be reasonable for the hub to use its LAN address (prefixed with the appropriate NAA) as its connUnitId. If the Ethernet is a replaceable PCCard, the hub must have an independent ID.</p>
connUnitType 1.3.6.1.3.94.1.6.1.3	Read only	The type of this connectivity unit.
connUnitNumports 1.3.6.1.3.94.1.6.1.4	Read only	The number of physical ports in the connectivity unit (internal or embedded, external).
connUnitState 1.3.6.1.3.94.1.6.1.5	Read only	The overall state of the connectivity unit.
connUnitStatus 1.3.6.1.3.94.1.6.1.6	Read only	The overall status of the connectivity unit.

Object and OID	Access	Description
connUnitProduct 1.3.6.1.3.94.1.6.1.7	Read only	The product model name of the connectivity unit vendor.
connUnitSn 1.3.6.1.3.94.1.6.1.8	Read only	The serial number for this connectivity unit.
connUnitUpTime 1.3.6.1.3.94.1.6.1.9	Read only	The number of centiseconds since the last unit initialization.
connUnitUrl 1.3.6.1.3.94.1.6.1.10	Read-write	The URL to launch a management application, if applicable; otherwise an empty string. In a standalone unit, this is the same as the top-level URL. This has the same definition as system URL for keywords.
connUnitDomainId 1.3.6.1.3.94.1.6.1.11	Read only	A 24-bit Fibre Channel address ID of this connectivity unit, right-justified with leading 0s, if required. This must be set to the Fibre Channel address ID or if it is a switch it will be set to the Domain Controller address. If this value is not applicable, return all bits set to one.
connUnitProxyMaster 1.3.6.1.3.94.1.6.1.12	Read only	A value of "yes" means this is the proxy master unit for a set of managed units. For example, this can be the only unit with a management card in it for a set of units. A standalone unit must return "yes" for this object.
connUnitPrincipal 1.3.6.1.3.94.1.6.1.13	Read only	Indicates whether this connectivity unit is the principal unit within the group of fabric elements. If this value is not applicable, it returns "unknown".
connUnitNumSensors 1.3.6.1.3.94.1.6.1.14	Read only	Number of sensors in the connUnitSensorTable.
connUnitStatusChangeTime 1.3.6.1.3.94.1.6.1.15	Read only	The sysuptime time stamp (in centiseconds) at which the last status change occurred.
connUnitConfigurationChangeTime 1.3.6.1.3.94.1.6.1.16	Read only	The sysuptime time stamp (in centiseconds) at which the last configuration change occurred.
connUnitNumRevs 1.3.6.1.3.94.1.6.1.17	Read only	The number of revisions in the connUnitRevsTable.
connUnitNumZones 1.3.6.1.3.94.1.6.1.18	Read only	The number of zones defined in the connUnitZoneTable.
connUnitModuleId 1.3.6.1.3.94.1.6.1.19	Read only	This is a unique ID, persistent between boots, that can be used to group a set of connUnits together into a module. It is used to create a connUnit with a connUnitType of "module" to represent a physical or logical group of connectivity units. Then the value of the group must be set to the value of connUnitId for this "container" connUnit. The connUnitModuleId must be in 0s if this connUnit is not part of a module.
connUnitName 1.3.6.1.3.94.1.6.1.20	Read-write	A display string containing a name for this connectivity unit. This object value must be persistent between boots.
connUnitInfo 1.3.6.1.3.94.1.6.1.21	Read-write	A display string containing information about this connectivity unit. This object value must be persistent between boots.

6 Connectivity unit group

Object and OID	Access	Description
connUnitControl 1.3.6.1.3.94.1.6.1.22	Read-write	Controls the addressed connUnit. NOTE: Cold start and warm start are as defined in MIB-II and are not meant to be a factory reset. <ul style="list-style-type: none"> • resetConnUnitColdStart: The addressed unit performs a Cold Start reset. • resetConnUnitWarmStart: The addressed unit performs a Warm Start reset. • offlineConnUnit: The addressed unit puts itself into an implementation-dependant offline state. In general, if a unit is in an offline state, it cannot be used to perform Fibre Channel work. • onlineConnUnit: The addressed unit puts itself into an implementation-dependant online state. In general, if a unit is in an online state, it is capable of performing Fibre Channel work. NOTE: Each implementation can chose not to allow any or all of these values for a SET request.
connUnitContact 1.3.6.1.3.94.1.6.1.23	Read-write	Contact information for this connectivity unit.
connUnitLocation 1.3.6.1.3.94.1.6.1.24	Read-write	Location information for this connectivity unit.
connUnitEventFilter 1.3.6.1.3.94.1.6.1.25	Read only	Defines the event severity logged by this connectivity unit. All events of severity less than or equal to connUnitEventFilter are logged in connUnitEventTable.
connUnitNumEvents 1.3.6.1.3.94.1.6.1.26	Read only	Number of events currently in the connUnitEventTable.
connUnitMaxEvents 1.3.6.1.3.94.1.6.1.27	Read only	Maximum number of events that can be defined in the connUnitEventTable.
connUnitEventCurrID 1.3.6.1.3.94.1.6.1.28	Read only	The last-used event ID (connUnitEventId).
connUnitRevsTable 1.3.6.1.3.94.1.7	Not accessible	Table of the revisions supported by the connectivity units managed by this agent.
connUnitRevsEntry 1.3.6.1.3.94.1.7.1	Not accessible	Each entry contains the information for a specific revision.
connUnitRevsUnitId 1.3.6.1.3.94.1.7.1.1	Read only	The connUnitId of the connectivity unit that contains this revision table.
connUnitRevsIndex 1.3.6.1.3.94.1.7.1.2	Read only	A unique value among all connUnitRevsEntries with the same value of connUnitRevsUnitId, in the range between 1 and connUnitNumRevs [connUnitRevsUnitId].
connUnitRevsRevId 1.3.6.1.3.94.1.7.1.3	Read only	A vendor-specific string identifying a revision of a component of the connUnit indexed by the connUnitRevsUnitId.
connUnitRevsDescription 1.3.6.1.3.94.1.7.1.4	Read only	Description of a component to which the revision corresponds.
connUnitSensorTable 1.3.6.1.3.94.1.8	Not accessible	Table of the sensors supported by each connectivity unit managed by this agent.
connUnitSensorEntry 1.3.6.1.3.94.1.8.1	Not accessible	Each entry contains the information for a specific sensor.

Object and OID	Access	Description
connUnitSensorUnitId 1.3.6.1.3.94.1.8.1.1	Read only	The connUnitId of the connectivity unit that contains this sensor table.
connUnitSensorIndex 1.3.6.1.3.94.1.8.1.2	Read only	A unique value among all connUnitSensorEntry with the same value of connUnitSensorUnitId, in the range between 1 and connUnitNumSensor [connUnitSensorUnitId].
connUnitSensorName 1.3.6.1.3.94.1.8.1.3	Read only	A textual identification of the sensor, intended primarily for operator use.
connUnitSensorStatus 1.3.6.1.3.94.1.8.1.4	Read only	The status indicated by the sensor.
connUnitSensorInfo 1.3.6.1.3.94.1.8.1.5	Read only	Miscellaneous static information about the sensor, such as its serial number.
connUnitSensorMessage 1.3.6.1.3.94.1.8.1.6	Read only	This describes the status of the sensor as a message. It may also provide more resolution on the sensor indication, for example: Cover temperature 1503K, above nominal operating range
connUnitSensorType 1.3.6.1.3.94.1.8.1.7	Read only	The type of component being monitored by this sensor.
connUnitSensorCharacteristic 1.3.6.1.3.94.1.8.1.8	Read only	The characteristics being monitored by this sensor.
connUnitPortTable 1.3.6.1.3.94.1.10	Not accessible	Generic information on ports for a specific connUnit.
connUnitPortEntry 1.3.6.1.3.94.1.10.1	Not accessible	Each entry contains the information for a specific port.
connUnitPortUnitId 1.3.6.1.3.94.1.10.1.1	Read only	The connUnitId of the connectivity unit that contains this port.
connUnitPortIndex 1.3.6.1.3.94.1.10.1.2	Read only	A unique value among all connUnitPortEntry on this connectivity unit, between 0 and connUnitNumPort [connUnitPortUnitId].
connUnitPortType 1.3.6.1.3.94.1.10.1.3	Read only	The port type.
connUnitPortFCClassCap 1.3.6.1.3.94.1.10.1.4	Read only	Bit mask that specifies the classes of service capability of this port. If this is not applicable, returns all bits set to 0. The bits have the following definition: <ul style="list-style-type: none"> • 0 = unknown • 1 = class-f • 2 = class-one • 4 = class-two • 8 = class-three • 16 = class-four • 32 = class-five • 64 = class-six
connUnitPortFCClassOp 1.3.6.1.3.94.1.10.1.5	Read only	Bit mask that specifies the classes of service that are currently operational. If this is not applicable, returns all bits set to 0. This object has the same definition as connUnitPortFCClassCap.

6 Connectivity unit group

Object and OID	Access	Description
connUnitPortState 1.3.6.1.3.94.1.10.1.6	Read only	The user selected state of the port hardware.
connUnitPortStatus 1.3.6.1.3.94.1.10.1.7	Read only	An overall protocol status for the port. If the value of connUnitPortState is not online, then this is reported Unknown.
connUnitPortTransmitter Type 1.3.6.1.3.94.1.10.1.8	Read only	The technology of the port transceiver.
connUnitPortModuleType 1.3.6.1.3.94.1.10.1.9	Read only	The module type of the port connector.
connUnitPortWwn 1.3.6.1.3.94.1.10.1.10	Read only	The World Wide Name of the port, if applicable; otherwise, an empty string.
connUnitPortFCId 1.3.6.1.3.94.1.10.1.11	Read only	This is the assigned Fibre Channel ID of the port. This must be a big-endian value of 24 bits. If this is loop, then it is the AL_PA that is connected. If this is an E_Port, then it will only contain the domain ID left justified, zero filled. If this port does not have a Fibre Channel address, returns all bits set to 1.
connUnitPortSn 1.3.6.1.3.94.1.10.1.12	Read only	The serial number of the unit (for example, for a GBIC). If this is not applicable, returns an empty string.
connUnitPortRevision 1.3.6.1.3.94.1.10.1.13	Read only	The port revision (for example, GBIC).
connUnitPortVendor 1.3.6.1.3.94.1.10.1.14	Read only	The port vendor (for example, for a GBIC).
connUnitPortSpeed 1.3.6.1.3.94.1.10.1.15	Read only	The speed of the port in kilobytes per second.

Object and OID	Access	Description
connUnitPortControl 1.3.6.1.3.94.1.10.1.16	Read-write	<p>Controls the addressed connUnit's port.</p> <p>The following are the valid commands:</p> <p>resetConnUnitPort</p> <p>If the addressed connUnit allows this operation to be performed to this port, the addressed port performs a vendor-specific reset operation. Examples of these operations are:</p> <ul style="list-style-type: none"> • The Link Reset protocol. • The Loop Initialization protocol. • Resynchronization occurring between the transceiver in the addressed port to the transceiver to which the port is connected. <p>bypassConnUnitPort</p> <p>If the addressed connUnit allows this operation to be performed to this port, the addressed port performs a vendor-specific "bypass" operation. Examples of these operations are:</p> <ul style="list-style-type: none"> • Transitioning from online to offline. • A request (NON-PARTICIPATING) command to the loop port state machine. • Removal of the port from an arbitrated loop by a hub. <p>unbypassConnUnitPort</p> <p>If the addressed connUnit allows this operation to be performed to this port, the addressed port performs a vendor-specific "unbypass" operation. Examples of these operations are:</p> <ul style="list-style-type: none"> • The Link Failure protocol. • A request (PARTICIPATING) command to the loop port state machine. • Addition of the port to an arbitrated loop by a hub. <p>offlineConnUnitPort</p> <p>If the addressed connUnit allows this operation to be performed to this port, the addressed port performs a vendor-specific offline operation. Examples of these operations are:</p> <ul style="list-style-type: none"> • Disabling a port's transceiver. • The Link Failure protocol. • Request (NON-PARTICIPATING) command to the loop port state machine removal of the port from an arbitrated loop by a hub. <p>onlineConnUnitPort</p> <p>If the addressed connUnit allows this operation to be performed to this port, the addressed port performs a vendor-specific online operation. Examples of these operations are:</p> <ul style="list-style-type: none"> • Enabling a port's transceiver. • The Link Failure protocol, request (PARTICIPATING) command to the loop port state machine. • Addition of the port from an arbitrated loop by a hub. <p>NOTE: Each implementation may chose not to allow any or all of these values on a SET.</p>
connUnitPortName 1.3.6.1.3.94.1.10.1.17	Read-write	A string describing the addressed port.
connUnitPortPhysicalNumber 1.3.6.1.3.94.1.10.1.18	Read only	This is the internal port number by which this port is known. In many implementations, this must be the same as connUnitPortIndex. Some implementations might have an internal port representation not compatible with the rules for table indices. In these cases, provide the internal representation of this port in this object. This value might also be used in the connUnitLinkPortNumberX or connUnitLinkPortNumberY objects of the connUnitLinkTable.

6 Connectivity unit group

Object and OID	Access	Description
connUnitPortStatObject 1.3.6.1.3.94.1.10.1.19	Read only	This OID is deprecated. This contains the OID of the first object of the table that contains the statistics for this particular port. If this has a value of 0, then there are no statistics available for this port. The port type information helps identify the statistics objects found in the table. From this point, use the getnext command to get the next statistics object. When the first part of the OID changes, the end of table is reached.
connUnitPortProtocolCap 1.3.6.1.3.94.1.10.1.20	Read only	The bit mask that specifies the driver-level protocol capability of this port. If this is not applicable, returns all bits set to 0. The bits have the following definition: <ul style="list-style-type: none"> • 0 = unknown • 1 = Loop • 2 = Fabric • 4 = SCSI • 8 = TCP/IP • 16 = VI • 32 = FICON
connUnitPortProtocolOp 1.3.6.1.3.94.1.10.1.21	Read only	The bit mask that specifies the driver level protocols that are currently operational. If this is not applicable, return all bits set to zero. The bits have the following definition: <ul style="list-style-type: none"> • 0 = unknown • 1 = Loop • 2 = Fabric • 4 = SCSI • 8 = TCP/IP • 16 = VI • 32 = FICON
connUnitPortNodeWwn 1.3.6.1.3.94.1.10.1.22	Read only	The node WWN of the port, if applicable; otherwise, an empty string. This must have the same value for a group of related ports. The container is defined as the largest physical entity. For example, all ports on HBAs on a host have the same node WWN. All ports on the same storage subsystem have the same node WWN.
connUnitPortHWState 1.3.6.1.3.94.1.10.1.23	Read only	The state of the port as detected by the hardware.
connUnitEventTable 1.3.6.1.3.94.1.11	Not accessible	The table of connectivity unit events. Errors, warnings, and information must be reported in this table.
connUnitEventEntry 1.3.6.1.3.94.1.11.1	Not accessible	Each entry contains an information on a specific event for the given connectivity unit.
connUnitEventUnitId 1.3.6.1.3.94.1.11.1.1	Read only	The connUnitId of the connectivity unit that contains this event table.

Object and OID	Access	Description
connUnitEventIndex 1.3.6.1.3.94.1.11.1.2	Read only	<p>Each connectivity unit has its own event buffer. As it wraps, it might write over previous events. This object is an index into the buffer. It is recommended that this table is read using "getNext"s to retrieve the initial table. The management application must read the event table at periodic intervals and then determine if any new entries were added by comparing the last known index value with the current highest index value. The management application must then update its copy of the event table. If the read interval is too long, it is possible that there might be events that might not be contained in the agent's internal event buffer.</p> <p>An agent might read events 50-75.</p> <p>At the next read interval, connUnitEventCurrID is 189. If the management application tries to read event index 76 and the agent's internal buffer is 100 entries maximum, event index 76 is no longer available.</p> <p>The index value is an incrementing integer starting from 1 every time there is a table reset. On table reset, all contents are emptied and all indices are set to 0. When an event is added to the table, the event is assigned the next-higher integer value than the last item entered into the table. If the index value reaches its maximum value, the next item entered causes the index value to roll over and start at 1 again.</p>
connUnitEventId 1.3.6.1.3.94.1.11.1.3	Read only	<p>The internal event ID. Incremented for each event, ranging between 0 and connUnitMaxEvents. Not used as table index to simplify the agent implementation. When this reaches the end of the range specified by connUnitMaxEvents, the ID rolls over to start at 0. This value is set back to 0 at reset. The relationship of this value to the index is that internal event ID might represent a smaller number than a 32-bit integer (for example, maximum 100 entries) and will only have a value range up to connUnitMaxEvents.</p>
connUnitREventTime 1.3.6.1.3.94.1.11.1.4	Read only	<p>This is the real time when the event occurred. It has the following format. DDMMYYYY HHMMSS</p> <p>Where:</p> <ul style="list-style-type: none"> DD = day number MM = month number YYYY = year HH = hours MM = minutes SS = seconds <p>If not applicable, returns a null string.</p>
connUnitSEventTime 1.3.6.1.3.94.1.11.1.5	Read only	This is the sysuptime time stamp when the event occurred.
connUnitEventSeverity 1.3.6.1.3.94.1.11.1.6	Read only	The event severity level.
connUnitEventType 1.3.6.1.3.94.1.11.1.7	Read only	The type of this event.
connUnitEventObject 1.3.6.1.3.94.1.11.1.8	Read only	This is used with the connUnitEventType to identify to which object the event refers. It can be the OID of a connectivity unit or of another object, like connUnitPortStatus [...].
connUnitEventDescr 1.3.6.1.3.94.1.11.1.9	Read only	The description of the event.

6 Connectivity unit group

Object and OID	Access	Description
connUnitLinkTable 1.3.6.1.3.94.1.12	Not accessible	A list of links known to this agent from this connectivity unit to other connectivity units.
connUnitLinkEntry 1.3.6.1.3.94.1.12.1	Not accessible	An entry describing a particular link to another.
connUnitLinkUnitId 1.3.6.1.3.94.1.12.1.1	Read only	The ID of the connectivity unit that contains this link table.
connUnitLinkIndex 1.3.6.1.3.94.1.12.1.2	Read only	This value is used to create a unique value for each entry in the link table with the same connUnitLinkUnitId. The value can only be reused if it is not currently in use and the value is the next candidate to be used. This value is allowed to wrap at the highest value represented by the number of bits. This value is reset to 0 when the system is reset and the first value to be used is 1.
connUnitLinkNodeIdX 1.3.6.1.3.94.1.12.1.3	Read only	The node WWN of the unit at one end of the link. If the node WWN is unknown and the node is a connUnit in the responding agent, then the value of this object must be equal to its connUnitID.
connUnitLinkPortNumberX 1.3.6.1.3.94.1.12.1.4	Read only	The port number on the unit specified by connUnitLinkNodeIdX, if known; otherwise, -1. If the value is positive, then it is equal to connUnitPortPhysicalNumber.
connUnitLinkPortWwnX 1.3.6.1.3.94.1.12.1.5	Read only	The port WWN of the unit specified by connUnitLinkNodeIdX, if known; otherwise, 16 octets of binary 0.
connUnitLinkNodeIdY 1.3.6.1.3.94.1.12.1.6	Read only	The node WWN of the unit at the other end of the link. If the node WWN is unknown and the node is a connUnit in the responding SNMP agency, then the value of this object must be equal to its connUnitID.
connUnitLinkPortNumberY 1.3.6.1.3.94.1.12.1.7	Read only	The port number on the unit specified by connUnitLinkNodeIdY, if known; otherwise, -1. If the value is positive, then it is equal to connUnitPortPhysicalNumber.
connUnitLinkPortWwnY 1.3.6.1.3.94.1.12.1.8	Read only	The port WWN on the unit specified by connUnitLinkNodeIdY, if known; otherwise, 16 octets of binary 0.
connUnitLinkAgentAddressY 1.3.6.1.3.94.1.12.1.9	Read only	The address of an FCMGMT MIB agent for the node identified by connUnitLinkNodeIdY, if known; otherwise, 16 octets of binary 0.
connUnitLinkAgentAddressTypeY 1.3.6.1.3.94.1.12.1.10	Read only	If connUnitLinkAgentAddressY is nonzero, it is a protocol address. connUnitLinkAgentAddressTypeY is the "address family number" assigned by IANA to identify the address format (for example, 1 is IPv4, 2 is IPv6).
connUnitLinkAgentPortY 1.3.6.1.3.94.1.12.1.11	Read only	The IP port number for the agent. This is provided if the agent is at a non-standard SNMP port.
connUnitLinkUnitTypeY 1.3.6.1.3.94.1.12.1.12	Read only	Type of the FC connectivity unit, as defined in connUnitType.
connUnitLinkConnIdY 1.3.6.1.3.94.1.12.1.13	Read only	This is the Fibre Channel ID of this port. If the connectivity unit is a switch, this is expected to be a big-endian value of 24 bits. If this is loop, then it is the AL_PA that is connected. If this is an E_Port, then it contains only the domain ID. If this is an F_Port, then it contains both the area and domain ID. If not any of those, unknown or cascaded loop, return all bits set to 1.
connUnitLinkCurrIndex 1.3.6.1.3.94.1.12.1.14	Read only	The last-used link index.

Statistics group

Each individual port has only one statistics table. If the object in the statistics table is not supported by the connectivity unit, then the high-order bit is set to 1 and the other bits are set to 0.

The high-order bit is reserved to indicate whether the object is supported or not. All objects start at a value of 0 during the hardware initialization and increment until the objects reach 63 bits, and then wrap to 0.

Object and OID	Access	Description
connUnitPortStatTable 1.3.6.1.3.94.4.5	Not accessible	A table that lists the statistics for the fabric port types.
connUnitPortStatEntry 1.3.6.1.3.94.4.5.1	Not accessible	An entry describing port statistics.
connUnitPortStatUnitId 1.3.6.1.3.94.4.5.1.1	Read-only	The connectivity unit ID that contains the port statistics table.
connUnitPortStatIndex 1.3.6.1.3.94.4.5.1.2	Read-only	The port index of the table.
connUnitPortStatCountError 1.3.6.1.3.94.4.5.1.3	Read-only	A count of the errors that have occurred on the port.
connUnitPortStatCountTx Objects 1.3.6.1.3.94.4.5.1.4	Read-only	The number of frames that have been transmitted by the port. A Fibre Channel (FC) frame starts with a Start Of Frame (SOF) and ends with an End Of Frame (EOF). FC loop devices will not count frames that are passed through. This value represents the sum total for all other transmitted objects.
connUnitPortStatCountRx Objects 1.3.6.1.3.94.4.5.1.5	Read-only	The number of frames, packets, IOs, and so forth that have been received by the port. A FC frame starts with SOF and ends with EOF. FC loop devices will not count frames that are passed through. This value represents the sum total for all other received objects.
connUnitPortStatCountTx Elements 1.3.6.1.3.94.4.5.1.6	Read-only	The number of octets or bytes that have been transmitted by the port. There is a one-second periodic polling of the port. This value is saved and compared with the next polled value to compute net throughput. NOTE: For an FC, ordered sets are not included in the count.
connUnitPortStatCountRx Elements 1.3.6.1.3.94.4.5.1.7	Read-only	The number of octets or bytes that have been received by the port. There is a one-second periodic polling of the port. This value is saved and compared with the next polled value to compute net throughput. NOTE: For an FC, ordered sets are not included in the count.
connUnitPortStatCountB BCreditZero 1.3.6.1.3.94.4.5.1.8	Read-only	The number of transitions in or out of the buffer-to-buffer credit zero state. This is an FC statistic only.
connUnitPortStatCountIn putBuffersFull 1.3.6.1.3.94.4.5.1.9	Read-only	The number of occurrences when all input buffers of a port were full and outbound buffer-to-buffer credit transitioned to 0. There is no credit to provide to other side. This is an FC statistic only. NOTE: This object is not supported.

6 Statistics group

Object and OID	Access	Description
connUnitPortStatCountF BSYFrames 1.3.6.1.3.94.4.5.1.10	Read-only	The number of times that Fabric Busy (FBSY) was returned to the port as a result of a frame that could not be delivered to the other end of the link. This occurs if either the fabric or the destination port is temporarily busy. Port can only occur on SOFc1 frames (the frames that establish a connection). This is an FC statistic only. This is the sum of all classes. If you cannot keep the by-class counters, then keep the sum counters. NOTE: This object is not supported.
connUnitPortStatCountP BSYFrames 1.3.6.1.3.94.4.5.1.11	Read-only	The number of times that Port Busy (PBSY) was returned to the port as a result of a frame that could not be delivered to the other end of the link. This occurs if the destination port is temporarily busy. PBSY can only occur on SOFc1 frames (the frames that establish a connection). This is an FC statistic only. This is the sum of all classes. If you cannot keep the by-class counters, then keep the sum counters. NOTE: This object is not supported.
connUnitPortStatCountF RJTFrames 1.3.6.1.3.94.4.5.1.12	Read-only	The number of times that Fabric Reject (FRJT) was returned to the port as a result of a frame that was rejected by the fabric. This is the total for all classes and is a FC-only statistic. NOTE: This object is not supported.
connUnitPortStatCountP RJTFrames 1.3.6.1.3.94.4.5.1.13	Read-only	The number of times that FRJT was returned to the port as a result of a frame that was rejected at the destination N_Port. This is the total for all classes and is a FC-only statistic.
connUnitPortStatCountCl ass1RxFrames 1.3.6.1.3.94.4.5.1.14	Read-only	The number of class 1 frames received at the port. This is an FC statistic only. NOTE: This object is not supported.
connUnitPortStatCountCl ass1TxFrames 1.3.6.1.3.94.4.5.1.15	Read-only	The number of class 1 frames transmitted out the port. This is an FC statistic only. NOTE: This object is not supported.
connUnitPortStatCountCl ass1FBSYFrames 1.3.6.1.3.94.4.5.1.16	Read-only	The number of times that FBSY was returned to the port as a result of a class 1 frame that could not be delivered to the other end of the link. This occurs if either the fabric or the destination port is temporarily busy. FBSY can only occur on SOFc1 frames (the frames that establish a connection). This is an FC statistic only. NOTE: This object is not supported.
connUnitPortStatCountCl ass1PBSYFrames 1.3.6.1.3.94.4.5.1.17	Read-only	The number of times that PBSY was returned to the port as a result of a class 1 frame that could not be delivered to the other end of the link. This occurs if the destination N_Port is temporarily busy. PBSY can only occur on SOFc1 frames (the frames that establish a connection). This is an FC statistic only. NOTE: This object is not supported.
connUnitPortStatCountCl ass1FRJTFrames 1.3.6.1.3.94.4.5.1.18	Read-only	The number of times that FRJT was returned to the port as a result of a class 1 frame that was rejected by the fabric. This is an FC statistic only. NOTE: This object is not supported.
connUnitPortStatCountCl ass1PRJTFrames 1.3.6.1.3.94.4.5.1.19	Read-only	The number of times that FRJT was returned to the port as a result of a class 1 frame that was rejected at the destination N_Port. This is an FC statistic only. NOTE: This object is not supported.

Object and OID	Access	Description
connUnitPortStatCountCl ass2RxFrames 1.3.6.1.3.94.4.5.1.20	Read-only	The number of class 2 frames received at the port. This is an FC statistic only.
connUnitPortStatCountCl ass2TxFrames 1.3.6.1.3.94.4.5.1.21	Read-only	The number of class 2 frames transmitted out the port. This is an FC statistic only. NOTE: This object is not supported.
connUnitPortStatCountCl ass2FBSYFrames 1.3.6.1.3.94.4.5.1.22	Read-only	The number of times that FBSY was returned to the port as a result of a class 2 frame that could not be delivered to the other end of the link. This occurs if either the fabric or the destination port is temporarily busy. FBSY can only occur on SOFc1 frames (the frames that establish a connection). This is an FC statistic only. NOTE: This object is not supported.
connUnitPortStatCountCl ass2PBSYFrames 1.3.6.1.3.94.4.5.1.23	Read-only	The number of times that PBSY was returned to the port as a result of a class 2 frame that could not be delivered to the other end of the link. This occurs if the destination N_Port is temporarily busy. PBSY can only occur on SOFc1 frames (the frames that establish a connection). This is an FC statistic only. NOTE: This object is not supported.
connUnitPortStatCountCl ass2FRJTFrames 1.3.6.1.3.94.4.5.1.24	Read-only	The number of times that FRJT was returned to the port as a result of a class 2 frame that was rejected by the fabric. This is an FC statistic only. NOTE: This object is not supported.
connUnitPortStatCountCl ass2PRJTFrames 1.3.6.1.3.94.4.5.1.25	Read-only	The number of times that FRJT was returned to the port as a result of a class 2 frame that was rejected at the destination N_Port. This is an FC statistic only. NOTE: This object is not supported.
connUnitPortStatCountCl ass3RxFrames 1.3.6.1.3.94.4.5.1.26	Read-only	The number of class 3 frames received at the port. This is an FC statistic only.
connUnitPortStatCountCl ass3TxFrames 1.3.6.1.3.94.4.5.1.27	Read-only	The number of class 3 frames transmitted out the port. This is an FC statistic only.
connUnitPortStatCountCl ass3Discards 1.3.6.1.3.94.4.5.1.28	Read-only	The number of class 3 frames that were discarded upon reception at the port. There is no FBSY or FRJT generated for class 3 frames. They are discarded if they cannot be delivered. This is an FC statistic only.
connUnitPortStatCountR xMulticastObjects 1.3.6.1.3.94.4.5.1.29	Read-only	The number of multicast frames or packets received at the port.
connUnitPortStatCountTx MulticastObjects 1.3.6.1.3.94.4.5.1.30	Read-only	The number of multicast frames or packets transmitted out the port.
connUnitPortStatCountR xBroadcastObjects 1.3.6.1.3.94.4.5.1.31	Read-only	The number of broadcast frames or packets received at the port. NOTE: This object is not supported.
connUnitPortStatCountTx BroadcastObjects 1.3.6.1.3.94.4.5.1.32	Read-only	The number of broadcast frames or packets transmitted out the port. On an FC loop, this object counts only the Open Replicate Primitive (OPNr) frames generated. NOTE: This object is not supported.

6 Statistics group

Object and OID	Access	Description
connUnitPortStatCountRxLinkResets 1.3.6.1.3.94.4.5.1.33	Read-only	The number of link resets received. This is an FC statistic only.
connUnitPortStatCountTxLinkResets 1.3.6.1.3.94.4.5.1.34	Read-only	The number of link resets transmitted. This is an FC statistic only.
connUnitPortStatCountNumberLinkResets 1.3.6.1.3.94.4.5.1.35	Read-only	The number of link resets and Loop Initialization Primitive (LIP) sequences detected at the port. The number of times the reset link protocol is initiated. This is a count of the logical resets, a count of the number of primitives. This is an FC statistic only. NOTE: This object is not supported.
connUnitPortStatCountRxOfflineSequences 1.3.6.1.3.94.4.5.1.36	Read-only	The number of offline primitive sequences received at the port. This is an FC statistic only.
connUnitPortStatCountTxOfflineSequences 1.3.6.1.3.94.4.5.1.37	Read-only	The number of offline primitive sequences transmitted from the port. This is an FC statistic only.
connUnitPortStatCountNumberOfflineSequences 1.3.6.1.3.94.4.5.1.38	Read-only	The number of offline primitive sequence received at the port. This is an FC statistic only. NOTE: This object is not supported.
connUnitPortStatCountLinkFailures 1.3.6.1.3.94.4.5.1.39	Read-only	The number of link failures. This count is a part of the Link Error Status Block (LESB). This is an FC statistic only.
connUnitPortStatCountInvalidCRC 1.3.6.1.3.94.4.5.1.40	Read-only	The number of frames received with an invalid Cyclic Redundancy Check (CRC). This count is a part of the LESB. Loop ports will not count CRC errors passing through when monitoring. This is an FC statistic only.
connUnitPortStatCountInvalidTxWords 1.3.6.1.3.94.4.5.1.41	Read-only	The number of invalid transmission words received at the port. This count is a part of the LESB. This is an FC statistic only.
connUnitPortStatCountPrimitiveSequenceProtocolErrors 1.3.6.1.3.94.4.5.1.42	Read-only	The number of primitive sequence protocol errors detected at the port. This count is a part of the LESB. This is an FC statistic only.
connUnitPortStatCountLossesofSignal 1.3.6.1.3.94.4.5.1.43	Read-only	The number of instances of signal loss detected at the port. This count is a part of the LESB. This is an FC statistic only.
connUnitPortStatCountLossesofSynchronization 1.3.6.1.3.94.4.5.1.44	Read-only	The number of instances of synchronization loss detected at the port. This count is a part of the LESB. This is an FC statistic only.
connUnitPortStatCountInvalidOrderedSets 1.3.6.1.3.94.4.5.1.45	Read-only	The number of invalid ordered sets received at the port. This count is a part of the LESB. This is an FC statistic only.
connUnitPortStatCountFramesTooLong 1.3.6.1.3.94.4.5.1.46	Read-only	The number of frames received at the port where the frame length is greater than what is agreed to in the Fabric Login (FLOGI) or in the Port Login (PLOGI). This could be caused by losing the end of frame delimiter. This is an FC statistic only.

Object and OID	Access	Description
connUnitPortStatCountFramesTruncated 1.3.6.1.3.94.4.5.1.47	Read-only	The number of frames received at the port where the frame length is less than the minimum indicated by the frame header. The frame length is normally 24 bytes, but could be longer if the Data Field Control (DFCTL) field indicates that an optional header can be present. This is an FC statistic only.
connUnitPortStatCountAddressErrors 1.3.6.1.3.94.4.5.1.48	Read-only	The number of frames received with unknown addressing (for example, a SID or DID not known to the routing algorithm). This is an FC statistic only.
connUnitPortStatCountDelimiterErrors 1.3.6.1.3.94.4.5.1.49	Read-only	The count of invalid frame delimiters received at the port. This is an FC statistic only.
connUnitPortStatCountEncodingDisparityErrors 1.3.6.1.3.94.4.5.1.50	Read-only	The number of disparity errors received at the port. This is an FC statistic only.

Service group

Implementation of the Service group is mandatory for all systems.

The Service group contains the following subgroups:

- Connectivity Unit Service Scalers group
- Connectivity Unit Service Tables group

Implementation of the Connectivity Unit Service Scalers group is mandatory for all systems.

Object and OID	Access	Description
connUnitSnsMaxEntry 1.3.6.1.3.94.5.1.1	Read only	The maximum number of entries in the table.
connUnitSnsTable 1.3.6.1.3.94.5.2.1	Not accessible	This table contains an entry for each object registered with this port in the switch.
connUnitSnsEntry 1.3.6.1.3.94.5.2.1.1	Not accessible	The simple name server (SNS) table for the port represented by the connUnitSnsPortIndex.
lconnUnitSnsId 1.3.6.1.3.94.5.2.1.1.1	Read only	The connUnitId of the connectivity unit that contains this name server table.
connUnitSnsPortIndex 1.3.6.1.3.94.5.2.1.1.2	Read only	The physical port number of this SNS table entry. Each physical port has an SNS table with 1-n entries indexed by connUnitSnsPortIdentifier (port address).
connUnitSnsPortIdentifier 1.3.6.1.3.94.5.2.1.1.3	Read only	The port identifier for this entry in the SNS table.
connUnitSnsPortName 1.3.6.1.3.94.5.2.1.1.4	Read only	The port name for this entry in the SNS table.
connUnitSnsNodeName 1.3.6.1.3.94.5.2.1.1.5	Read only	The node name for this entry in the SNS table.
connUnitSnsClassOfSvc 1.3.6.1.3.94.5.2.1.1.6	Read only	The Classes of Service offered by this entry in the SNS table.

6 Service group

Object and OID	Access	Description
connUnitSnsNodeIPAddresses 1.3.6.1.3.94.5.2.1.1.7	Read only	The IPv6 formatted address of the node for this entry in the SNS table.
connUnitSnsProcAssoc 1.3.6.1.3.94.5.2.1.1.8	Read only	The process associator for this entry in the SNS table.
connUnitSnsFC4Type 1.3.6.1.3.94.5.2.1.1.9	Read only	The FC-4 types supported by this entry in the SNS table.
connUnitSnsPortType 1.3.6.1.3.94.5.2.1.1.10	Read only	The port type of this entry in the SNS table.
connUnitSnsPortIPAddress 1.3.6.1.3.94.5.2.1.1.11	Read only	The IPv6 formatted address of this entry in the SNS table.
connUnitSnsFabricPortName 1.3.6.1.3.94.5.2.1.1.12	Read only	The fabric port name of this entry in the SNS table.
connUnitSnsHardAddress 1.3.6.1.3.94.5.2.1.1.13	Read only	The hard address of this entry in the SNS table.
connUnitSnsSymbolicPortName 1.3.6.1.3.94.5.2.1.1.14	Read only	The symbolic port name of this entry in the SNS table.
connUnitSnsSymbolicNodeName 1.3.6.1.3.94.5.2.1.1.15	Read only	The symbolic node name of this entry in the SNS table.

IEEE 802.1x PAE MIB Objects

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- [Dot1x PAE system group](#) 99
- [Dot1x PAE authenticator group](#) 99

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 44](#) through [Figure 46](#) 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 44 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 45 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
          - dot1xAuthAuthEapStartsWhileAuthenticated 1.0.8802.1.1.1.1.2.3.1.10
          - dot1xAuthAuthEapLogoffWhileAuthenticated 1.0.8802.1.1.1.1.2.3.1.11
          - 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 46 dot1xPaeAuthenticator hierarchy

Dot1x PAE system group

Object and OID	Access	Description
dot1xPaePortTable 1.0.8802.1.1.1.1.2	Not accessible	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 1.0.8802.1.1.1.1.2.1	Not accessible	The port number, protocol version, and initialization control for a port.
dot1xPaePortNumber 1.0.8802.1.1.1.1.2.1.1	Not accessible	The port number associated with this port.
dot1xPaePortProtocolVersion 1.0.8802.1.1.1.1.2.1.2	Read-only	The protocol version associated with this port.
dot1xPaePortCapabilities 1.0.8802.1.1.1.1.2.1.3	Read-only	Indicates the PAE functionality that this port supports and that may be managed through this MIB. Valid values: <ul style="list-style-type: none"> dot1xPaePortAuthCapable (0) dot1xPaePortSuppCapable (1)
dot1xPaePortInitialize 1.0.8802.1.1.1.1.2.1.4	Read-write	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 1.0.8802.1.1.1.1.2.1.5	Read-write	The re-authentication control for this port. Setting this attribute to TRUE causes the authenticator PAE state machine for the port to re-authenticate the supplicant. Setting this attribute to FALSE has no effect. This attribute always returns FALSE when it is read.

Dot1x PAE authenticator group

Object and OID	Access	Description
dot1xAuthConfigTable 1.0.8802.1.1.1.1.2.1	Not accessible	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	Not accessible	The configuration information for an authenticator PAE.

7 Dot1x PAE authenticator group

Object and OID	Access	Description
dot1xAuthPaeState 1.0.8802.1.1.1.1.2.1.1.1	Read-only	The current value of the authenticator PAE state machine. Valid values: <ul style="list-style-type: none"> • 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	Read-only	The current state of the back-end authentication state machine. Valid values: <ul style="list-style-type: none"> • 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	Read-write	The current value of the administrative controlled directions parameter for the port.
dot1xAuthOperControlledDirections 1.0.8802.1.1.1.1.2.1.1.4	Read-only	The current value of the operational controlled directions parameter for the port.
dot1xAuthAuthControlledPortStatus 1.0.8802.1.1.1.1.2.1.1.5	Read-only	The current value of the controlled port status parameter for the port.
dot1xAuthAuthControlledPortControl 1.0.8802.1.1.1.1.2.1.1.6	Read-write	The current value of the controlled port control parameter for the port.
dot1xAuthQuietPeriod 1.0.8802.1.1.1.1.2.1.1.7	Read-write	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	Read-write	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	Read-write	The value, in seconds, of the suppTimeout constant currently in use by the back-end authentication state machine.
dot1xAuthServerTimeout 1.0.8802.1.1.1.1.2.1.1.10	Read-write	The value, in seconds, of the serverTimeout constant currently in use by the back-end authentication state machine.
dot1xAuthMaxReq 1.0.8802.1.1.1.1.2.1.1.11	Read-write	The value of the maxReq constant currently in use by the back-end authentication state machine.
dot1xAuthReAuthPeriod 1.0.8802.1.1.1.1.2.1.1.12	Read-write	The value, in seconds, of the reAuthPeriod constant currently in use by the re-authentication timer state machine.

Object and OID	Access	Description
dot1xAuthReAuthEnabled 1.0.8802.1.1.1.1.2.1.1.13	Read-write	The enable or disable control used by the re-authentication timer state machine.
dot1xAuthKeyTxEnabled 1.0.8802.1.1.1.1.2.1.1.14	Read-write	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	Not accessible	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	Not accessible	The statistics information for an authenticator PAE.
dot1xAuthEapolFramesRx 1.0.8802.1.1.1.1.2.2.1.1	Read-only	The number of valid Extensible Authentication Protocol over LAN (EAPOL) frames of any type that have been received by this authenticator.
dot1xAuthEapolFramesTx 1.0.8802.1.1.1.1.2.2.1.2	Read-only	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	Read-only	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	Read-only	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	Read-only	The number of Extensible Authentication Protocol (EAP) response or ID frames that have been received by this authenticator.
dot1xAuthEapolRespFramesRx 1.0.8802.1.1.1.1.2.2.1.6	Read-only	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	Read-only	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	Read-only	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	Read-only	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	Read-only	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	Read-only	The protocol version number carried in the most recently received EAPOL frame.
dot1xAuthLastEapolFrameSource 1.0.8802.1.1.1.1.2.2.1.12	Read-only	The source MAC address carried in the most recently received EAPOL frame.
dot1xAuthDiagTable 1.0.8802.1.1.1.1.2.3	Not accessible	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	Not accessible	The diagnostics information for an authenticator PAE.
dot1xAuthEntersConnecting 1.0.8802.1.1.1.1.2.3.1.1	Read-only	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	Read-only	Counts the number of times that the state machine transitions from CONNECTING to DISCONNECTED as a result of receiving an EAPOL logoff message.

7 Dot1x PAE authenticator group

Object and OID	Access	Description
dot1xAuthEntersAuthenticating 1.0.8802.1.1.1.1.2.3.1.3	Read-only	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	Read-only	Counts the number of times that the state machine transitions from AUTHENTICATING to AUTHENTICATED, as a result of the back-end authentication state machine indicating successful authentication of the supplicant (authSuccess = TRUE).
dot1xAuthAuthTimeoutsWhileAuthenticating 1.0.8802.1.1.1.1.2.3.1.5	Read-only	Counts the number of times that the state machine transitions from AUTHENTICATING to ABORTING, as a result of the back-end authentication state machine indicating authentication timeout (authTimeout = TRUE).
dot1xAuthAuthFailWhileAuthenticating 1.0.8802.1.1.1.1.2.3.1.6	Read-only	Counts the number of times that the state machine transitions from AUTHENTICATING to HELD, as a result of the back-end authentication state machine indicating authentication failure (authFail = TRUE).
dot1xAuthAuthReauthsWhileAuthenticating 1.0.8802.1.1.1.1.2.3.1.7	Read-only	Counts the number of times that the state machine transitions from AUTHENTICATING to ABORTING, as a result of a re-authentication request (reAuthenticate = TRUE).
dot1xAuthAuthEapStartsWhileAuthenticating 1.0.8802.1.1.1.1.2.3.1.8	Read-only	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	Read-only	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	Read-only	Counts the number of times that the state machine transitions from AUTHENTICATED to CONNECTING, as a result of a re-authentication request (reAuthenticate = TRUE).
dot1xAuthAuthEapStartsWhileAuthenticated 1.0.8802.1.1.1.1.2.3.1.11	Read-only	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	Read-only	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	Read-only	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	Read-only	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	Read-only	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.

Object and OID	Access	Description
dot1xAuthBackendNonNakResponsesFromSupplicant 1.0.8802.1.1.1.1.2.3.1.16	Read-only	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	Read-only	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	Read-only	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	Not accessible	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	Not accessible	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	Read-only	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	Read-only	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	Read-only	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	Read-only	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	Read-only	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	Read-only	The authentication method used to establish the session. Values: <ul style="list-style-type: none"> • remoteAuthServer(1) • localAuthServer(2)
dot1xAuthSessionTime 1.0.8802.1.1.1.1.2.4.1.7	Read-only	The duration of the session in seconds.

7 Dot1x PAE authenticator group

Object and OID	Access	Description
dot1xAuthSessionTerminateCause 1.0.8802.1.1.1.1.2.4.1.8	Read-only	The reason for the session termination. Values: <ul style="list-style-type: none">• 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	Read-only	The user name representing the identity of the supplicant PAE.

NOTE

The dot1xPaeSupplicant group is not supported.

LLDP MIB Objects

In this chapter

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- [LLDP MIB](#) 108
- [LLDP-EXT-DOT1-MIB](#) 115
- [LLDP-EXT-DOT3-MIB](#) 121

LLDP MIB objects overview

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

[Figure 47](#) through [Figure 51](#) 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 47 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 48 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 49 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 50 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 51 lldpRemoteSystemsData hierarchy

LLDP MIB

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

NOTE
LLDP notifications are not supported.

LLDP configuration group

Object and OID	Access	Description
lldpConfiguration 1.0.8802.1.1.2.1.1	Not accessible	LLDP configuration group.
lldpMessageTxInterval 1.0.8802.1.1.2.1.1.1	Read-write	The interval at which LLDP frames are transmitted on behalf of the LLDP agent. The default value for this object is 30 seconds. The value of this object must be restored from nonvolatile storage after a re-initialization of the management system.

Object and OID	Access	Description
IldpMessageTxHoldMultiplier 1.0.8802.1.1.2.1.1.2	Read-write	<p>The time-to-live value expressed as a multiple of the IldpMessageTxInterval 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:</p> $\text{TTL} = \min(65535, (\text{IldpMessageTxInterval} * \text{IldpMessageTxHoldMultiplier}))$ <p>For example, if the value of IldpMessageTxInterval is 30, and the value of IldpMessageTxHoldMultiplier is 4, then the value 120 is encoded in the TTL field in the LLDP header.</p> <p>The default value for this object is four seconds. The value of this object must be restored from nonvolatile storage after a re-initialization of the management system.</p>
IldpReinitDelay 1.0.8802.1.1.2.1.1.3	Read-write	<p>The object indicates the delay (in units of seconds) from when the IldpPortConfigAdminStatus object of a particular port becomes disabled until re-initialization is attempted. The default value for this object is two seconds. The value of this object must be restored from nonvolatile storage after a re-initialization of the management system.</p>
IldpTxDelay 1.0.8802.1.1.2.1.1.4	Read-write	<p>The object 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 value for this object is set using the following formula:</p> $1 \leq \text{IldpTxDelay} \leq (0.25 * \text{IldpMessageTxInterval})$ <p>The default value for this object is two seconds. The value of this object must be restored from nonvolatile storage after a re-initialization of the management system.</p>
IldpNotificationInterval 1.0.8802.1.1.2.1.1.5	Read-write	<p>This object controls the transmission of LLDP notifications. If notification transmission is enabled for particular ports, the suggested default throttling period is five seconds. The value of this object must be restored from nonvolatile storage after a re-initialization of the management system.</p>
IldpPortConfigTable 1.0.8802.1.1.2.1.1.6	Not accessible	<p>The table that controls LLDP frame transmission on individual ports.</p>
IldpPortConfigEntry 1.0.8802.1.1.2.1.1.6.1	Not accessible	<p>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.</p>
IldpPortConfigPortNum 1.0.8802.1.1.2.1.1.6.1.1	Not accessible	<p>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 IldpPortConfigTable.</p>
IldpPortConfigAdminStatus 1.0.8802.1.1.2.1.1.6.1.2	Read-write	<p>The administratively desired status of the local LLDP agent.</p>
IldpPortConfigNotificationEnable 1.0.8802.1.1.2.1.1.6.1.3	Read-write	<p>The object controls, on a per-port basis, whether or not notifications from the agent are enabled.</p> <p>The values are as follows:</p> <ul style="list-style-type: none"> • true(1) - The notifications are enabled. • false(2) - The notifications are not enabled.

Object and OID	Access	Description
IldpPortConfigTLVsTxEnable 1.0.8802.1.1.2.1.1.6.1.4	Read-write	The object, 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.
IldpConfigManAddrTable 1.0.8802.1.1.2.1.1.7	Not accessible	NOTE: This table is not supported.

LLDP statistics group

Object and OID	Access	Description
IldpStatistics 1.0.8802.1.1.2.1.2	Not accessible	LLDP statistics group.
IldpStatsRemTablesLastChangeTime 1.0.8802.1.1.2.1.2.1	Read-only	The value of the sysUpTime object (defined in IETF RFC 3418) at the time an entry is created, modified, or deleted in the tables associated with the IldpRemoteSystemsData objects and all LLDP extension objects associated with remote systems.
IldpStatsRemTablesInserts 1.0.8802.1.1.2.1.2.2	Read-only	The number of times the complete set of information advertised by a particular MSAP has been inserted into tables contained in IldpRemoteSystemsData and IldpExtensions objects.
IldpStatsRemTablesDeletes 1.0.8802.1.1.2.1.2.3	Read-only	The number of times the complete set of information advertised by a particular MSAP has been deleted from tables contained in IldpRemoteSystemsData and IldpExtensions objects.
IldpStatsRemTablesDrops 1.0.8802.1.1.2.1.2.4	Read-only	The number of times the complete set of information advertised by a particular MSAP could not be entered into tables contained in IldpRemoteSystemsData and IldpExtensions objects because of insufficient resources.
IldpStatsRemTablesAgeouts 1.0.8802.1.1.2.1.2.5	Read-only	The number of times the complete set of information advertised by a particular MSAP has been deleted from tables contained in IldpRemoteSystemsData and IldpExtensions objects because the information timeliness interval has expired.
IldpStatsTxPortTable 1.0.8802.1.1.2.1.2.6	Not accessible	A table containing LLDP transmission statistics for individual ports. Entries are not required to exist in this table while the IldpPortConfigEntry object is equal to disabled (4).
IldpStatsTxPortEntry 1.0.8802.1.1.2.1.2.6.1	Not accessible	The LLDP frame transmission statistics for a particular port. The port must be contained in the same chassis as the LLDP agent.
IldpStatsTxPortNum 1.0.8802.1.1.2.1.2.6.1.1	Not accessible	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 IldpStatsTable.
IldpStatsTxPortFramesTotal 1.0.8802.1.1.2.1.2.6.1.2	Read-only	The number of LLDP frames transmitted by this LLDP agent on the indicated port.
IldpStatsRxPortTable 1.0.8802.1.1.2.1.2.7	Not accessible	A table containing LLDP reception statistics for individual ports. Entries are not required to exist in this table while the IldpPortConfigEntry object is equal to disabled (4).
IldpStatsRxPortEntry 1.0.8802.1.1.2.1.2.7.1	Not accessible	The LLDP frame reception statistics for a particular port. The port must be contained in the same chassis as the LLDP agent.

Object and OID	Access	Description
IldpStatsRxPortNum 1.0.8802.1.1.2.1.2.7.1.1	Not accessible	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 IldpStatsTable.
IldpStatsRxPortFramesDiscardedTotal 1.0.8802.1.1.2.1.2.7.1.2	Read-only	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 Link Layer Discovery Protocol Data Unit (LLDPDU) validation problems may exist with the local LLDP agent in the receiving system.
IldpStatsRxPortFramesErrors 1.0.8802.1.1.2.1.2.7.1.3	Read-only	The number of invalid LLDP frames received by this LLDP agent on the indicated port while this LLDP agent is enabled.
IldpStatsRxPortFramesTotal 1.0.8802.1.1.2.1.2.7.1.4	Read-only	The number of valid LLDP frames received by this LLDP agent on the indicated port while this LLDP agent is enabled.
IldpStatsRxPortTLVsDiscardedTotal 1.0.8802.1.1.2.1.2.7.1.5	Read-only	The number of LLDP TLVs discarded for any reason by this LLDP agent on the indicated port.
IldpStatsRxPortTLVsUnrecognizedTotal 1.0.8802.1.1.2.1.2.7.1.6	Read-only	The number of LLDP TLVs received on the given port that are not recognized by this LLDP agent on the indicated port.
IldpStatsRxPortAgeoutsTotal 1.0.8802.1.1.2.1.2.7.1.7	Read-only	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 IldpRemoteSystemsData and IldpExtensions objects because the information timeliness interval has expired.

LLDP local system data group

Object and OID	Access	Description
IldpLocalSystemData 1.0.8802.1.1.2.1.3	Not accessible	LLDP local system data group.
IldpLocChassisIdSubtype 1.0.8802.1.1.2.1.3.1	Read-only	The type of encoding used to identify the chassis associated with the local system.
IldpLocChassisId 1.0.8802.1.1.2.1.3.2	Read-only	The string value used to identify the chassis component associated with the local system.
IldpLocSysName 1.0.8802.1.1.2.1.3.3	Read-only	The string value used to identify the system name of the local system. If the local agent supports IETF RFC 3418, the IldpLocSysName object must have the same value of the sysName object.
IldpLocSysDesc 1.0.8802.1.1.2.1.3.4	Read-only	The string value used to identify the system description of the local system. If the local agent supports IETF RFC 3418, the IldpLocSysDesc object must have the same value of the sysDesc object.
IldpLocSysCapSupported 1.0.8802.1.1.2.1.3.5	Read-only	The bitmap value used to identify which system capabilities are supported on the local system.
IldpLocSysCapEnabled 1.0.8802.1.1.2.1.3.6	Read-only	The bitmap value used to identify which system capabilities are enabled on the local system.

Object and OID	Access	Description
IldpLocPortTable 1.0.8802.1.1.2.1.3.7	Not accessible	This table contains one or more rows per port information associated with the local system known to this agent.
IldpLocPortEntry 1.0.8802.1.1.2.1.3.7.1	Not accessible	The information about a particular port component. Entries may be created and deleted in this table by the agent.
IldpLocPortNum 1.0.8802.1.1.2.1.3.7.1.1	Not accessible	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 IldpLocPortTable.
IldpLocPortIdSubtype 1.0.8802.1.1.2.1.3.7.1.2	Read-only	The type of port identifier encoding used in the associated IldpLocPortId object.
IldpLocPortId 1.0.8802.1.1.2.1.3.7.1.3	Read-only	The string value used to identify the port component associated with a given port in the local system.
IldpLocPortDesc 1.0.8802.1.1.2.1.3.7.1.4	Read-only	The string value used to identify the port description of the 802 LAN station associated with the local system. If the local agent supports IETF RFC 2863, the IldpLocPortDesc object must have the same value of the ifDescr object.
IldpLocManAddrTable 1.0.8802.1.1.2.1.3.8	Not accessible	This table contains management address information on the local system known to this agent.
IldpLocManAddrEntry 1.0.8802.1.1.2.1.3.8.1	Not accessible	The management address information about a particular chassis component. There may be multiple management addresses configured on the system identified by a particular IldpLocChassisId. Each management address must have a distinct management address type (IldpLocManAddrSubtype) and management address (IldpLocManAddr.)
IldpLocManAddrSubtype 1.0.8802.1.1.2.1.3.8.1.1	Not accessible	The type of management address identifier encoding used in the associated IldpLocManagementAdd object.
IldpLocManAddr 1.0.8802.1.1.2.1.3.8.1.2	Not accessible	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.
IldpLocManAddrLen 1.0.8802.1.1.2.1.3.8.1.3	Read-only	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 are not required to implement an IANA family number or address length equivalency table in order to decode the management address.
IldpLocManAddrIfSubtype 1.0.8802.1.1.2.1.3.8.1.4	Read-only	The enumeration value that identifies the interface numbering method used for defining the interface number associated with the local system.
IldpLocManAddrIfId 1.0.8802.1.1.2.1.3.8.1.5	Read-only	The integer value used to identify the interface number regarding the management address component associated with the local system.
IldpLocManAddrOID 1.0.8802.1.1.2.1.3.8.1.6	Read-only	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.

LLDP remote systems data group

Object and OID	Access	Description
lldpRemoteSystemsData 1.0.8802.1.1.2.1.4	Not accessible	LLDP remote systems data group.
lldpRemTable 1.0.8802.1.1.2.1.4.1	Not accessible	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	Not accessible	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	Not accessible	A time filter for this entry.
lldpRemLocalPortNum 1.0.8802.1.1.2.1.4.1.1.2	Not accessible	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	Not accessible	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	Read-only	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	Read-only	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	Read-only	The type of port identifier encoding used in the associated lldpRemPortId object.
lldpRemPortId 1.0.8802.1.1.2.1.4.1.1.7	Read-only	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	Read-only	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	Read-only	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	Read-only	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	Read-only	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	Read-only	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	Not accessible	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	Not accessible	The management address information about a particular chassis component.
lldpRemManAddrSubtype 1.0.8802.1.1.2.1.4.2.1.1	Not accessible	The type of management address identifier encoding used in the associated lldpRemManagementAddr object.

Object and OID	Access	Description
IldpRemManAddr 1.0.8802.1.1.2.1.4.2.1.2	Not accessible	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.
IldpRemManAddrIfSubtype 1.0.8802.1.1.2.1.4.2.1.3	Read-only	The enumeration value that identifies the interface numbering method used for defining the interface number associated with the remote system.
IldpRemManAddrIfId 1.0.8802.1.1.2.1.4.2.1.4	Read-only	The integer value used to identify the interface number regarding the management address component associated with the remote system.
IldpRemManAddrOID 1.0.8802.1.1.2.1.4.2.1.5	Read-only	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.
IldpRemUnknownTLVTable 1.0.8802.1.1.2.1.4.3	Not accessible	This table contains information about an incoming TLV which is not recognized by the receiving LLDP agent.
IldpRemUnknownTLVEntry 1.0.8802.1.1.2.1.4.3.1	Not accessible	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.
IldpRemUnknownTLVType 1.0.8802.1.1.2.1.4.3.1.1	Not accessible	This object represents the value extracted from the type field of the TLV.
IldpRemUnknownTLVInfo 1.0.8802.1.1.2.1.4.3.1.2	Read-only	This object represents the value extracted from the value field of the TLV.
IldpRemOrgDefInfoTable 1.0.8802.1.1.2.1.4.4	Not accessible	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 must be used for information retrieval.
IldpRemOrgDefInfoEntry 1.0.8802.1.1.2.1.4.4.1	Not accessible	The information about the unrecognized organizationally defined information advertised by the remote system.
IldpRemOrgDefInfoOUI 1.0.8802.1.1.2.1.4.4.1.1	Not accessible	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.
IldpRemOrgDefInfoSubtype 1.0.8802.1.1.2.1.4.4.1.2	Not accessible	The integer value used to identify the subtype of the organizationally defined information received from the remote system.
IldpRemOrgDefInfoIndex 1.0.8802.1.1.2.1.4.4.1.3	Not accessible	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 IldpRemOrgDefInfoOUI and IldpRemOrgDefInfoSubtype 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 IldpRemOrgDefInfoIndex will wrap between reboots.
IldpRemOrgDefInfo 1.0.8802.1.1.2.1.4.4.1.4	Read-only	The string value used to identify the organizationally defined information of the remote system. The encoding for this object must 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 52 and Figure 53 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 52 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 53 LLDP-EXT-DOT1-MIB hierarchy

IldpXdot1 configuration group

Object and OID	Access	Description
IldpXdot1Config 1.0.8802.1.1.2.1.5.329 62.1.1	Not accessible	IEEE 802.1 configuration group.
IldpXdot1ConfigPortVlan Table 1.0.8802.1.1.2.1.5.329 62.1.1.1	Not accessible	A table that controls selection of LLDP Port VLAN-ID TLVs to be transmitted on individual ports. This table returns values only for the TE interfaces that are associated with the VLAN.
IldpXdot1ConfigPortVlan Entry 1.0.8802.1.1.2.1.5.329 62.1.1.1.1	Not accessible	The LLDP configuration information that controls the transmission of IEEE 802.1 organizationally defined port VLAN-ID TLV on LLDP transmission-capable ports.
IldpXdot1ConfigPortVlan TxEnable 1.0.8802.1.1.2.1.5.329 62.1.1.1.1.1	Read-write	A truth value and configured by the network management which 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 nonvolatile storage after a re-initialization of the management system.
IldpXdot1ConfigVlanName Table 1.0.8802.1.1.2.1.5.329 62.1.1.2	Not accessible	The table that controls selection of LLDP VLAN name TLV instances to be transmitted on individual ports.
IldpXdot1ConfigVlanName Entry 1.0.8802.1.1.2.1.5.329 62.1.1.2.1	Not accessible	The LLDP configuration information that specifies the set of ports (represented as a PortList) on which the Local System VLAN name instance is transmitted.
IldpXdot1ConfigVlanName eTxEnable 1.0.8802.1.1.2.1.5.329 62.1.1.2.1.1	Read-write	The boolean value that indicates whether the corresponding Local System VLAN name instance is transmitted on the port defined by the given IldpXdot1LocVlanNameEntry. The value of this object must be restored from nonvolatile storage after a re-initialization of the management system.
IldpXdot1ConfigProtocolVla nTable 1.0.8802.1.1.2.1.5.329 62.1.1.3	Not accessible	The table that controls selection of LLDP Port and Protocol VLAN ID TLV instances to be transmitted on individual ports.
IldpXdot1ConfigProtocolVla nEntry 1.0.8802.1.1.2.1.5.329 62.1.1.3.1	Not accessible	The LLDP configuration information that specifies the set of ports (represented as a PortList) on which the Local System Protocol VLAN instance is transmitted.
IldpXdot1ConfigProtocolVla nTxEnable 1.0.8802.1.1.2.1.5.329 62.1.1.3.1.1	Read-write	The boolean value that indicates whether the corresponding Local System Port and Protocol VLAN instance is transmitted on the port defined by the given IldpXdot1LocProtoVlanEntry. The value of this object must be restored from nonvolatile storage after a re-initialization of the management system.
IldpXdot1ConfigProtocolT able 1.0.8802.1.1.2.1.5.329 62.1.1.4	Not accessible	The table that controls selection of LLDP Protocol TLV instances to be transmitted on individual ports.

Object and OID	Access	Description
IldpXdot1ConfigProtocolEntry 1.0.8802.1.1.2.1.5.32962.1.1.4.1	Not accessible	The LLDP configuration information that specifies the set of ports (represented as a PortList) on which the Local System Protocol instance is transmitted.
IldpXdot1ConfigProtocolTxEnable 1.0.8802.1.1.2.1.5.32962.1.1.4.1.1	Read-write	The boolean value that indicates whether the corresponding Local System Protocol Identity instance is transmitted on the port defined by the given IldpXdot1LocProtocolEntry. The value of this object must be restored from nonvolatile storage after a re-initialization of the management system.

IldpXdot1 local data group

Object and OID	Access	Description
IldpXdot1LocalData 1.0.8802.1.1.2.1.5.32962.1.2	Not accessible	IEEE 802.1 local system information.
IldpXdot1LocTable 1.0.8802.1.1.2.1.5.32962.1.2.1	Not accessible	This table contains one row per port for an IEEE 802.1 organizationally defined LLDP extension on the local system known to this agent.
IldpXdot1LocEntry 1.0.8802.1.1.2.1.5.32962.1.2.1.1	Not accessible	The information about an IEEE 802.1 organizationally defined LLDP extension.
IldpXdot1LocPortVlanId 1.0.8802.1.1.2.1.5.32962.1.2.1.1.1	Read-only	The integer value used to identify the VLAN identifier of the port associated with the local system. A value of zero is 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.
IldpXdot1LocProtoVlanTable 1.0.8802.1.1.2.1.5.32962.1.2.2	Not accessible	This table contains one or more rows per port and protocol VLAN information about the local system.
IldpXdot1LocProtoVlanEntry 1.0.8802.1.1.2.1.5.32962.1.2.2.1	Not accessible	The port and protocol VLAN ID information about a particular port component. There may be multiple port and protocol VLANs, identified by a particular IldpXdot1LocProtoVlanId, configured on the given port.
IldpXdot1LocProtoVlanId 1.0.8802.1.1.2.1.5.32962.1.2.2.1.1	Not accessible	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 is used if the system either does not know the protocol VLAN ID (PPVID) or does not support port and protocol VLAN operation.
IldpXdot1LocProtoVlanSupported 1.0.8802.1.1.2.1.5.32962.1.2.2.1.2	Read-only	The truth value used to indicate whether the given port (associated with the local system) supports port and protocol VLANs.
IldpXdot1LocProtoVlanEnabled 1.0.8802.1.1.2.1.5.32962.1.2.2.1.3	Read-only	The truth value used to indicate whether the port and protocol VLANs are enabled on the given port associated with the local system. If <i>fcocport</i> is configured, then that interface supports protocol-based VLAN and IldpXdot1LocProtoVlanEnabled must 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.

Object and OID	Access	Description
IldpXdot1LocVlanNameTable 1.0.8802.1.1.2.1.5.32962.1.2.3	Not accessible	This table contains one or more rows per IEEE 802.1Q VLAN name information on the local system known to this agent.
IldpXdot1LocVlanNameEntry 1.0.8802.1.1.2.1.5.32962.1.2.3.1	Not accessible	The VLAN name information about a particular port component. There may be multiple VLANs, identified by a particular IldpXdot1LocVlanId, configured on the given port.
IldpXdot1LocVlanId 1.0.8802.1.1.2.1.5.32962.1.2.3.1.1	Not accessible	The integer value used to identify the IEEE 802.1Q VLAN IDs with which the given port is compatible.
IldpXdot1LocVlanName 1.0.8802.1.1.2.1.5.32962.1.2.3.1.2	Read-only	The string value used to identify a VLAN name identified by the VLAN ID associated with the given port on the local system.
IldpXdot1LocProtocolTable 1.0.8802.1.1.2.1.5.32962.1.2.4	Not accessible	This table contains one or more rows per protocol identity information on the local system known to this agent.
IldpXdot1LocProtocolEntry 1.0.8802.1.1.2.1.5.32962.1.2.4.1	Not accessible	The information about particular protocols that are accessible through the given port component.
IldpXdot1LocProtocolIndex 1.0.8802.1.1.2.1.5.32962.1.2.4.1.1	Not accessible	This object represents an arbitrary local integer value used by this agent to identify a particular protocol identity.
IldpXdot1LocProtocolId 1.0.8802.1.1.2.1.5.32962.1.2.4.1.2	Read-only	The octet string value used to identify the protocols associated with the given port of the local system.

IldpXdot1 remote data group

Object and OID	Access	Description
IldpXdot1RemoteData IldpXdot1RemTable 1.0.8802.1.1.2.1.5.32962.1.3	Not accessible	IEEE 802.1 remote system information.
IldpXdot1RemTable 1.0.8802.1.1.2.1.5.32962.1.3.1	Not accessible	This table contains one or more rows per physical network connection known to this agent.
IldpXdot1RemEntry 1.0.8802.1.1.2.1.5.32962.1.3.1.1	Not accessible	The information about a particular port component.
IldpXdot1RemPortVlanId 1.0.8802.1.1.2.1.5.32962.1.3.1.1.1	Read-only	The integer value used to identify the VLAN identifier of the port 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 IldpXdot1RemPortVlanId must be zero.

Object and OID	Access	Description
lldpXdot1RemProtoVlanTable 1.0.8802.1.1.2.1.5.329 62.1.3.2	Not accessible	This table contains one or more rows per port and protocol VLAN information about the remote system received on the given port.
lldpXdot1RemProtoVlanEntry 1.0.8802.1.1.2.1.5.329 62.1.3.2.1	Not accessible	The port and protocol VLAN information about a particular port component.
lldpXdot1RemProtoVlanId 1.0.8802.1.1.2.1.5.329 62.1.3.2.1.1	Not accessible	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 must be zero.
lldpXdot1RemProtoVlanSupported 1.0.8802.1.1.2.1.5.329 62.1.3.2.1.2	Read-only	The truth value used to indicate whether the given port (associated with the remote system) is capable of supporting port and protocol VLANs.
lldpXdot1RemProtoVlanEnabled 1.0.8802.1.1.2.1.5.329 62.1.3.2.1.3	Read-only	The truth value used to indicate whether the port and protocol VLANs are enabled on the given port associated with the remote system.
lldpXdot1RemVlanNameTable 1.0.8802.1.1.2.1.5.329 62.1.3.3	Not accessible	This table contains one or more rows per IEEE 802.1Q VLAN name information about the remote system received on the given port.
lldpXdot1RemVlanNameEntry 1.0.8802.1.1.2.1.5.329 62.1.3.3.1	Not accessible	The VLAN name information about a particular port component.
lldpXdot1RemVlanId 1.0.8802.1.1.2.1.5.329 62.1.3.3.1.1	Not accessible	The integer value used to identify the IEEE 802.1Q VLAN IDs with which the given port of the remote system is compatible.
lldpXdot1RemVlanName 1.0.8802.1.1.2.1.5.329 62.1.3.3.1.2	Read-only	The string value used to identify a VLAN name identified by the VLAN ID associated with the remote system.
lldpXdot1RemProtocolTable 1.0.8802.1.1.2.1.5.329 62.1.3.4	Not accessible	This table contains one or more rows per protocol information about the remote system received on the given port.
lldpXdot1RemProtocolEntry 1.0.8802.1.1.2.1.5.329 62.1.3.4.1	Not accessible	The protocol information about a particular port component.

Object and OID	Access	Description
lldpXdot1RemProtocolldex 1.0.8802.1.1.2.1.5.329 62.1.3.4.1.1	Not accessible	This object represents an arbitrary local integer value used by this agent to identify a particular protocol identity.
lldpXdot1RemProtocolld 1.0.8802.1.1.2.1.5.329 62.1.3.4.1.2	Read-only	The octet string value used to identify the protocols associated with the given port of the 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 54 and Figure 55 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 54 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 55 LLDP-EXT-DOT3-MIB hierarchy

lldpXdot3 configuration group

Object and OID	Access	Description
lldpXdot3Config 1.0.8802.1.1.2.1.5.4623.1.1	Not accessible	IEEE 802.3 configuration information.
lldpXdot3PortConfigTable 1.0.8802.1.1.2.1.5.4623.1.1.1	Not accessible	A table that controls selection of LLDP TLVs to be transmitted on individual ports.

Object and OID	Access	Description
lldpXdot3PortConfigEntry 1.0.8802.1.1.2.1.5.4623.1.1.1.1	Not accessible	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	Read-write	This object is 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: <ul style="list-style-type: none"> The bit macPhyConfigStatus (0) indicates that the LLDP agent must transmit MAC/PHY configuration or status TLV. The bit powerViaMDI (1) indicates that the LLDP agent must transmit Power through MDI TLV. The bit linkAggregation (2) indicates that the LLDP agent must transmit Link Aggregation TLV. The bit maxFrameSize (3) indicates that the LLDP agent must transmit Maximum-frame-size TLV.

lldpXdot3 local data group

Object and OID	Access	Description
lldpXdot3LocalData 1.0.8802.1.1.2.1.5.4623.1.2	Not accessible	IEEE 802.3 local device information.
lldpXdot3LocPortTable 1.0.8802.1.1.2.1.5.4623.1.2.1	Not accessible	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	Not accessible	The information about a particular port component.
lldpXdot3LocPortAutoNegSupported 1.0.8802.1.1.2.1.5.4623.1.2.1.1.1	Read-only	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	Read-only	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	Read-only	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	Read-only	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 accessible	This table contains power Ethernet information of the local system known to the agent. NOTE: This table is not supported.

Object and OID	Access	Description
lldpXdot3LocLinkAggTable 1.0.8802.1.1.2.1.5.462 3.1.2.3	Not accessible	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 1.0.8802.1.1.2.1.5.462 3.1.2.3.1	Not accessible	The link aggregation information about a particular port component.
lldpXdot3LocLinkAggStatus 1.0.8802.1.1.2.1.5.462 3.1.2.3.1.1	Read-only	The bitmap value contains the link aggregation capabilities and the current aggregation status of the link.
lldpXdot3LocLinkAggPortId 1.0.8802.1.1.2.1.5.462 3.1.2.3.1.2	Read-only	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 must be set to zero.
lldpXdot3LocMaxFrameSizeTable 1.0.8802.1.1.2.1.5.462 3.1.2.4	Not accessible	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 1.0.8802.1.1.2.1.5.462 3.1.2.4.1	Not accessible	The maximum frame size information about a particular port component.
lldpXdot3LocMaxFrameSize 1.0.8802.1.1.2.1.5.462 3.1.2.4.1.1	Read-only	An integer value indicating the maximum supported frame size in octets on the given port of the local system.

lldpXdot3 remote data group

Object and OID	Access	Description
lldpXdot3RemoteData 1.0.8802.1.1.2.1.5.462 3.1.3	Not accessible	IEEE 802.3 remote devices information.
lldpXdot3RemPortTable 1.0.8802.1.1.2.1.5.462 3.1.3.1	Not accessible	This table contains Ethernet port information (as a part of the LLDP 802.3 organizational extension) of the remote system.
lldpXdot3RemPortEntry 1.0.8802.1.1.2.1.5.462 3.1.3.1.1	Not accessible	The information about a particular physical network connection.
lldpXdot3RemPortAutoNegSupported 1.0.8802.1.1.2.1.5.462 3.1.3.1.1.1	Read-only	The truth value used to indicate whether the given port (associated with the remote system) supports auto-negotiation.

Object and OID	Access	Description
lldpXdot3RemPortAutoNegEnabled 1.0.8802.1.1.2.1.5.462 3.1.3.1.1.2	Read-only	The truth value used to indicate whether port auto-negotiation is enabled on the given port associated with the remote system.
lldpXdot3RemPortAutoNegAdvertisedCap 1.0.8802.1.1.2.1.5.462 3.1.3.1.1.3	Read-only	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 1.0.8802.1.1.2.1.5.462 3.1.3.1.1.4	Read-only	An integer value that indicates the operational MAU type of the sending device.
lldpXdot3RemPowerTable 1.0.8802.1.1.2.1.5.462 3.1.3.2	Not accessible	This table contains power Ethernet information of the remote system. NOTE: This table is not supported.
lldpXdot3RemLinkAggTable 1.0.8802.1.1.2.1.5.462 3.1.3.3	Not accessible	This table contains port link aggregation information (as a part of the LLDP 802.3 organizational extension) of the remote system.
lldpXdot3RemLinkAggEntry 1.0.8802.1.1.2.1.5.462 3.1.3.3.1	Not accessible	The link aggregation information about the port component of the remote system.
lldpXdot3RemLinkAggStatus 1.0.8802.1.1.2.1.5.462 3.1.3.3.1.1	Read-only	The bitmap value contains the link aggregation capabilities and the current aggregation status of the link.
lldpXdot3RemLinkAggPortId 1.0.8802.1.1.2.1.5.462 3.1.3.3.1.2	Read-only	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 must be zero.
lldpXdot3RemMaxFrameSizeTable 1.0.8802.1.1.2.1.5.462 3.1.3.4	Not accessible	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 1.0.8802.1.1.2.1.5.462 3.1.3.4.1	Not accessible	The maximum frame size information about a particular port component.
lldpXdot3RemMaxFrameSize 1.0.8802.1.1.2.1.5.462 3.1.3.4.1.1	Read-only	An integer value indicating the maximum supported frame size in octets on the port component associated with the remote system.

8 LLDP-EXT-DOT3-MIB

IEEE 802.3 LAG MIB Objects

In this chapter

- [IEEE 802.3 LAG MIB overview](#) 127
- [Aggregator group](#) 129
- [Aggregator port group](#) 130

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 56](#) through [Figure 60](#) 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 56 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 57 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 58 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
    - 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 59 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 60 dot3adAggPortStatsTable hierarchy

Aggregator group

object and OID	Access	Description
dot3adAggTable 1.2.840.10006.300.43.1.1 .1	Not accessible	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	Not accessible	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	Not accessible	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	Read-only	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	Read-write	A 2-octet read-write value indicating the priority value associated with the system ID of the actor.
dot3adAggActorSystemID 1.2.840.10006.300.43.1.1 .1.1.4	Read-only	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	Read-only	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	Read-write	The current administrative value of the key for the aggregator.
dot3adAggActorOperKey 1.2.840.10006.300.43.1.1 .1.1.7	Read-only	The current operational value of the key for the aggregator.

9 Aggregator port group

object and OID	Access	Description
dot3adAggPartnerSystemID 1.2.840.10006.300.43.1.1 .1.1.8	Read-only	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 is a value assigned by the local system.
dot3adAggPartnerSystemPriority 1.2.840.10006.300.43.1.1 .1.1.9	Read-only	A 2-octet read-only value that indicates the priority value associated with the system ID of the partner. If the aggregation is manually configured, this system priority value is a value assigned by the local system.
dot3adAggPartnerOperKey 1.2.840.10006.300.43.1.1 .1.1.10	Read-only	The current operational value of the key for the current protocol partner of the aggregator. This is a 16-bit value. If the aggregation is manually configured, this key value is a value assigned by the local system.
dot3adAggCollectorMaxDelay 1.2.840.10006.300.43.1.1 .1.1.11	Read-write	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	Not accessible	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	Not accessible	A list of the ports associated with a given aggregator.
dot3adAggPortListPorts 1.2.840.10006.300.43.1.1 .2.1.1	Read-only	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.

Aggregator port group

object and OID	Access	Description
dot3adAggPortTable 1.2.840.10006.300.43.1. 2.1	Not accessible	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	Not accessible	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	Read-only	The ifIndex of the port.
dot3adAggPortActorSystemPriority 1.2.840.10006.300.43.1. 2.1.1.2	Read-write	A 2-octet read-write value used to define the priority value associated with the system ID of the actor.

object and OID	Access	Description
dot3adAggPortActorSystemID 1.2.840.10006.300.43.1.2.1.1.3	Read-only	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	Read-write	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	Read-only	The current operational value of the key for the aggregation port. This is a 16-bit value. The meaning of particular key values is of local significance.
dot3adAggPortPartnerAdminSystemPriority 1.2.840.10006.300.43.1.2.1.1.6	Read-write	A 2-octet read-write value used to define the administrative value of priority associated with the system ID of the partner. 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	Read-only	A 2-octet read-only value indicating the operational value of priority associated with the system ID of the partner. The value of this attribute may contain the manually configured value carried in aAggPortPartnerAdminSystemPriority if there is no protocol partner.
dot3adAggPortPartnerAdminKey 1.2.840.10006.300.43.1.2.1.1.10	Read-write	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	Read-only	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 value.
dot3adAggPortSelectedAggID 1.2.840.10006.300.43.1.2.1.1.12	Read-only	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.
dot3adAggPortAttachedAggID 1.2.840.10006.300.43.1.2.1.1.13	Read-only	The identifier value of the aggregator to which this aggregation port is currently attached. Zero indicates that the aggregation port is not currently attached to an aggregator.
dot3adAggPortActorPort 1.2.840.10006.300.43.1.2.1.1.14	Read-only	The port number locally assigned to the aggregation port. The port number is communicated in Ling Aggregation Control Protocol Data Units (LACPDU) as the actor port.
dot3adAggPortActorPortPriority 1.2.840.10006.300.43.1.2.1.1.15	Read-write	The priority value assigned to this aggregation port. This is a 16-bit value.

9 Aggregator port group

object and OID	Access	Description
dot3adAggPortPartnerAdminPort 1.2.840.10006.300.43.1.2.1.1.16	Read-write	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	Read-only	The operational port number assigned to this aggregation port by the protocol partner. The value of this attribute may contain the manually configured value carried in aAggPortPartnerAdminPort if there is no protocol partner. This is a 16-bit value.
dot3adAggPortPartnerAdminPortPriority 1.2.840.10006.300.43.1.2.1.1.18	Read-write	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	Read-only	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 is a 16-bit value.
dot3adAggPortActorAdminState 1.2.840.10006.300.43.1.2.1.1.20	Read-write	A string of 8 bits, corresponding to the administrative values of actor state as transmitted by the actor in LACPDUs.
dot3adAggPortActorOperState 1.2.840.10006.300.43.1.2.1.1.21	Read-only	A string of 8 bits, corresponding to the current operational values of actor state as transmitted by the actor in LACPDUs.
dot3adAggPortPartnerAdminState 1.2.840.10006.300.43.1.2.1.1.22	Read-write	A string of 8 bits, corresponding to the current administrative value of actor state for the protocol partner.
dot3adAggPortPartnerOperState 1.2.840.10006.300.43.1.2.1.1.23	Read-only	A string of 8 bits, corresponding to the current value of actor state in the most recently received LACPDU transmitted by the protocol partner.
dot3adAggPortAggregateOrIndividual 1.2.840.10006.300.43.1.2.1.1.24	Read-only	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	Not accessible	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	Not accessible	A list of LACP statistics for each port on this device.
dot3adAggPortStatsLACPDUUsRx 1.2.840.10006.300.43.1.2.2.1.1	Read-only	The number of valid LACPDUs received on this aggregation port.

object and OID	Access	Description
dot3adAggPortStatsMarkerPDUsRx 1.2.840.10006.300.43.1.2.2.1.2	Read-only	The number of valid marker PDUs received on this aggregation port.
dot3adAggPortStatsMarkerResponsePDUsRx 1.2.840.10006.300.43.1.2.2.1.3	Read-only	The number of valid marker response PDUs received on this aggregation port.
dot3adAggPortStatsUnknownRx 1.2.840.10006.300.43.1.2.2.1.4	Read-only	The number of frames received that either carry the Slow Protocols Ethernet Type value, but contain an unknown PDU, or addressed to the slow protocols group MAC address, but do not carry the Slow Protocols Ethernet Type.
dot3adAggPortStatsIllegalRx 1.2.840.10006.300.43.1.2.2.1.5	Read-only	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).
dot3adAggPortStatsLACPDUstx 1.2.840.10006.300.43.1.2.2.1.6	Read-only	The number of LACPDUs transmitted on this aggregation port.
dot3adAggPortStatsMarkerPDUsTx 1.2.840.10006.300.43.1.2.2.1.7	Read-only	The number of marker PDUs transmitted on this aggregation port.
dot3adAggPortStatsMarkerResponsePDUsTx 1.2.840.10006.300.43.1.2.2.1.8	Read-only	The number of marker response PDUs transmitted on this aggregation port.
dot3adAggPortDebugPartnerChangeCount 1.2.840.10006.300.43.1.2.3.1.12	Read-only	The count of the number of times the partner's perception of the LAG ID for this aggregation port has changed.
dot3adTablesLastChanged 1.2.840.10006.300.43.1.3	Read-only	This object indicates the time of the most recent change to the dot3adAggTable, dot3adAggPortListTable, or dot3adAggPortTable.

9 Aggregator port group

Bridge-MIB Objects

In this chapter

- Bridge-MIB overview 135
- Bridge-MIB 139
- P-Bridge MIB 145
- Q-Bridge MIB 148
- RSTP MIB 155

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 61 through Figure 65 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 61 Bridge-MIB overall hierarchy

```

- dot1dBridge 1.3.6.1.2.1.17
  - dot1dNotifications 1.3.6.1.2.1.17.0
  - dot1d base 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
  - dot1d STP 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 62 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 63 P-Bridge MIB hierarchy

10 Bridge-MIB overview

```
- 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
```

```

- dot1qVlan
  - dot1qVlanCurrentTable 1.3.6.1.2.1.17.7.1.4.2
    - dot1qVlanCurrentEntry 1.3.6.1.2.1.17.7.1.4.2.1
      - dot1qVlanTimeMark 1.3.6.1.2.1.17.7.1.4.2.1.1
      - dot1qVlanIndex 1.3.6.1.2.1.17.7.1.4.2.1.2
      - dot1qVlanFdbId 1.3.6.1.2.1.17.7.1.4.2.1.3
      - dot1qVlanCurrentEgressPorts 1.3.6.1.2.1.17.7.1.4.2.1.4
      - dot1qVlanCurrentUntaggedPorts 1.3.6.1.2.1.17.7.1.4.2.1.5
      - dot1qVlanStatus 1.3.6.1.2.1.17.7.1.4.2.1.6
      - dot1qVlanCreationTime 1.3.6.1.2.1.17.7.1.4.2.1.7
    - dot1qVlanStaticTable 1.3.6.1.2.1.17.7.1.4.3
      - dot1qVlanStaticEntry 1.3.6.1.2.1.17.7.1.4.3.1
        - dot1qVlanStaticName 1.3.6.1.2.1.17.7.1.4.3.1.1
        - dot1qVlanStaticEgressPorts 1.3.6.1.2.1.17.7.1.4.3.1.2
        - dot1qVlanForbiddenEgressPorts 1.3.6.1.2.1.17.7.1.4.3.1.3
        - dot1qVlanStaticUntaggedPorts 1.3.6.1.2.1.17.7.1.4.3.1.4
        - dot1qVlanStaticRowStatus 1.3.6.1.2.1.17.7.1.4.3.1.5
      - dot1qPortVlanStatisticsTable 1.3.6.1.2.1.17.7.1.4.6
        - dot1qPortVlanStatisticsEntry 1.3.6.1.2.1.17.7.1.4.6.1
          - dot1qTpVlanPortInFrames 1.3.6.1.2.1.17.7.1.4.6.1.1
          - dot1qTpVlanPortOutFrames 1.3.6.1.2.1.17.7.1.4.6.1.2
          - dot1qTpVlanPortInDiscards 1.3.6.1.2.1.17.7.1.4.6.1.3
          - dot1qTpVlanPortInOverflowFrames 1.3.6.1.2.1.17.7.1.4.6.1.4
          - dot1qTpVlanPortOutOverflowFrames 1.3.6.1.2.1.17.7.1.4.6.1.5
          - dot1qTpVlanPortInOverflowDiscards 1.3.6.1.2.1.17.7.1.4.6.1.6

```

FIGURE 64 Q-Bridge MIB hierarchy

```

- rstp
  - dot1dStpVersion 1.3.6.1.2.1.17.2.16
  - dot1dStpTxHoldCount 1.3.6.1.2.1.17.2.17
  - dot1dStpExtPortTable 1.3.6.1.2.1.17.2.19
    - dot1dStpExtPortEntry 1.3.6.1.2.1.17.2.19.1
      - dot1dStpPortProtocolMigration 1.3.6.1.2.1.17.2.19.1.1
        - dot1dStpPortAdminEdgePort 1.3.6.1.2.1.17.2.19.1.2
        - dot1dStpPortOperEdgePort 1.3.6.1.2.1.17.2.19.1.3
        - dot1dStpPortAdminPointToPoint 1.3.6.1.2.1.17.2.19.1.4
        - dot1dStpPortOperPointToPoint 1.3.6.1.2.1.17.2.19.1.5
        - dot1dStpPortAdminPathCost 1.3.6.1.2.1.17.2.19.1.6

```

FIGURE 65 RSTP hierarchy

Bridge-MIB

The Bridge-MIB is the MIB module for managing devices that support IEEE 802.1D.

NOTE

The Bridge-MIB objects are not supported in Virtual Cluster Switching (VCS) mode.

Bridge-MIB traps

Trap name and OID	Description
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.

dot1d base group

This contains the objects that are applicable to all types of bridges (support only for default VLAN).

Object and OID	Access	Description
dot1dBase 1.3.6.1.2.1.17.1	Not accessible	The OID sub-tree in the Bridge-MIB for base group.
dot1dBaseBridgeAddress 1.3.6.1.2.1.17.1.1	Read-only	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	Read-only	The number of ports controlled by this bridging entity.
dot1dBaseType 1.3.6.1.2.1.17.1.3	Read-only	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. Valid values: <ul style="list-style-type: none"> • unknown (1) • transparent-only (2) • sourceroute-only (3) • srt (4)
dot1dBasePortTable 1.3.6.1.2.1.17.1.4	Not accessible	A table that contains generic information about every port that is associated with this bridge. Transparent, source route, and srt ports are included.
dot1dBasePortEntry 1.3.6.1.2.1.17.1.4.1	Not accessible	A list of information for each port of the bridge.
dot1dBasePort 1.3.6.1.2.1.17.1.4.1.1	Read-only	The port number of the port for which this entry contains bridge management information.
dot1dBasePortIfIndex 1.3.6.1.2.1.17.1.4.1.2	Read-only	The value of the instance of the ifIndex object, defined in IF-MIB, for the interface corresponding to this port.
dot1dBasePortCircuit 1.3.6.1.2.1.17.1.4.1.3	Read-only	This object contains the name of an object unique to this port. For example, when multiple ports correspond one-to-one with multiple X.25 virtual circuits, this value might identify an object instance (for example, the first) associated with the X.25 virtual circuit corresponding to this port. For a port which has a unique value of dot1dBasePortIfIndex, this object can have the value {0 0}.

Object and OID	Access	Description
dot1dBasePortDelayExceededDiscards 1.3.6.1.2.1.17.1.4.1.4	Read-only	The number of frames discarded by this port due to excessive transit delay through the bridge. It is incremented by both transparent and source route bridges.
dot1dBasePortMtuExceededDiscards 1.3.6.1.2.1.17.1.4.1.5	Read-only	The number of frames discarded by this port due to an excessive size. It is incremented by both transparent and source route bridges.

dot1d STP group

Implementation of the dot1dStp sub-tree is optional. It is implemented by those bridges that support the Spanning Tree Protocol.

Object and OID	Access	Description
dot1dStp 1.3.6.1.2.1.17.2	Not accessible	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	Read-only	An indication of what version of the Spanning Tree Protocol is being run. Values: <ul style="list-style-type: none"> • unknown (1) • decLb100 (2) • ieee8021d (3)
dot1dStpPriority 1.3.6.1.2.1.17.2.2	Read-write	The value of the writable 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 through 61440, in steps of 4096.
dot1dStpTimeSinceTopologyChange 1.3.6.1.2.1.17.2.3	Read-only	The time (in hundredths of a second) when the last time a topology change was detected by the bridge entity. For RSTP, this reports the time when the tcWhile timer for any port on this bridge was non-zero.
dot1dStpTopChanges 1.3.6.1.2.1.17.2.4	Read-only	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	Read-only	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	Read-only	The cost of the path to the root as seen from this bridge.
dot1dStpRootPort 1.3.6.1.2.1.17.2.7	Read-only	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	Read-only	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	Read-only	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.

Object and OID	Access	Description
dot1dStpHoldTime 1.3.6.1.2.1.17.2.10	Read-only	This time value determines the interval length during which no more than two configuration bridge protocol data units (PDUs) are transmitted by this node, in units of hundredths of a second.
dot1dStpForwardDelay 1.3.6.1.2.1.17.2.11	Read-only	This time value, measured in units of hundredths of a second, controls how fast a port changes its spanning state when moving toward 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	Read-write	The value that all bridges use for MaxAge when the 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 one 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	Read-write	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 one 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	Read-write	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 dot1dStpBridgeMaxAge. The granularity of this timer is specified by 802.1D-1998 to be one 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	Not accessible	A table that contains port-specific information for the Spanning Tree Protocol.
dot1dStpPortEntry 1.3.6.1.2.1.17.2.15.1	Not accessible	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	Read-only	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	Read-write	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 through 240, in steps of 16.
dot1dStpPortState 1.3.6.1.2.1.17.2.15.1.3	Read-only	The current state of the port, as defined by application of the Spanning Tree Protocol. This state controls what action a port takes on reception of a frame. Values: <ul style="list-style-type: none"> • disabled (1) • blocking (2) • listening (3) • learning (4) • forwarding (5) • broken (6)
dot1dStpPortEnable 1.3.6.1.2.1.17.2.15.1.4	Read-write	The enabled or disabled status of the port. Values: <ul style="list-style-type: none"> • enabled (1) • disabled (2)

Object and OID	Access	Description
dot1dStpPortPathCost 1.3.6.1.2.1.17.2.15.1.5	Read-write	The contribution of this port to the path cost of paths toward 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.
dot1dStpPortDesignated Root 1.3.6.1.2.1.17.2.15.1.6	Read-only	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.
dot1dStpPortDesignated Cost 1.3.6.1.2.1.17.2.15.1.7	Read-only	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.
dot1dStpPortDesignated Bridge 1.3.6.1.2.1.17.2.15.1.8	Read-only	The bridge identifier of the bridge that this port considers to be the designated bridge for the segment of this port.
dot1dStpPortDesignated Port 1.3.6.1.2.1.17.2.15.1.9	Read-only	The port identifier of the port on the designated bridge for the segment of this port.
dot1dStpPortForwardTransitions 1.3.6.1.2.1.17.2.15.1.10	Read-only	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	Read-write	The contribution of this port to the path cost of paths toward 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

Implementation of the dot1dTp sub-tree is optional. It is implemented by those bridges that support the transparent bridging mode. A transparent or SRT bridge implements this sub-tree.

Object and OID	Access	Description
dot1dTpFdbTable 1.3.6.1.2.1.17.4.3	Not accessible	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	Not accessible	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	Read-only	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	Read-only	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.

Object and OID	Access	Description
dot1dTpFdbStatus 1.3.6.1.2.1.17.4.3.1.3	Read-only	<p>The status of this entry.</p> <ul style="list-style-type: none"> other (1) - This would include the case where some other MIB object (not the corresponding instance of dot1dTpFdbPort, nor an entry in the dot1dStaticTable) is being used to determine if and how frames addressed to the value of the corresponding instance of dot1dTpFdbAddress are being forwarded. invalid (2) - This entry is no longer valid (for example, it was learned but has since aged out), but has not yet been flushed from the table. learned (3) - The value of the corresponding instance of dot1dTpFdbPort was learned, and is being used. self (4) - The value of the corresponding instance of dot1dTpFdbAddress represents one of the addresses of the bridge. The corresponding instance of dot1dTpFdbPort indicates which of the bridge ports has this address. mgmt (5) - The value of the corresponding instance of dot1dTpFdbAddress is also the value of an existing instance of dot1dStaticAddress.
dot1dTpPortTable 1.3.6.1.2.1.17.4.4	Not accessible	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	Not accessible	A list of information for each port of a transparent bridge.
dot1dTpPort 1.3.6.1.2.1.17.4.4.1.1	Read-only	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	Read-only	The maximum size of the INFO (non-MAC) field that this port receives or transmits.
dot1dTpPortInFrames 1.3.6.1.2.1.17.4.4.1.3	Read-only	<p>The number of frames that have been received by this port from its segment.</p> <p>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.</p>
dot1dTpPortOutFrames 1.3.6.1.2.1.17.4.4.1.4	Read-only	<p>The number of frames that have been transmitted by this port to its segment.</p> <p>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.</p>
dot1dTpPortInDiscards 1.3.6.1.2.1.17.4.4.1.5	Read-only	The count of received valid frames that were discarded (that is, filtered) by the forwarding process.

dot1d static group

Object and OID	Access	Description
dot1dStaticTable 1.3.6.1.2.1.17.5.1	Not accessible	A table containing filtering information configured into the bridge by (local or network) management specifying the set of ports to which frames received from specific ports and containing specific destination addresses are allowed to be forwarded.
dot1dStaticEntry 1.3.6.1.2.1.17.5.1.1	Not accessible	The filtering information configured into the bridge by (local or network) management specifying the set of ports to which the frames received from a specific port and containing a specific destination address are allowed to be forwarded.
dot1dStaticAddress 1.3.6.1.2.1.17.5.1.1.1	Read-create	The destination MAC address in a frame to which filtering information of this entry applies. This object can take the value of a unicast address, a group address, or the broadcast address.
dot1dStaticReceivePort 1.3.6.1.2.1.17.5.1.1.2	Read-create	The port number from which a frame must be received in order for the filtering information of this entry to apply. A value of zero indicates that this entry applies on all ports of the bridge for which there is no other applicable entry.
dot1dStaticAllowedToGo To 1.3.6.1.2.1.17.5.1.1.3	Read-create	The set of ports to which frames received from a specific port and destined for a specific MAC address are allowed to be forwarded.
dot1dStaticStatus 1.3.6.1.2.1.17.5.1.1.4	Read-create	This object indicates the status of this entry. Values: <ul style="list-style-type: none"> • other (1) - This entry is currently in use, but the conditions under which it remains so differ from the following values. • invalid (2) - Writing this value to the object removes the corresponding entry. • permanent (3) - This entry is currently in use and remains so after the next reset of the bridge. • deleteOnReset (4) - This entry is currently in use and remains so until the next reset of the bridge. • deleteOnTimeout (5) - This entry is currently in use and remains so until it is aged out.

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.

NOTE

The P-Bridge MIB objects are not supported in VCS mode.

The following tables are not supported:

- dot1dTpHCPortTable
- dot1dUserPriorityRegenTable
- dot1dTrafficClassTable
- dot1dPortOutboundAccessPriorityTable
- dot1dPortGarpTable

- dot1dPortGmrpTable

Object and OID	Access	Description
dot1dBase 1.3.6.1.2.1.17.1	Not accessible	The OID sub-tree in the Bridge MIB for base group.
dot1dBaseBridgeAddress 1.3.6.1.2.1.17.1.1	Read-only	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	Read-only	The number of ports controlled by this bridging entity.
dot1dBaseType 1.3.6.1.2.1.17.1.3	Read-only	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. Valid values: <ul style="list-style-type: none"> • unknown (1) • transparent-only (2) • sourceroute-only (3) • srt (4)
dot1dTpPortOverflowTable 1.3.6.1.2.1.17.4.6	Not accessible	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	Not accessible	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	Read-only	The number of times the associated dot1dTpPortInFrames counter has overflowed.
dot1dTpPortOutOverflowFrames 1.3.6.1.2.1.17.4.6.1.2	Read-only	The number of times the associated dot1dTpPortOutFrames counter has overflowed.
dot1dTpPortInOverflowDiscards 1.3.6.1.2.1.17.4.6.1.3	Read-only	The number of times the associated dot1dTpPortInDiscards counter has overflowed.

dot1dExtBase group

Object and OID	Access	Description
dot1dDeviceCapabilities 1.3.6.1.2.1.17.6.1.1.1	Read-only	<p>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.</p> <ul style="list-style-type: none"> dot1dExtendedFilteringServices (0) - Can perform filtering of individual multicast addresses controlled by GMRP. dot1dTrafficClasses (1) - Can map user priority to multiple traffic classes. dot1qStaticEntryIndividualPort (2) - dot1qStaticUnicastReceivePort and dot1qStaticMulticastReceivePort can represent non-zero entries. dot1qIVLCapable (3) - Independent VLAN Learning (IVL). dot1qSVLCapable (4) - Shared VLAN Learning (SVL). dot1qHybridCapable (5) - Both IVL and SVL simultaneously. dot1qConfigurablePvidTagging (6) - Whether the implementation supports the ability to override the default PVID setting and its egress status (VLAN-tagged or untagged) on each port. dot1dLocalVlanCapable (7) - Can support multiple local bridges, outside of the scope of 802.1Q defined VLANs.
dot1dTrafficClassesEnabled 1.3.6.1.2.1.17.6.1.1.2	Read-write	<p>The value true (1) indicates that traffic classes are enabled on this bridge. The value false (2) indicates that the bridge operates with a single priority level for all traffic. The value of this object must be retained across re-initialization of the management system.</p>
dot1dGmrpStatus 1.3.6.1.2.1.17.6.1.1.3	Read-write	<p>The administrative status requested by management for GMRP. The value enabled (1) indicates that GMRP must be enabled on the device, in all VLANs, and on all ports for which it has not been specifically disabled.</p> <p>The value disabled (2) indicates that GMRP is disabled in all VLANs, on all ports, and all GMRP packets are forwarded transparently.</p>
dot1dPortCapabilitiesTable 1.3.6.1.2.1.17.6.1.1.4	Not accessible	<p>A table that contains capabilities information about every port that is associated with this bridge.</p>
dot1dPortCapabilitiesEntry 1.3.6.1.2.1.17.6.1.1.4.1	Not accessible	<p>A set of capabilities information about this port indexed by dot1dBasePort.</p>
dot1dPortCapabilities 1.3.6.1.2.1.17.6.1.1.4.1.1	Read-only	<p>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.</p> <ul style="list-style-type: none"> dot1qDot1qTagging (0) - Supports 802.1Q VLAN tagging of frames and Generic VLAN Registration Protocol (GVRP). dot1qConfigurableAcceptableFrameTypes (1) - Allows modified values of dot1qPortAcceptableFrameTypes. dot1qIngressFiltering (2) - Supports the discarding of any frame received on a port whose VLAN classification does not include that port in its member set.

dot1dPriority group

Object and OID	Access	Description
dot1dPortPriorityTable 1.3.6.1.2.1.17.6.1.2.1	Not accessible	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	Not accessible	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	Read-write	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	Read-write	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.

NOTE

The Q-Bridge MIB objects are not supported in VCS mode.

The following tables are not supported:

- dot1qPortVlanTable
- dot1qPortVlanHCStatisticsTable
- dot1qLearningConstraintsTable
- dot1vProtocolGroupTable
- dot1vProtocolPortTable

dot1qBase group

Object and OID	Access	Description
dot1qVlanVersionNumber 1.3.6.1.2.1.17.7.1.1.1	Read-only	The version number of IEEE 802.1Q that the device supports.
dot1qMaxVlanId 1.3.6.1.2.1.17.7.1.1.2	Read-only	The maximum IEEE 802.1Q VLAN-ID that the device supports.
dot1qMaxSupportedVlans 1.3.6.1.2.1.17.7.1.1.3	Read-only	The maximum number of IEEE 802.1Q VLANs that the device supports.

Object and OID	Access	Description
dot1qNumVlans 1.3.6.1.2.1.17.7.1.1.4	Read-only	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	Read-write	The administrative status requested by management for GVRP. The value enabled (1) indicates that GVRP must be enabled on the device, on all ports for which it has not been specifically disabled. The value disabled (2) indicates that GVRP is disabled on all ports, and all GVRP packets are forwarded transparently.

dot1qTp group

Object and OID	Access	Description
dot1qFdbTable 1.3.6.1.2.1.17.7.1.2.1	Not accessible	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	Not accessible	Information about a specific filtering database.
dot1qFdbId 1.3.6.1.2.1.17.7.1.2.1.1.1	Not accessible	The identity of this filtering database.
dot1qFdbDynamicCount 1.3.6.1.2.1.17.7.1.2.1.2	Read-only	The current number of dynamic entries in this filtering database.
dot1qTpFdbTable 1.3.6.1.2.1.17.7.1.2.2	Not accessible	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	Not accessible	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	Not accessible	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	Read-only	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).

Object and OID	Access	Description
dot1qTpFdbStatus 1.3.6.1.2.1.17.7.1.2.2.1.3	Read-only	The status of this entry. Values: <ul style="list-style-type: none"> other (1) - This would include the case where some other MIB object (not the corresponding instance of dot1dTpFdbPort, nor an entry in the dot1dStaticTable) is being used to determine if and how frames addressed to the value of the corresponding instance of dot1dTpFdbAddress are being forwarded. invalid (2) - This entry is no longer valid (for example, it was learned but has since aged out), but has not yet been flushed from the table. learned (3) - The value of the corresponding instance of dot1dTpFdbPort was learned, and is being used. self (4) - The value of the corresponding instance of dot1dTpFdbAddress represents one of the bridge addresses. The corresponding instance of dot1dTpFdbPort indicates which of the bridge ports has this address. mgmt (5) - The value of the corresponding instance of dot1dTpFdbAddress is also the value of an existing instance of dot1dStaticAddress.
dot1qTpGroupTable 1.3.6.1.2.1.17.7.1.2.3	Not accessible	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	Not accessible	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	Not accessible	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	Read-only	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	Read-only	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	Not accessible	A table containing forwarding information for each VLAN, specifying the set of ports to which forwarding of all multicast 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	Not accessible	Forwarding information for a VLAN, specifying the set of ports to which all multicasts must be forwarded, configured statically by management or dynamically by GMRP.
dot1qForwardAllPorts 1.3.6.1.2.1.17.7.1.2.4.1.1	Read-only	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	Read-write	The set of ports configured by management in this VLAN to which all multicast group-addressed frames are to be forwarded.

Object and OID	Access	Description
dot1qForwardAllForbiddenPorts 1.3.6.1.2.1.17.7.1.2.4.1.3	Read-write	The set of ports configured by the management in this VLAN for which the service requirement attribute <i>Forward All Multicast Groups</i> may not be dynamically registered by GMRP.
dot1qForwardUnregisteredTable 1.3.6.1.2.1.17.7.1.2.5	Not accessible	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	Not accessible	Forwarding information for a VLAN, specifying the set of ports to which all multicasts for which there is no more specific forwarding information are forwarded.
dot1qForwardUnregisteredPorts 1.3.6.1.2.1.17.7.1.2.5.1.1	Read-only	The complete set of ports in this VLAN to which multicast group-addressed frames for which there is no more specific forwarding information are forwarded.
dot1qForwardUnregisteredStaticPorts 1.3.6.1.2.1.17.7.1.2.5.1.2	Read-write	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	Read-write	The set of ports configured by management in this VLAN for which the service requirement attribute <i>Forward Unregistered Multicast Groups</i> may not be dynamically registered by GMRP.

dot1qStatic group

Object and OID	Access	Description
dot1qStaticUnicastTable 1.3.6.1.2.1.17.7.1.3.1	Not accessible	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	Not accessible	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	Not accessible	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	Not accessible	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	Read-write	The set of ports for which a frame with a specific unicast address is 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.

Object and OID	Access	Description
dot1qStaticUnicastStatus 1.3.6.1.2.1.17.7.1.3.1.1.4	Read-write	This object indicates the status of this entry. Values: <ul style="list-style-type: none"> • other (1) - This entry is currently in use, but the conditions under which it remains so differ from the following values. • invalid (2) - Writing this value to the object removes the corresponding entry. • permanent (3) - This entry is currently in use and remains so after the next reset of the bridge. • deleteOnReset (4) - This entry is currently in use and remains so until the next reset of the bridge. • deleteOnTimeout (5) - This entry is currently in use and remains so until it is aged out.
dot1qStaticMulticastTable 1.3.6.1.2.1.17.7.1.3.2	Not accessible	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	Not accessible	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	Not accessible	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	Not accessible	This object represents either the value zero 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	Read-write	The set of ports to which frames received from a specific port and destined for a specific multicast or broadcast MAC address must be forwarded, regardless of any dynamic information; for example, from GMRP.

Object and OID	Access	Description
dot1qStaticMulticastForbiddenEgressPorts 1.3.6.1.2.1.17.7.1.3.2.1.4	Read-write	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	Read-write	This object indicates the status of this entry. Values: <ul style="list-style-type: none"> • other (1) - This entry is currently in use, but the conditions under which it remains so differ from the following values. • invalid (2) - Writing this value to the object removes the corresponding entry. • permanent (3) - This entry is currently in use and remains so after the next reset of the bridge. • deleteOnReset (4) - This entry is currently in use and remains so until the next reset of the bridge. • deleteOnTimeout (5) - This entry is currently in use and remains so until it is aged out.

dot1qVlan group

Object and OID	Access	Description
dot1qVlanCurrentTable 1.3.6.1.2.1.17.7.1.4.2	Not accessible	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	Not accessible	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	Not accessible	A time filter for this entry.
dot1qVlanIndex 1.3.6.1.2.1.17.7.1.4.2.1.2	Not accessible	The VLAN ID or other identifier referring to this VLAN.
dot1qVlanFdbId 1.3.6.1.2.1.17.7.1.4.2.1.3	Read-only	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	Read-only	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	Read-only	The set of ports that are transmitting traffic for this VLAN as untagged frames.

Object and OID	Access	Description
dot1qVlanStatus 1.3.6.1.2.1.17.7.1.4.2.1.6	Read-only	This object indicates the status of this entry. Values: <ul style="list-style-type: none"> other (1) - This entry is currently in use, but the conditions under which it remains so differ from the following values. permanent (2) - This entry, corresponding to an entry in dot1qVlanStaticTable, is currently in use and remains so after the next reset of the device. The port lists for this entry include ports from the equivalent dot1qVlanStaticTable entry and ports learned dynamically. dynamicGvrp (3) - This entry is currently in use and remains so until removed by GVRP. There is no static entry for this VLAN, and it is removed when the last port leaves the VLAN.
dot1qVlanCreationTime 1.3.6.1.2.1.17.7.1.4.2.1.7	Read-only	The value of sysUpTime when this VLAN was created.
dot1qVlanStaticTable 1.3.6.1.2.1.17.7.1.4.3	Not accessible	A table containing static configuration information for each VLAN configured into the device by (local or network) management. All entries are permanent and restored after the device is reset.
dot1qVlanStaticEntry 1.3.6.1.2.1.17.7.1.4.3.1	Not accessible	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	Read-create	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	Read-create	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	Read-create	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	Read-create	The set of ports that must transmit egress packets for this VLAN as untagged.
dot1qVlanStaticRowStatus 1.3.6.1.2.1.17.7.1.4.3.1.5	Read-create	This object indicates the status of this entry.
dot1qPortVlanStatisticsTable 1.3.6.1.2.1.17.7.1.4.6	Not accessible	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	Not accessible	The traffic statistics for a VLAN on an interface.
dot1qTpVlanPortInFrames 1.3.6.1.2.1.17.7.1.4.6.1.1	Read-only	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).

Object and OID	Access	Description
dot1qTpVlanPortOutFrames 1.3.6.1.2.1.17.7.1.4.6.1.2	Read-only	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	Read-only	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	Read-only	The number of times the associated dot1qTpVlanPortInFrames counter has overflowed.
dot1qTpVlanPortOutOverflowFrames 1.3.6.1.2.1.17.7.1.4.6.1.5	Read-only	The number of times the associated dot1qTpVlanPortOutFrames counter has overflowed.
dot1qTpVlanPortInOverflowDiscards 1.3.6.1.2.1.17.7.1.4.6.1.6	Read-only	The number of times the associated dot1qTpVlanPortInDiscards counter has overflowed.

RSTP MIB

The Bridge MIB Extension module for managing devices that support the Rapid Spanning Tree Protocol (RSTP) defined by IEEE 802.1w.

NOTE

The RSTP MIB objects are not supported in VCS mode.

Object and OID	Access	Description
dot1dStpVersion 1.3.6.1.2.1.17.2.16	Read-write	The version of Spanning Tree Protocol that the bridge is currently running. Values: <ul style="list-style-type: none"> 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	Read-write	The value used by the port transmit state machine to limit the maximum transmission rate. The value of this object must be retained across re-initialization of the management system.
dot1dStpExtPortTable 1.3.6.1.2.1.17.2.19	Not accessible	A table that contains port-specific Rapid Spanning Tree information.
dot1dStpExtPortEntry 1.3.6.1.2.1.17.2.19.1	Not accessible	A list of Rapid Spanning Tree information maintained by each port.
dot1dStpPortProtocolMigration 1.3.6.1.2.1.17.2.19.1.1	Read-write	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.

Object and OID	Access	Description
dot1dStpPortAdminEdgePort 1.3.6.1.2.1.17.2.19.1.2	Read-write	The administrative value of the edge port parameter. <ul style="list-style-type: none"> true (1) - Indicates that this port must be assumed as an edge port. false (2) - Indicates that this port must be assumed as a non-edge port.
dot1dStpPortOperEdgePort 1.3.6.1.2.1.17.2.19.1.3	Read-only	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 is changed as well. This object is also changed to false on reception of a BPDU.
dot1dStpPortAdminPointToPoint 1.3.6.1.2.1.17.2.19.1.4	Read-write	The administrative point-to-point status of the LAN segment attached to this port, using the enumeration values of the IEEE 802.1w clause. Valid values: <ul style="list-style-type: none"> forceTrue (0) - Indicates that this port must always be treated as if it is connected to a point-to-point link. forceFalse (1) - Indicates that this port must be treated as having a shared media connection. 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 adminPortToPointMAC. The value of this object must be retained across re-initializations of the management system.
dot1dStpPortOperPointToPoint 1.3.6.1.2.1.17.2.19.1.5	Read-only	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	Read-write	The administratively assigned value for the contribution of this port to the path cost of paths toward the spanning tree root.

sFlow MIB Objects

In this chapter

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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 66](#) and [Figure 67](#) depict the organization and structure of the sFlow MIB.

```

- iso
  - org
    - dod
      - internet
        - private
          - enterprises
            - enterprisesx4300
              - sFlowMIB
                - sFlowAgent
                  - sFlowTable

```

FIGURE 66 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 67 sFlowAgent hierarchy

sFlow MIB

The MIB module for managing the generation and transportation of sFlow data records.

Object and OID	Access	Description
sFlowVersion 1.3.6.1.4.1.4300.1.1.1	Read-only	Uniquely identifies the version and implementation of this MIB.
sFlowAgentAddressType 1.3.6.1.4.1.4300.1.1.2	Read-only	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	Read-only	The IP address associated with this agent.
sFlowTable 1.3.6.1.4.1.4300.1.1.4	Not accessible	A table of the sFlow samplers within a device.
sFlowEntry 1.3.6.1.4.1.4300.1.1.4.1	Not accessible	The attributes of an sFlow sampler.
sFlowDataSource 1.3.6.1.4.1.4300.1.1.4.1.1	Read-only	Identifies the source of the data for the sFlow sampler.
sFlowOwner 1.3.6.1.4.1.4300.1.1.4.1.2	Read-write	The entity making use of this sFlow sampler.
sFlowTimeout 1.3.6.1.4.1.4300.1.1.4.1.3	Read-write	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	Read-write	The statistical sampling rate for packet sampling from this source.
sFlowCounterSamplingInterval 1.3.6.1.4.1.4300.1.1.4.1.5	Read-write	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	Read-write	The maximum number of bytes that must 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 must adjust the value to the closest permissible value.
sFlowMaximumDatagramSize 1.3.6.1.4.1.4300.1.1.4.1.7	Read-write	The maximum number of data bytes that can be sent in a single sample datagram. The manager must set this value to avoid fragmentation of the sFlow datagrams.
sFlowCollectorAddressType 1.3.6.1.4.1.4300.1.1.4.1.8	Read-write	The type of sFlow collector address.
sFlowCollectorAddress 1.3.6.1.4.1.4300.1.1.4.1.9	Read-write	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	Read-write	The destination port for sFlow datagrams.
sFlowDatagramVersion 1.3.6.1.4.1.4300.1.1.4.1.11	Read-write	The version of the sFlow datagrams that must be sent. When set to a value not supported by the agent, the agent must adjust the value to the highest supported value less than the requested value, or return an error if no such value exists.

Frequently Asked Questions for MIB

This section provides answers to the Frequently Asked Questions (FAQs) about MIB.

1. When should 64-bit counters be used?

RFC 2233 adopted expanded 64-bit counters for high capacity interfaces in which 32-bit counters do not provide enough capacity and wrap too fast.

2. Which version of SNMP is required to query 64-bit counters?

SNMPv2C or SNMPv3 is required to query 64-bit counters. SNMPv1 does not support 64-bit counters. Be aware that ifInOctets (1.3.6.1.2.1.2.2.1.10) is a 32-bit counter and the 64-bit version is ifHCInOctets (1.3.6.1.2.1.31.1.1.1.6).

A Frequently Asked Questions for MIB

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