

53-1002750-01  
14 December 2012



# Fabric OS

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## MIB Reference

Supporting Fabric OS v7.1.0

**BROCADE**

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## Document History

Document Title	Publication Number	Summary of Changes	Publication Date
<i>Brocade MIB Reference Manual v2.3</i>	53-0000069-02		December 2000
<i>Brocade MIB Reference Manual v3.0</i>	53-0000134-03		July 2001
<i>Brocade MIB Reference Manual v3.0, 4.0</i>	53-0000184-02		March 2002
<i>Brocade MIB Reference Manual</i> (v4.1, v4.0.x, v3.1, v3.0.x, v2.6.x)	53-0000521-02	Added Brocade-specific Entity and HA-MIBs.	April 2003
<i>Brocade MIB Reference Manual</i> (v4.1.2, v4.1, v4.0.x, v3.1, v3.0.x, v2.6.x)	53-0000521-03	Added FICON information.	May 2003
<i>Brocade MIB Reference Manual</i> (v4.1.2, v4.1, v4.0.x, v3.1, v3.0.x, v2.6.x)	53-0000521-04	Revised FICON information.	October 2003
<i>Brocade MIB Reference Manual</i> (v4.2.0, v4.1.2, v4.1, v4.0.x, v3.1, v3.0.x, v2.6.x)	53-0000521-06	Updated to support the Brocade 3250, 3850, and 24000 switches.	December 2003
<i>Brocade Fabric OS MIB Reference Manual</i>	53-0000521-08	Updated to support the Brocade 4100.	September 2004

<b>Document Title</b>	<b>Publication Number</b>	<b>Summary of Changes</b>	<b>Publication Date</b>
<i>Brocade Fabric OS MIB Reference Manual</i>	53-0000521-09	Updated to support the Brocade 48000 and 200E.	April 2005
<i>Brocade Fabric OS MIB Reference Manual</i>	53-1000045-01	Updated to support the Brocade 4900, 7500, and FR4-18i blade.	January 2006
<i>Brocade Fabric OS MIB Reference</i>	53-1000241-01	Changed name, updated to support Fabric OS v5.2.x.	September 2006
<i>Brocade Fabric OS MIB Reference</i>	53-1000439-01	New branding, updated to support Fabric OS v5.3.0.	June 2007
<i>Brocade Fabric OS MIB Reference</i>	53-1000602-01	Updated to support the Brocade DCX Data Center Backbone Director.	October 2007
<i>Brocade Fabric OS MIB Reference</i>	53-1000602-02	Updated to support the Brocade 300, 5100, and 5300 switches.	March 2008
<i>Brocade Fabric OS MIB Reference</i>	53-1001156-01	Updated to support the Brocade DCX-4S and Brocade Encryption Switch.	November 2008
<i>Fabric OS MIB Reference</i>	53-1001339-01	Updated to support the Brocade 7800 Extension Switch, Brocade 8000 Switch, FCOE10-24 DCX Blade, and FX8-24 DCX Extension Blade. Added USM MIB details, fcipTcpConnTable, and fcipConnStatsTable.	July 2009
<i>Fabric OS MIB Reference</i>	53-1001768-01	Updated to support the Brocade FC8-64 port blade and Brocade VA-40FC. Added BD MIB details, swConnUnitPortStatExtention Table, swMemUsageLimit1, swMemUsageLimit3, swFabricReconfigTrap, swFabricSegmentTrap, and swExtTrap.	March 2010

Document Title	Publication Number	Summary of Changes	Publication Date
<i>Fabric OS MIB Reference</i>	53-1002151-01	Updated to support Brocade 6510, Brocade DCX 8510-8 Backbone, and Brocade DCX 8510-4 Backbone. Added FibreAlliance extension MIB, SNMPv2 MIB, ipAddressTable, MIBs for swConnUnitPortStatExtention Table, and switch traps.	April 2011
<i>Fabric OS MIB Reference</i>	53-1002750-01	Updated to support Brocade 6505, Brocade 6520, and Brocade VA-40FC. Added swDeviceStatusTrap, swConnUnitPCSErrorCounter, and swConnUnitPortTable. Updated the MIB objects that are not supported or deprecated for this release. Customized traps are obsoleted.	December 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.
- [Chapter 3, “RMON MIB Objects,”](#) provides information for RMON MIB object types.
- [Chapter 4, “FE MIB Objects,”](#) provides information for FE MIB object types.
- [Chapter 5, “Entity MIB Objects,”](#) provides information for Entity MIB object types.
- [Chapter 6, “SW-MIB Objects,”](#) provides information for FC Switch MIB (SW-MIB) object types.
- [Chapter 7, “High-Availability MIB Objects,”](#) provides information for High-Availability MIB object types.
- [Chapter 8, “FICON MIB Objects,”](#) provides information for FICON MIB (LINK-INCIDENT-MIB) object types.
- [Chapter 9, “FibreAlliance MIB Objects,”](#) provides information for FibreAlliance MIB (FCMGMT-MIB) object types.
- [Chapter 10, “FibreAlliance Extension MIB Objects,”](#) provides information for FibreAlliance extension MIB object types.
- [Chapter 11, “FCIP MIB Objects,”](#) provides information on FCIP MIB object types.
- [Chapter 12, “iSCSI MIB Objects,”](#) provides information on iSCSI MIB object types.
- [Chapter 13, “SNMPv2 MIB Objects,”](#) provides information on SNMPv2 MIB object types.
- [Chapter 14, “USM MIB Objects,”](#) provides information on USM MIB object types.

## Supported hardware and software

- [Chapter 15, “IEEE 802.1x PAE MIB Objects,”](#) provides information on IEEE 802.1x PAE MIB object types.
- [Chapter 16, “LLDP MIB Objects,”](#) provides information on LLDP MIB object types.
- [Chapter 17, “IEEE 802.3 LAG MIB Objects,”](#) provides information on IEEE 802.3 LAG MIB object types.
- [Chapter 18, “Bridge-MIB Objects,”](#) provides information on Bridge-MIB object types.
- [Chapter 19, “BD MIB Objects,”](#) provides information on BD MIB object types.
- [Appendix A, “MIB Object Groupings,”](#) is a function-based listing of MIB objects.
- [Appendix B, “Mapping of CLI Counters to MIB Objects,”](#) maps the CLI counters to the corresponding MIB objects.

## Supported hardware and software

In those instances in which procedures or parts of procedures documented here apply to some switches but not to others, this guide identifies exactly which switches are supported and which are not.

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

This document supports Brocade Fabric OS version 7.1.0 and earlier versions, and all switches supporting these Fabric OS versions, including:

- Brocade 300
- Brocade 4100
- Brocade 4900
- Brocade 5000
- Brocade 5100
- Brocade 5300
- Brocade 5410
- Brocade 5424
- Brocade 5450
- Brocade 5460
- Brocade 5470
- Brocade 5480
- Brocade 6505
- Brocade 6510
- Brocade 6520
- Brocade 7500
- Brocade 7500E
- Brocade 7600
- Brocade VA-40FC
- Brocade 7800 Extension Switch

- Brocade 8000 FCoE Switch
- Brocade Encryption Switch
- Brocade DCX Backbone and Brocade DCX-4S Backbone
  - FA4-18 Fibre Channel application blade
  - FCOE10-24 DCX Blade
  - FS8-18 Encryption Blade
  - FC8-16 port blade
  - FC8-32 port blade
  - FC8-48 port blade
  - FC8-64 port blade
  - FX8-24 DCX Extension Blade
- Brocade 48000 director
  - FA4-18 Fibre Channel application blade
  - FC4-16 port blade
  - FC4-16IP blade
  - FC4-32 port blade
  - FC4-48 port blade
  - FC8-16 port blade
  - FC8-32 port blade
  - FC8-48 port blade
  - FC10-6 port blade
  - FR4-18i router blade
- Brocade VA-40FC
- Brocade DCX 8510-8 Backbone and Brocade DCX 8510-4 Backbone
  - FC8-64 port blade
  - FC16-32 port blade
  - FC16-48 port blade
  - FCOE10-24 DCX Blade
  - FS8-18 Encryption Blade
  - FX8-24 DCX Extension Blade

The following platforms can interoperate with switches running Fabric OS v7.0.0, but cannot load Fabric OS v7.0.0:

- Brocade 4100
- Brocade 4900
- Brocade 5000
- Brocade 7500/7500E
- Brocade 7600
- Brocade 48000

The following blades are not supported in any chassis operating with Fabric OS v7.0.0:

- FA4-18
- FC4-16IP
- FC4-16
- FC4-32
- FC4-48

## What's new in this document

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

- Information that was added:
  - Support for Brocade 6505, Brocade 6520, and Brocade VA-40FC
  - The following traps included:
    - swDeviceStatusTrap
  - The following MIB objects included:
    - swConnUnitPortTable
    - swConnUnitPortEntry
    - swConnUnitPortCapableSpeeds
    - swConnUnitPortSpeedMode
    - swDeviceStatus
    - swConnUnitPCSErrorCounter
- Information that was changed:
  - Obsoleted customized traps. Refer section [“Customized traps”](#).
  - Updated the following MIB objects as not supported.
    - fcipExtendedLinkTcpDroppedPackets
    - fcipExtendedLinkTcpSmoothedRTT
    - fcipExtendedLinkRtxRtxTO
    - fcipExtendedLinkRtxDupAck
    - fcipExtendedLinkDupAck
    - xfcipExtendedLinkTcpDroppedPackets
  - Updated the following MIB objects as deprecated.
    - swFwLastEvent
    - swFwLastEventVal
    - swFwLastEventTime
    - swFwBehaviorType
    - swFwBehaviorInt
    - swFwLastSeverityLevel
    - swFCportspeed
  - Change of version number wherever applicable

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:

<b>bold text</b>	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>code text</code>	Identifies CLI output Identifies syntax examples

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

## Notes, cautions, and warnings

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

---

### NOTE

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

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### 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.

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## Key terms

For definitions specific to Brocade and Fibre Channel, see the technical glossaries on MyBrocade. See “[Brocade resources](#)” on page xviii for instructions on accessing MyBrocade.

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

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

## Notice to the reader

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

These references are made for informational purposes only.

**TABLE 1**

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 Fabric 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

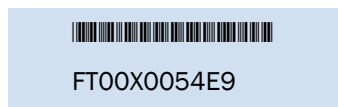
Contact your switch supplier for hardware, firmware, and software support, including product repairs and part ordering. To expedite your call, have the following information immediately available:

### 1. General Information

- Switch model
- Switch operating system version
- Software name and software version, if applicable
- Error numbers and messages received
- **supportSave** 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 as follows:

- *Brocade 300, 4100, 4900, 5100, 5300, 6510, 6520, 7500, 7500E, 7800, 8000, VA-40FC, and Brocade Encryption Switch*—On the switch ID pull-out tab located inside the chassis on the port side on the left
- *Brocade 5000*—On the switch ID pull-out tab located on the bottom of the port side of the switch
- *Brocade 5410, 5424, 5450, 5460, 5470, 5480*—Serial number label attached to the module
- *Brocade 7600*—On the bottom of the chassis
- *Brocade 48000*—Inside the chassis next to the power supply bays
- *Brocade DCX and 8510-8*—On the bottom right on the port side of the chassis
- *Brocade DCX-4S and 8510-4*—On the bottom right on the port side of the chassis, directly above the cable management comb

### 3. World Wide Name (WWN)

## Document feedback

Use the **licenseIdShow** command to display the WWN of the chassis. If you cannot use the **licenseIdShow** command because the switch is inoperable, you can get the WWN from the same place as the serial number, except for the Brocade DCX. For the Brocade DCX, access the numbers on the WWN cards by removing the Brocade logo plate at the top of the nonport side of the chassis.

## 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

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## Setting the SNMP security level

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

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

Recipients for SNMP traps are restricted according to security levels. Security levels are selected and set for a switch using the `snmpconfig --set seclevel` command. To select and set SNMP security levels, issue the command `snmpconfig --set seclevel` after having logged in to the switch as `admin`.

The following example sets the SNMP security level to **1** (authentication only). This setting allows all SNMPv1 users to perform GET and SET operations on MIBs, but creates an exception for SNMPv3 users that do not have authentication and privacy privileges (noAuthnoPriv).

```
switch:admin> snmpconfig --set seclevel
Select SNMP Security Level
(0 = No security, 1 = Authentication only, 2 = Authentication and Privacy, 3 =
sxNo Access): (0..3) [0]
Select SNMP SET Security Level
(0 = No security, 1 = Authentication only, 2 = Authentication and Privacy, 3 =
No Access): (0..3) [0]
```

[Table 2](#) shows the security level options.

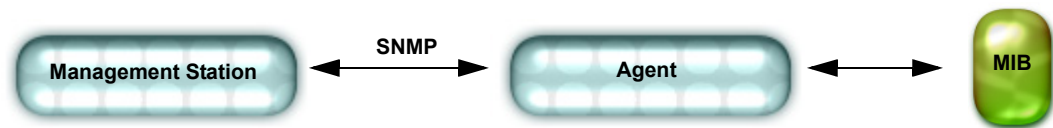
# 1 Understanding SNMP basics

**TABLE 2** Security level options

Security level	Protocol	Query behavior	Traps
No security [0] (noAuthnoPriv)	SNMPv1	Allowed.	Sent.
	SNMPv3	Allowed.	Sent.
Authentication only [1] (authNoPriv)	SNMPv1	Allowed.	Sent.
	SNMPv3	All SNMPv3 users allowed except noAuthNoPriv users.	Sent for all SNMPv3 users except noAuthNoPriv users.
Authentication and Privacy [2] (authPriv)	SNMPv1	Not allowed.	Not Sent.
	SNMPv3	Only SNMPv3 users with authPriv privilege are allowed.	Sent only for authPriv users.
No Access [3]	SNMPv1	Not allowed.	Not Sent.
	SNMPv3		

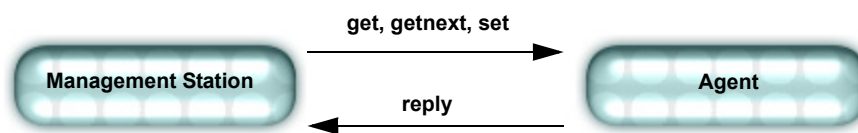
## Understanding SNMP basics

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



**FIGURE 1** SNMP structure

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



**FIGURE 2** SNMP query

The management station can also receive *traps*, unsolicited messages from the switch agent if an unusual event occurs ([Figure 3](#)). For more information, refer to “[Understanding SNMP traps](#)” on page 4.



**FIGURE 3** SNMP trap

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

## Understanding MIBs

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

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

```
1.3.6.1.4.1.1588.2.1.1.1
```

The corresponding name is:

```
iso.org.dod.internet.private.enterprise.bcsi.commDev.fibreChannel.fcSwitch.sw
```

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.

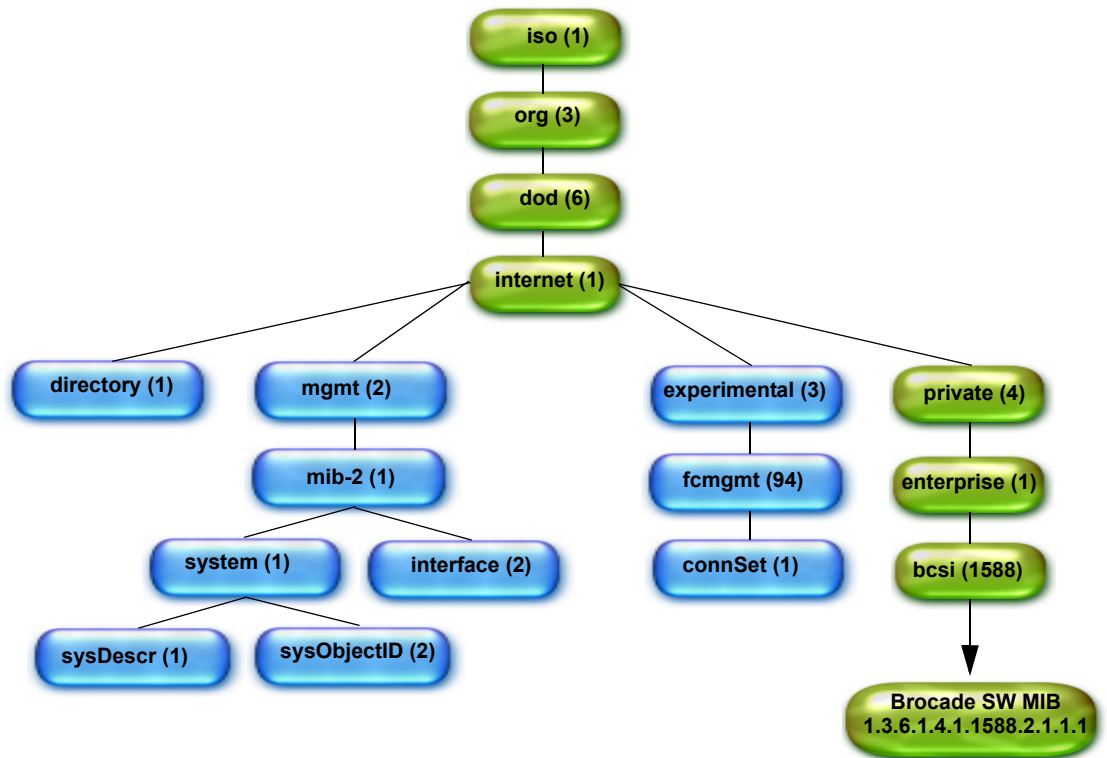


FIGURE 4 Brocade MIB tree location

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

# 1 Understanding SNMP basics

Since different vendors vary the information in their private enterprise MIBs, it is necessary to verify their information. The Fibre Channel MIB standards dictate that certain information be included in all MIBs: it is the vendors' responsibility to follow the standards. The standards are as follows:

- *FibreAlliance* (FA) MIB: Brocade supports v4.4. and later releases.
- *Fabric Element* (FE) MIB: accepted by the Internet Engineering Task Force (IETF).

Brocade supports FE\_RFC2837.mib under the MIB-II branch in Fabric OS v7.1.0, v7.0.0, v6.4.1\_fcoe, v6.4.0, v6.3.0, v6.2.0, v6.1.2\_CEE, v6.1.0, and v6.0.0. The latest version of the FE MIB references the FRAMEWORK.MIB and, based on the MIB browser, it is necessary to load this MIB before the FE.MIB. For more information, refer to [“Loading Brocade MIBs”](#) on page 7.

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 and to any configured port. In order to receive traps, the management station IP address and severity level must be configured on the switch. Up to six trap recipients can be configured using Web Tools or the **snmpConfig** command. You can define a different message severity level for each recipient so that some recipients receive all trap messages and others receive only the most critical.

---

### NOTE

Due to design limitation, IP address validation cannot be done for trap recipients.

---

There are two main MIB trap choices:

- FibreAlliance MIB trap - Associated with the Fibre Alliance MIB (FA-MIB), this MIB manages SAN switches and devices from any company that complies with Fibre Alliance specifications.
- Brocade-specific MIB trap - Associated with the Brocade-specific Brocade MIB (SW-MIB), manages Brocade switches only.

There is some overlap in the functionality of these MIBs. If you enable both SW-MIB and FA-MIB traps, you could receive duplicate messages for the switch events that trigger the trap.



You can also use these additional MIBs and their associated traps: HA-MIB; FICON-MIB; and SWEXTTRAP. In Fabric OS v6.4.0, you can use the **snmpConfig** command to enable or disable all the MIBs.

An event trap (swEventTrap, connUnitEventTrap, or swFabricWatchTrap) is basically an error message (**errShow** output) that is SNMP-formatted and delivered.

### *FA traps*

Consider enabling the FA traps if you want to use SNMP to monitor multiple connectivity units, including Brocade switches.

The **switchStatusPolicySet** command determines the FA-TRAP switch status-related outputs:

- connUnitStatusChange  
This trap is generated by Fabric watch such that only the swUnitsStatusChange is controlled by **switchStatusPolicySet** command.
- connUnitSensorStatusChange  
This trap is generated by any sensor event.
- connUnitPortStatusChange  
This trap sends the instance of connUnitPortName as part of the trap; the instance string is NULL, if the port name is not defined for the specified port.
- connUnitEventTrap  
All the external traps gets converted into swEventTrap except for AN-1006, AUTH-3001 to AUTH-3008, FW-3001, SEC-3001 to SEC-3034, and SEC-3044 to SEC-3048 RASlog messages.

Events in the Error Log of a severity at or above the configured threshold will generate SNMP traps.

The Fibre Alliance Trap (FA-TRAP) can be configured to send traps using the **snmpConfig** command. For more information on this command, refer to the *Fabric OS Command Reference*.

### *HA traps*

Consider enabling these traps to monitor field-replaceable unit (FRU) status and control processor (CP) status when you have a Brocade director in your environment:

- fruStatusChanged  
This trap is generated by a FRU status change, such as a switch reboot or disabling or enabling a FRU component such as fandisable, fanenable and so on.
- cpStatusChanged  
This trap is generated by a change in the status of a CP, including a reboot or firmware download.
- fruHistoryTrap  
This trap is generated when a FRU is added or removed. It is not generated when standby CP is removed.

The high availability trap (HA-TRAP) can be configured to send traps using the **snmpConfig** command. For more information on this command, refer to the *Fabric OS Command Reference*.

## *SW traps*

There are fourteen specific traps defined in Brocade SW-TRAP.

1. swfault (no longer supported)
2. swSensorScn (no longer supported)
3. swFCPortScn  
This trap is generated by a port state change.
4. swEventTrap  
This trap is generated by any switch event reported to the system error log.  
The desired severity level is introduced to filter a swEvent trap based on the severity level.
5. swFabricWatchTrap  
This trap is generated when any Fabric Watch threshold is reached.  
The desired severity level is introduced to filter a swFabricWatchTrap based on the severity level.
6. swTrackChangesTrap  
This trap is generated by a login or a logout.
7. swIPv6ChangeTrap  
This trap is generated when an IPv6 address status change event occurs. It is generated only when IPv6 stateless state changes to the deprecation state and not for address change notification.
8. swPmgrEventTrap  
This trap is generated when any partition manager change happens.
9. swFabricReconfigTrap  
The trap to be sent for tracking fabric reconfiguration.
10. swFabricSegmentTrap  
The trap to be sent for tracking segmentation.
11. swExtTrap  
The trap adds the SSN binding to the traps if it is enabled.
12. swStateChangeTrap  
This trap is sent when the switch changes its state to online or offline.
13. swPortMoveTrap  
This trap is sent when the virtual ports are moved from one switch to another.
14. swBrcdGenericTrap  
This trap is sent for one of the events, such as fabric change, device change, FAPWWN change, and FDMI events. This trap is for Brocade use.
15. swDeviceStatusTrap  
This trap is sent whenever a device logs in or logs out.

The Brocade trap (SW-TRAP) can be configured to send traps using the `snmpConfig` command. For more information on this command, refer to [Table 6](#) or the *Fabric OS Command Reference*.

## Object instances

MIB objects are defined by the OID, which is the type of object, and by the instance number, which is an instance of that MIB object. A Fibre Channel port is a MIB object, and port 0 is an instance of that object. The following is an OID number and an instance number:

```
1.3.6.1.4.1.1588.2.1.1.1.6.2.1.11.5
```

where:

```
1.3.6.1.4.1.1588.2.1.1.1.6.2.1.11 is the OID (of swFCPortTxWords) and 5 is the instance ID for port 4.
```

You must add 1 to the port number to get its instance number in SNMP because SNMP numbering starts at 1; switch port numbering starts at 0.

## 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:

- bd.mib
- BRCD\_REG.mib
- BRCD\_TC.mib
- brcdfcip.mib
- CPQ\_HOST.mib
- CPQ\_RACK.mib
- FA.mib
- FICON.mib
- HA.mib
- IBMBladeCenterTrapMIB.mib
- SW.mib
- faext.mib

## Standard MIBs

Distribution of standard MIBs has been stopped from Fabric OS v6.4.0. Download the following MIBs from the <http://www.oidview.com/> website:

# 1 Loading Brocade MIBs

- SNMP-FRAMEWORK-MIB
- IF-MIB
- IANAifType-MIB
- INET-ADDRESS-MIB
- RFC1213-MIB
- SNMPv2-MIB
- ENTITY-MIB
- RMON-MIB
- FC-MGMT-MIB
- FCIP-MGMT-MIB
- ISCSI-MIB
- FIBRE-CHANNEL-FE-MIB
- SNMPv2-PARTY-MIB
- SNMPv2-SMI-MIB
- SNMP-VIEW-BASED-ACM-MIB
- SNMP-USER-BASED-SM-MIB
- SNMP-TARGET-MIB
- IEEE 802.1x PAE MIB
- IEEE 802.3 LAG MIB
- BRIDGE-MIB
- P-BRIDGE MIB
- Q-BRIDGE MIB
- RSTP-MIB
- LLDP MIB
- LLDP-EXT-DOT1-MIB
- LLDP-EXT-DOT3-MIB
- IP MIB
- SNMP-COMMUNITY-MIB

## Before loading MIBs

Before loading Brocade MIB files, ensure that you have the correct version of SNMP for your Fabric OS version ([Table 3](#)).

**TABLE 3** Fabric OS-supported SNMP versions

Firmware	SNMPv1	SNMPv2	SNMPv3
Fabric OS v5.x	Yes	Yes <sup>1</sup>	Yes <sup>2</sup>
Fabric OS v6.0.0	Yes	Yes	Yes
Fabric OS v6.1.0	Yes	Yes	Yes
Fabric OS v6.2.0	Yes	Yes	Yes

**TABLE 3** Fabric OS-supported SNMP versions (Continued)

Firmware	SNMPv1	SNMPv2	SNMPv3
Fabric OS v6.1.2_CEE	Yes	No	Yes
Fabric OS v6.3.0	Yes	No	Yes
Fabric OS v6.4.0	Yes	No	Yes
Fabric OS v6.4.1_fcoe	Yes	No	Yes
Fabric OS v7.0.0	Yes	No	Yes
Fabric OS v7.0.1	Yes	No	Yes
Fabric OS v7.1.0	Yes	No	Yes

1. SNMPv2 is supported in Fabric OS v5.0.4 and later, but SNMPv2 traps are not supported.
2. Fabric OS v5.x supports the SNMPv3-USM MIB (snmpUsmMIB), which is available as RFC 3414.

## 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.

# 1 Loading Brocade MIBs

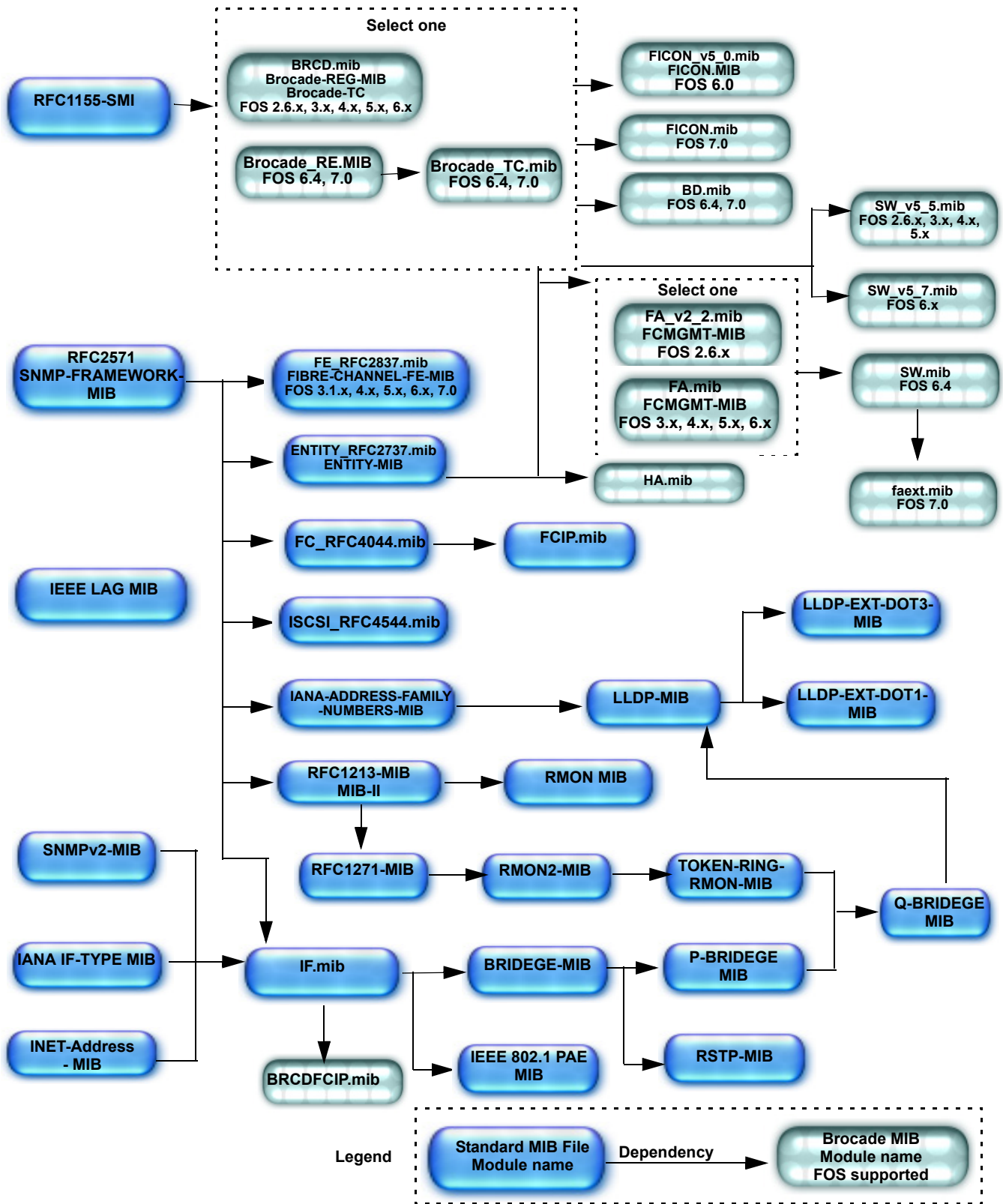


FIGURE 5 Brocade SNMP MIB dependencies and advised installation order

**NOTE**

FA.mib obsoletes the use of the connUnitPortStatFabricTable and now uses the connUnitPortStatTable for port statistics.

All versions of Fabric OS support SNMPv1. Fabric OS v5.0.1 supports the SNMPv3-USM (snmpUsmMIB) MIB. Fabric OS v5.3.0 supports the FCIP MIB and ifXtable.

**SNMP CLI usage**

The examples for configuring SNMPv3 users/traps are listed in the following section.

***Configuring SNMPv3 user/traps***

1. Create a user on the switch in non-VF Context using CLI userconfig, with the required role.

```
switch:admin> userconfig --add fa_adm -r fabricadmin -h0 -a 0-255
Setting initial password for fa_adm
Enter new password:*****
Re-type new password:*****
Account fa_adm has been successfully added.
switch:admin>
```

Create a user on the switch in VF Context using CLI userconfig, with the required role.

```
switch:admin> userconfig --add sa_user -r switchadmin -l 1-128 -h1 -c admin
Setting initial password for sa_user
Enter new password:*****
Re-type new password:*****
Account sa_user has been successfully added.
switch:admin>
```

2. Create the SNMPv3 user.

```
switch:root> snmpconfig --set snmpv3

SNMP Informs Enabled (true, t, false, f): [false] t

SNMPv3 user configuration(snmp user not configured in FOS user database will
have physical AD and admin role as the default):
User (rw): [snmpadmin1]
Auth Protocol [MD5(1)/SHA(2)/noAuth(3)]: (1..3) [3]
Priv Protocol [DES(1)/noPriv(2)/3DES(3)/AES128(4)/AES192(5)/AES256(6)]:
(2..2) [2]
Engine ID: [0:0:0:0:0:0:0:0] 80:00:05:23:01:0A:23:34:21
User (rw): [snmpadmin2]
Auth Protocol [MD5(1)/SHA(2)/noAuth(3)]: (1..3) [3] 1
New Auth Passwd:
Verify Auth Passwd:
Priv Protocol [DES(1)/noPriv(2)/3DES(3)/AES128(4)/AES192(5)/AES256(6)]:
(1..6) [2] 1
New Priv Passwd:
Verify Priv Passwd:
Engine ID: [0:0:0:0:0:0:0:0] 80:00:05:23:01:0A:23:34:1B
User (rw): [snmpadmin3]
Auth Protocol [MD5(1)/SHA(2)/noAuth(3)]: (1..3) [3]
Priv Protocol [DES(1)/noPriv(2)/3DES(3)/AES128(4)/AES192(5)/AES256(6)]:
(2..2) [2]
```

# 1 Loading Brocade MIBs

```
Engine ID: [0:0:0:0:0:0:0:0]
User (ro): [snmpuser1]
Auth Protocol [MD5(1)/SHA(2)/noAuth(3)]: (1..3) [3]
Priv Protocol [DES(1)/noPriv(2)/3DES(3)/AES128(4)/AES192(5)/AES256(6)]:
(2..2) [2]
Engine ID: [0:0:0:0:0:0:0:0]
User (ro): [snmpuser2]
Auth Protocol [MD5(1)/SHA(2)/noAuth(3)]: (1..3) [3]
Priv Protocol [DES(1)/noPriv(2)/3DES(3)/AES128(4)/AES192(5)/AES256(6)]:
(2..2) [2]
Engine ID: [0:0:0:0:0:0:0:0]
User (ro): [snmpuser3]
Auth Protocol [MD5(1)/SHA(2)/noAuth(3)]: (1..3) [3]
Priv Protocol [DES(1)/noPriv(2)/3DES(3)/AES128(4)/AES192(5)/AES256(6)]:
(2..2) [2]
Engine ID: [0:0:0:0:0:0:0:0]
```

```
SNMPv3 trap recipient configuration:
Trap Recipient's IP address : [0.0.0.0] 10.35.52.33
UserIndex: (1..6) [1]
Trap recipient Severity level : (0..5) [0] 4
Trap recipient Port : (0..65535) [162]
Trap Recipient's IP address : [0.0.0.0] 10.35.52.27
UserIndex: (1..6) [2]
Trap recipient Severity level : (0..5) [0] 4
Trap recipient Port : (0..65535) [162]
Trap Recipient's IP address : [0.0.0.0]
Trap Recipient's IP address : [0.0.0.0]
Trap Recipient's IP address : [0.0.0.0]
Trap Recipient's IP address : [0.0.0.0]
```

Committing configuration.....done.

```
switch:root> snmpconfig --show snmpv3
```

```
SNMP Informs = 1 (ON)
```

```
SNMPv3 USM configuration:
User 1 (rw): snmpadmin1
    Auth Protocol: noAuth
    Priv Protocol: noPriv
    Engine ID: 80:00:05:23:01:0a:23:34:21
User 2 (rw): snmpadmin2
    Auth Protocol: MD5
    Priv Protocol: DES
    Engine ID: 80:00:05:23:01:0a:23:34:1b
User 3 (rw): snmpadmin3
    Auth Protocol: noAuth
    Priv Protocol: noPriv
    Engine ID: 00:00:00:00:00:00:00:00:00
User 4 (ro): snmpuser1
    Auth Protocol: noAuth
    Priv Protocol: noPriv
    Engine ID: 00:00:00:00:00:00:00:00:00
User 5 (ro): snmpuser2
    Auth Protocol: noAuth
    Priv Protocol: noPriv
    Engine ID: 00:00:00:00:00:00:00:00:00
User 6 (ro): snmpuser3
    Auth Protocol: noAuth
```



```

Priv Protocol: noPriv
Engine ID: 00:00:00:00:00:00:00:00:00

SNMPv3 Trap configuration:
Trap Entry 1:      10.35.52.33
  Trap Port: 162
  Trap User: snmpadmin1
  Trap recipient Severity level: 4
Trap Entry 2:      10.35.52.27
  Trap Port: 162
  Trap User: snmpadmin2
  Trap recipient Severity level: 4
Trap Entry 3:      No trap recipient configured yet
Trap Entry 4:      No trap recipient configured yet
Trap Entry 5:      No trap recipient configured yet
Trap Entry 6:      No trap recipient configured yet

```

### An example of the SNMPv3 user trap recipients configured with DNS names and IPv6 addresses

```

switch:admin> snmpconfig --set snmpv3

SNMP Informs Enabled (true, t, false, f): [false]
SNMPv3 user configuration (snmp user not configured in FOS user database will
have physical AD and admin role as the default):
User (rw): [snmpadmin1]
Auth Protocol [MD5(1)/SHA(2)/noAuth(3)]: (1..3) [3]
Priv Protocol [DES(1)/noPriv(2)/3DES(3)/AES128(4)/AES192(5)/AES256(6)]:
(2..2) [2]
User (rw): [snmpadmin2]
Auth Protocol [MD5(1)/SHA(2)/noAuth(3)]: (1..3) [3] 1
New Auth Passwd:
Verify Auth Passwd:
Priv Protocol [DES(1)/noPriv(2)/3DES(3)/AES128(4)/AES192(5)/AES256(6)]:
(1..6) [2]
User (rw): [snmpadmin3]
Auth Protocol [MD5(1)/SHA(2)/noAuth(3)]: (1..3) [3] 1
New Auth Passwd:
Verify Auth Passwd:
Priv Protocol [DES(1)/noPriv(2)/3DES(3)/AES128(4)/AES192(5)/AES256(6)]:
(1..6) [2] 1
New Priv Passwd:
Verify Priv Passwd:
User (ro): [snmpuser1]
Auth Protocol [MD5(1)/SHA(2)/noAuth(3)]: (1..3) [3]
Priv Protocol [DES(1)/noPriv(2)/3DES(3)/AES128(4)/AES192(5)/AES256(6)]:
(2..2) [2]
User (ro): [snmpuser2]
Auth Protocol [MD5(1)/SHA(2)/noAuth(3)]: (1..3) [3]
Priv Protocol [DES(1)/noPriv(2)/3DES(3)/AES128(4)/AES192(5)/AES256(6)]:
(2..2) [2]
User (ro): [snmpuser3]
Auth Protocol [MD5(1)/SHA(2)/noAuth(3)]: (1..3) [3]
Priv Protocol [DES(1)/noPriv(2)/3DES(3)/AES128(4)/AES192(5)/AES256(6)]:
(2..2) [2]

SNMPv3 trap recipient configuration:
Trap Recipient's IP address : [0.0.0.0] 172.26.4.102
UserIndex: (1..6) [1]

```

# 1 Loading Brocade MIBs

```
Trap recipient Severity level : (0..5) [0] 1
Trap recipient Port : (0..65535) [162]
Trap Recipient's IP address : [0.0.0.0] fe80::224:1dff:fef6:3f98
UserIndex: (1..6) [2]
Trap recipient Severity level : (0..5) [0] 2
Trap recipient Port : (0..65535) [162]
Trap Recipient's IP address : [0.0.0.0] HCL0389U.corp.brocade.com
UserIndex: (1..6) [3]
Trap recipient Severity level : (0..5) [0] 5
Trap recipient Port : (0..65535) [162]
Trap Recipient's IP address : [0.0.0.0]
Trap Recipient's IP address : [0.0.0.0]
Trap Recipient's IP address : [0.0.0.0]
Committing configuration.....done.
DCX_128:FID128:admin>
```

```
switch:admin> snmpconfig --show snmpv3
```

```
SNMP Informs = 0 (OFF)
```

```
SNMPv3 USM configuration:
```

```
User 1 (rw): snmpadmin1
    Auth Protocol: noAuth
    Priv Protocol: noPriv
User 2 (rw): snmpadmin2
    Auth Protocol: MD5
    Priv Protocol: noPriv
User 3 (rw): snmpadmin3
    Auth Protocol: MD5
    Priv Protocol: DES
User 4 (ro): snmpuser1
    Auth Protocol: noAuth
    Priv Protocol: noPriv
User 5 (ro): snmpuser2
    Auth Protocol: noAuth
    Priv Protocol: noPriv
User 6 (ro): snmpuser3
    Auth Protocol: noAuth
    Priv Protocol: noPriv
```

```
SNMPv3 Trap configuration:
```

```
Trap Entry 1:      172.26.4.102
    Trap Port: 162
    Trap User: snmpadmin1
    Trap recipient Severity level: 1
Trap Entry 2:      fe80::224:1dff:fef6:3f98
    Trap Port: 162
    Trap User: snmpadmin2
    Trap recipient Severity level: 2
Trap Entry 3:      HCL0389U.corp.brocade.com
    Trap Port: 162
    Trap User: snmpadmin3
    Trap recipient Severity level: 5
Trap Entry 4:      No trap recipient configured yet
Trap Entry 5:      No trap recipient configured yet
Trap Entry 6:      No trap recipient configured yet
```

To display the traps and MIBs supported in Fabric OS:

```
switch:root> snmpTraps --show

# |Mib Name          |Supported Traps
---|-----|-----
001|SW-MIB            |sw-track-changes-trap
  |                  |sw-fabric-watch-trap
  |                  |sw-fc-port-scn
  |                  |ip-v6-change-trap
  |                  |sw-pmgr-event-trap
  |                  |sw-event-trap
  |                  |sw-fabric-reconfig-trap
  |                  |sw-fabric-reconfig-trap
  |                  |sw-state-trap
  |                  |sw-move-port-trap
  |                  |sw-brcd-generic-trap
002|FICON-MIB        |link-rnid-device-registration
  |                  |link-rnid-device-deregistration
  |                  |link-lirr-listener-added
  |                  |link-lirr-listener-removed
  |                  |link-rlir-failure-incident
003|FA-MIB           |conn-unit-status-change
  |                  |conn-unit-sensor-status-change
  |                  |conn-unit-port-status-change
  |                  |conn-unit-event-trap
004|RFC1157          |cold-restart-trap
  |                  |warm-restart-trap
  |                  |if-link-up-trap
  |                  |if-link-down-trap
  |                  |snmp-authetication-trap
005|HA-MIB           |fru-status-change-trap
  |                  |fru-history-trap
  |                  |cp-status-change-trap
006|BD-MIB           |bd-trap
  |                  |bd-clear-trap
```

To send all traps to the configured recipients:

```
switch:root> snmpTraps --send
Number of traps sent : 30
```

To send all traps to the recipient 10.35.52.33:

```
switch:root> snmpTraps --send -ip_address 10.35.52.33
Number of traps sent : 30
```

To send the sw-fc-port-scn trap to the configured recipients:

```
switch:root> snmpTraps --send -trap_name sw-fc-port-scn
Number of traps sent : 1
```

To send the sw-fc-port-scn trap to the recipient 10.35.52.33:

```
switch:root> snmpTraps --send -trap_name sw-fc-port-scn -ip_address
10.35.52.33
Number of traps sent : 1
```

To unblock port traps on all the ports or on a specific port:

```
switch:admin> snmptraps -unblock ALL
```

# 1 Loading Brocade MIBs

```
switch:admin> snmptraps -unblock -port 1/10
```

To block port traps on slot 1 and port 10:

```
Switch:admin> snmptraps -block -port 1/10
```

Example of accessControl configuration:

```
switch:admin> snmpconfig --set accessControl
SNMP access list configuration:
Access host subnet area in dot notation: [0.0.0.0] 192.168.0.0
Read/Write? (true, t, false, f): [true]
Access host subnet area in dot notation: [0.0.0.0] 10.32.148.0
Read/Write? (true, t, false, f): [true] f
Access host subnet area in dot notation: [0.0.0.0]
Read/Write? (true, t, false, f): [true]
Access host subnet area in dot notation: [0.0.0.0] 10.33.0.0
Read/Write? (true, t, false, f): [true] f
Access host subnet area in dot notation: [0.0.0.0]
Read/Write? (true, t, false, f): [true]
Access host subnet area in dot notation: [0.0.0.0]
Read/Write? (true, t, false, f): [true]
Committing configuration...done.
```

Example of mibCapability configuration:

To enable the swFabricWatchTrap non-interactively:

```
switch:admin> snmpconfig --enable mibCapability -mib_name SW-MIB -trap_name
swFabricWatchTrap
Operation succeeded
```

To enable the swEventTrap of the SW-MIB category only (this operation disables all other SNMP traps in this MIB category):

```
switch:admin> snmpconfig --set mibCapability -mib_name SW-MIB -bitmask 0x10
Operation succeeded
switch:admin> snmpconfig --show mibCapability
[...]
SW-MIB: NO
swFault: NO
swSensorScn: NO
swFCPortScn: NO
swEventTrap: YES
DesiredSeverity:None
swFabricWatchTrap: NO
DesiredSeverity:None
swTrackChangesTrap: NO
swIPv6ChangeTrap: NO
swPmgrEventTrap: NO
swFabricReconfigTrap: NO
swFabricSegmentTrap: NO
swExtTrap: NO
[...]
```

To enable the SW-MIB MIB only without changing the current trap configuration:

```
switch:admin> snmpconfig --enable mibCapability -mib_name SW-MIB
```

```

Operation succeeded
switch:admin> snmpconfig --show mibCapability
[...]
SW-MIB: YES
swFault: NO
swSensorScn: NO
swFCPortScn: NO
swEventTrap: YES
DesiredSeverity:None
swFabricWatchTrap: YES
DesiredSeverity:None
swTrackChangesTrap: NO
swIPv6ChangeTrap: NO
swPmgrEventTrap: NO
swFabricReconfigTrap: NO
swFabricSegmentTrap: NO
swExtTrap: NO
[...]

```

To re-enable all traps under the SW-MIB category after they were disabled:

```

switch:admin> snmpconfig --set mibCapability -mib_name SW-MIB -bitmask 0xFFFF
Operation succeeded
switch:admin> snmpconfig --show mibCapability
[...]
SW-MIB: YES
swFault: YES
swSensorScn: YES
swFCPortScn: YES
swEventTrap: YES
DesiredSeverity:None
swFabricWatchTrap: YES
DesiredSeverity:None
swTrackChangesTrap: YES
swIPv6ChangeTrap: YES
swPmgrEventTrap: YES
swFabricReconfigTrap: Yes
swFabricSegmentTrap: Yes
swExtTrap: Yes
[...]

```

To display the configuration for all MIBs and associated traps:

```

switch:admin> snmpconfig --show mibcapability
FE-MIB: YES
SW-MIB: YES
FA-MIB: YES
FICON-MIB: YES
HA-MIB: YES
FCIP-MIB: YES
ISCSI-MIB: YES
IF-MIB: YES
BD-MIB: YES
SW-TRAP: YES
    swFault: YES
    swSensorScn: YES
    swFCPortScn: YES
    swEventTrap: YES
        DesiredSeverity:None

```

# 1 Loading Brocade MIBs

```
swFabricWatchTrap: YES
    DesiredSeverity:None
swTrackChangesTrap: YES
swIPv6ChangeTrap: YES
swPmgrEventTrap: YES
swFabricReconfigTrap: YES
swFabricSegmentTrap: YES
swExtTrap: YES
FA-TRAP: YES
    connUnitStatusChange: YES
    connUnitDeletedTrap: YES
    connUnitEventTrap: YES
    connUnitSensorStatusChange: YES
    connUnitPortStatusChange: YES
FICON-TRAP: YES
    linkRNIDDeviceRegistration: YES
    linkRNIDDeviceDeRegistration: YES
    linkLIRRListenerAdded: YES
    linkLIRRListenerRemoved: YES
    linkRLIRFailureIncident: YES
HA-TRAP: YES
    fruStatusChanged: YES
    cpStatusChanged: YES
    fruHistoryTrap: YES
ISCSI-TRAP: YES
    iscsiTgtLoginFailure: YES
    iscsiIntrLoginFailure: YES
    iscsiInstSessionFailure: YES
IF-TRAP: YES
    linkDown: YES
    linkUp: YES
BD-TRAP: YES
    bdTrap: YES
    bdClearTrap: YES
```

## To set the system group:

```
DCX_128:FID128:admin> snmpconfig --set systemgroup
```

```
Example of systemGroup configuration (default)
```

```
switch:admin> snmpconfig --default systemGroup
```

```
*****
```

```
This command will reset the agent's system group configuration back to
factory default
```

```
*****
```

```
sysDescr = Fibre Channel Switch
```

```
sysLocation = End User Premise
```

```
sysContact = Field Support
```

```
authTraps = 0 (OFF)
```

```
*****
```

```
Are you sure? (yes, y, no, n): [no] y
```

## 3. Set the security level.

```
switch:admin> snmpconfig --set secLevel
```

```
Select SNMP GET Security Level
```

```
(0 = No security, 1 = Authentication only, 2 = Authentication and Privacy, 3 =
No Access): (0..3) [0] 2
```

```
Select SNMP SET Security Level
```

```
(0 = No security, 1 = Authentication only, 2 = Authentication and Privacy, 3 =
No Access): (2..3) [2] 2
switch:admin> snmpconfig --show secLevel
GET security level = 2, SET level = 2
SNMP GET Security Level: Authentication and Privacy
SNMP SET Security Level: Authentication and Privacy
```

To set the security level to default:

```
DCX_128:FID128:admin> snmpconfig --default seclevel
GET security level = 0, SET level = 0
SNMP GET Security Level: No security
SNMP SET Security Level: No security
SNMP GET Security Level will be set to 'No Security'
SNMP SET Security Level will be set to 'No Security'
Do you want to continue? (yes, y, no, n): [no] y
DCX_128:FID128:admin>
```

```
DCX_128:FID128:admin> snmpconfig --show seclevel
GET security level = 0, SET level = 0
SNMP GET Security Level: No security
SNMP SET Security Level: No security
DCX_128:FID128:admin
```

4. In the Manager (SNMP Browser), create a user snmpadmin1 with Authentication protocol as noAuth, Privacy protocol as noPriv, set the password and set the trap port as 162. (Same values are set as in the switch SNMPv3 configuration.)

---

#### NOTE

SNMPv3 supports AES128 and DES protocols. SNMPv3 does not support privacy protocols AES192, AES256, and 3DES.

---

## Access Gateway and Brocade MIBs

Table 4 shows the MIBs supported by Brocade Access Gateway.

**TABLE 4** Access Gateway MIB support

MIB name	Supported	Description
MIB-2	Yes	Updated to support Access Gateway in v5.2.1.
Entity-MIB	Yes	Supported in Access Gateway.
HA-MIB	Yes	Supported in Access Gateway.
SW-MIB	No	Disabled in Access Gateway because the conventions are specific to fabric switches. In Fabric OS v6.4.0, swConnUnitPortExtensionTable is supported in Access Gateway mode. In Fabric OS v7.0.0, SNMP allows you to access the following tables to support the Advanced Performance Monitoring feature on Access Gateway, even if the SW-MIB is disabled: <ul style="list-style-type: none"> <li>• “swBlmPerfEEMntTable”</li> <li>• “swBlmPerfFitMntTable”</li> </ul>
FA-MIB	Yes	The connUnitSnsTable is not supported because a switch in Access Gateway does support name server services.

# 1 Firmware upgrades and enabled traps

**TABLE 4** Access Gateway MIB support (Continued)

MIB name	Supported	Description
FE-MIB	No	Disabled in Access Gateway because the conventions are specific to fabric switches.
CPQ-Rack MIB	Limited	Supported on embedded switches only.
FCIP MIB	No	Disabled in Access Gateway because the conventions are specific to fabric switches.
iSCSI MIB	No	Disabled in Access Gateway because the conventions are specific to fabric switches.
IF-MIB	Yes	Supported in Access Gateway.
BD-MIB	Yes	Supported for F-ports.
IEEE 802.3 LAG MIB	No	Supported in Access Gateway.
IEEE 802.1x PAE MIB	No	Supported in Access Gateway.
LLDP MIB	No	Supported in Access Gateway.
BRIDGE-MIB	No	Supported in Access Gateway.
RMON-MIB	Yes	Supported in Access Gateway.
FA-Ext	Yes	Supported in Access Gateway.
SNMPv2 MIB	Yes	Supported in Access Gateway.

## Firmware upgrades and enabled traps

The pre-Fabric OS v4.4 firmware had trap group level settings (for example, traps were turned on and off as a group). In Fabric OS v4.4 or later, you can turn on and off traps individually within a trap group. When you upgrade to the Fabric OS v4.4 firmware or later, by default the individual traps are turned off even if the corresponding trap group was enabled before upgrading. You must use the **snmpconfig** command to turn on explicitly the individual traps within each trap group.

## Fabric OS commands for configuring SNMP

Use the following commands (Table 5) to configure MIBs in the Fabric OS. For procedures for configuring SNMP on the Brocade switches, refer to the *Fabric OS Administrator's Guide*.

**TABLE 5** Commands for configuring SNMP

Command	Description
snmpConfig	This command has all the features of the existing agtcfg* commands; in addition, it has SNMPv3 configuration parameters. Enhanced in Fabric OS v6.3.0 to support SNMP Informs for SNMPv3 users. Enhanced in Fabric OS v6.4.0 to support option-based mibcapability behavior.
snmpTraps	This command supports the SNMP notification generator feature, Notification generator framework has been implemented to send various SNMP traps.

For more information about the commands, either refer to Table 6 or the *Fabric OS Command Reference*.



TABLE 6 Detailed description of the commands

Command	Operands	Arguments
<b>snmpConfig</b> <b>--show</b>   <b>--set</b>   <b>--default</b>   <b>--enable</b>   <b>--disable</b> [ <b>snmpv1</b>   <b>snmpv3</b>   <b>accessControl</b>   <b>mibCapability</b>   <b>systemGroup</b>   <b>seclevel</b> ]	<p><b>--show</b> Displays the SNMP agent configuration data of the specified category.</p> <p><b>--set</b> Sets the SNMP agent configuration data of the specified category. This operand displays the current settings and then prompts you to change the values for each parameter.</p> <p><b>--default</b> Sets the SNMP agent configuration data for a specified item to the default values. Generally, these default values may be available in the configuration database. The command sets to factory defaults if the SNMP agent configuration parameters are not available in the configuration database.</p> <p><b>--enable</b> Enables the SNMP agent configuration for the specified category. This operand is valid only with <b>mibCapability</b> and <b>snmpv1</b>. When used with the <b>snmpv1</b> operand, this command restores access to SNMPv1/v2c.</p> <p><b>--disable</b> Disables the SNMP agent configuration for the specified category. This operand is valid only with <b>mibCapability</b> and <b>snmpv1</b>. When used with the <b>snmpv1</b> operand, this command blocks access to SNMPv1/v2c. All requests for v1/v2c version will be dropped by the switch, and SNMPv1 traps will be blocked from being sent, even if trap destinations are present.</p>	<p><b>snmpv1</b> Selects SNMPv1-related configuration parameters. These parameters include the community string, trap recipient IP address, and trap severity level associated with each trap recipient IP address. When "0" is configured as a trap port, traps can be received at the default port 162.</p> <p><b>snmpv3</b> Selects SNMPv3-related configuration parameters. These parameters include the user name, authentication protocol and password, the privacy protocol and password, the SNMPv3 trap recipient's IP address, its associated user index and trap severity level. When "0" is configured as a trap port, traps can be received at the default port 162. In Fabric OS v6.3.0 and later, the <b>--set snmpv3</b> command supports an interactive option to enable or disable informs by setting the parameter "SNMP Informs Enabled" to true or false. If informs are enabled, all trap destinations receive inform requests. If informs are disabled, all trap destinations receive trap requests. When informs are enabled, the engine ID must be set to correspond to the management engine IP address. Informs are by default disabled.</p> <p><b>accessControl</b> Selects access-control-related parameters. These parameters include the access host subnet area and access permission (read-write).</p> <p><b>mibCapability</b> Selects configuration parameters related to the SNMP agent's MIBs and trap capability parameters. These parameters include MIBs and traps supported by the SNMP agent.</p> <p><b>systemGroup</b> Selects configuration parameters related to the system group. These parameters include sysDescr, sysLocation, sysContact, and authentication failure trap.</p> <p><b>secLevel</b> Sets the SNMP security level.</p>

# 1 Fabric OS commands for configuring SNMP

**TABLE 6 Detailed description of the commands (Continued)**

Command	Operands	Arguments
<b>snmpConfig --set mibCapability</b> <b>[-mib_name &lt;mib_name&gt; [ -bitmask</b> <b>&lt;bit_mask&gt;]]</b>	<b>--set mibCapability</b> Configures MIBs interactively. When used without a MIB name, this command displays a menu with supported MIBs and associated traps, and for each MIB or trap, you are prompted to confirm or change the default by specifying yes or no. Specifying yes means you can access the MIB variables with an SNMP manager. All MIBs and associated traps are by default enabled.	<b>-mib_name &lt;mib_name&gt;</b> Specifies the name of the MIB to be configured. This operand is required if you want to configure MIB traps non-interactively. Valid MIB names include the following: <ul style="list-style-type: none"> <li>• FE-MIB</li> <li>• SW-MIB</li> <li>• FA-MIB</li> <li>• FICON-MIB</li> <li>• HA-MIB</li> <li>• FCIP-MIB</li> <li>• ISCSI-MIB</li> <li>• IF-MIB</li> <li>• BD-MIB</li> </ul> <b>-bitmask &lt;bit_mask&gt;</b> Specifies the bit mask for the MIB. In Fabric OS v6.4.0 and later, SNMP Traps are identified by their bit mask and can be read directly from the switch configuration. The MIB and trap status (enabled or disabled) status is recorded in a 64-bit counter. The last bit (bit 0) is reserved for the MIB and the remaining bits are reserved for the traps of that MIB. The trap's position is allocated based on the last ID of the trap OID. For example, the last ID of the swEventTrap is 5 so its position will be fifth from the right.
<b>snmpConfig --enable   --disable</b> <b>mibCapability -mib_name</b> <b>&lt;mib_name&gt; [-trap_name</b> <b>&lt;trap_name&gt;]</b>	<b>--enable mibCapability -mib_name</b> <b>&lt;mib_name&gt;</b> Enables the specified MIB non-interactively.	<b>-trap_name &lt;trap_name&gt;</b> Specifies the name of the trap to be disabled. This operand is optional. Use <b>snmpConfig --show mibCapability</b> for a listing of valid traps.
	<b>--disable mibCapability -mib_name</b> <b>&lt;mib_name&gt;</b> Disables the specified MIB non-interactively. When used with the trap name operand, only the specified trap is disabled.	
<b>snmpConfig --help</b>	<b>--help</b> Displays the command usage.	
<b>snmptraps --send [-trap_name</b> <b>&lt;trap_name&gt;] [-ip_address</b> <b>&lt;ip_address&gt;]</b>	<b>--send</b> Sends one or all SNMP traps to all configured recipients or to a specified recipient.	<b>-trap_name &lt;trap_name&gt;</b> Specifies the trap by name. Use <b>snmptraps --show</b> for a listing of valid traps.
		<b>-ip_address &lt;ip_address&gt;</b> Specifies the recipient by its IP address. The IP address must be specified in IPv4 format.

TABLE 6 Detailed description of the commands (Continued)

Command	Operands	Arguments
<code>snmptraps -show [port]</code>	<p><b>--show</b> Displays all configured SNMP traps and MIBs supported in Fabric OS. This also shows the blocked ports trap status on all the ports.</p> <p><code>port</code> Shows only those ports which have blocked traps.</p>	
<p><code>snmptraps -block   -unblock [-port &lt;Slot/Port&gt;   ALL]</code></p> <p><b>NOTE:</b> This command is not supported for linkDown and linkup traps.</p>	<p><b>--block</b> Blocks port traps on a port.</p> <p><b>NOTE:</b> You cannot block port traps on all the ports.</p> <p><b>--unblock</b> Unblocks port traps on a port or on all the ports.</p>	<p><b>-port &lt;Slot/Port&gt;</b> Specifies the slot and port. You must provide a slot for chassis systems such as DCX, DCX-4S, and so on.</p> <p>ALL Unblocks port traps on all the ports.</p>
<code>snmptraps -help</code>	<p><b>--help</b> Displays the command usage.</p>	

## Support for Administrative Domains

Administrative Domains are supported in Fabric OS v5.3.0 and later releases. An Administrative Domain (AD) is a domain within a fabric. Administrative domains can be used to limit administrator access within a fabric, and to provide service providers with a means to assign portions of a fabric to individual consumers. An AD may contain switches, devices, and ports. An AD may also limit access to a configured set of users.

## Support for Role-Based Access Control

Role-Based Access Control (RBAC) is supported in Fabric OS v5.3.0 and later releases. RBAC applies a fixed set of roles that address the access control needs of a majority of customers. Each role is a set of permissions that can be applied to a user that controls the kinds of jobs and tasks the user can perform on a fabric or fabric element.

## Support for IPv6 addressing

IPv6 addressing is supported in Fabric OS v5.3.0 and later releases.

## Support for Virtual Fabric

Virtual Fabric is supported in Fabric OS v6.2.0 and later releases.

# 1 Customized traps

## Customized traps

This is only applicable for OEM customers. FOS v7.0.0 and v7.0.1 releases supported addition of system OID in trap OID to customized trap OID on different platforms. For example, Fabric Watch customized trap OID is 1.3.6.1.4.1.1588.2.1.1.62.0.5 on DCX and 1.3.6.1.4.1.1588.2.1.1.71.0.5 on Brocade 5100. This feature is not supported from FOS 7.1.0 release.

# 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.

## 2 MIB II overview

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

**FIGURE 6** MIB-II overall hierarchy

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

**FIGURE 7** System hierarchy

```

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

```

**FIGURE 8** Interfaces hierarchy

```

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

```

**FIGURE 9** AT hierarchy

## 2 MIB II overview

- 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
  - ipAddressTable 1.3.6.1.2.1.4.34
    - ipAddressEntry 1.3.6.1.2.1.4.34.1
      - ipAddressAddrType 1.3.6.1.2.1.4.34.1.1
      - ipAddressAddr 1.3.6.1.2.1.4.34.1.2
      - ipAddressIfIndex 1.3.6.1.2.1.4.34.1.3



```

- ipAddressType 1.3.6.1.2.1.4.34.1.4
- ipAddressPrefix 1.3.6.1.2.1.4.34.1.5
- ipAddressOrigin 1.3.6.1.2.1.4.34.1.6
- ipAddressStatus 1.3.6.1.2.1.4.34.1.7
- ipAddressCreated 1.3.6.1.2.1.4.34.1.8
- ipAddressLastChanged 1.3.6.1.2.1.4.34.1.9
- ipAddressRowStatus 1.3.6.1.2.1.4.34.1.10
- ipAddressStorageType 1.3.6.1.2.1.4.34.1.11

```

**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
      - EGP group
```

**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
  - 1.3.6.1.2.1.11.7 and 1.3.6.1.2.1.11.23 is not supported.
  - 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
  - RMON group
  - 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**

## 2 System group

```
- 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 1.3.6.1.2.1.31.1.1.1.17
```

FIGURE 16 ifMIB hierarchy

## Textual conventions

Table 7 lists the textual conventions used for MIB-II.

TABLE 7 MIB-II textual conventions

Type definition	Value
DisplayString	Octet String of size 0 to 255
PhysAddress	Octet String

## Objects and types imported

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

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

## System group

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

TABLE 8

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 should include the full name and version identification of the hardware type, software operating system, and networking software.</p> <p>This must contain only printable ASCII characters.</p> <p>Set this value using the <b>snmpconfig</b> command. The default value is either Fibre Channel Switch or Access Gateway.</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 "NetYarn, Inc." was assigned the subtree 1.3.6.1.4.1.4242, it could assign the identifier 1.3.6.1.4.1.4242.1.1 to its "Knit Router."</p> <p>The default value is either:</p> <ul style="list-style-type: none"> <li>• Fibre Channel Switches: iso.org.dod.internet.private.enterprises.bcsi.commDev.fibrechannel.fcSwitch.sw</li> <li>• Brocade Access Gateway: iso.org.dod.internet.private.enterprises.bcsi.commDev.fibrechannel.fcSwitch.sw</li> </ul>
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> <p>Set this value using the <b>switchuptime</b> command.</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 of four characters.</p> <p>The default is Field Support.</p> <p>Set this value using the <b>snmpconfig</b> 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> <p>Set this value using the <b>snmpconfig</b> command.</p>

**TABLE 8**

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, 3rd floor). The minimum length of the string must be four. The default is End User Premise. Set this value using the <b>snmpconfig</b> 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 should be calculated accordingly: Layer functionality <ul style="list-style-type: none"> <li>• 1 = physical (for example, repeaters)</li> <li>• 2 = datalink/subnetwork (for example, bridges)</li> <li>• 3 = internet (for example, IP gateways)</li> <li>• 4 = end-to-end (for example, IP hosts)</li> <li>• 7 = applications (for example, mail relays)</li> </ul> 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. FCIP tunnel support is added in Fabric OS 5.3.0 and later. 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.

**TABLE 9**

Object and OID	Access	Description
ifNumber 1.3.6.1.2.1.2.1	Read only	The number of network interfaces and existing FC ports present on this system, regardless of their current state. This number will vary across platforms (switches). The return value is dynamic for all Brocade switches and depends on the number of GbE ports, FC ports and transport interfaces.
ifTable 1.3.6.1.2.1.2.2	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 should 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.

TABLE 9

Object and OID	Access	Description
ifIndex 1.3.6.1.2.1.2.2.1.1	Read only	<p>A unique value for each interface.</p> <p>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.</p> <p>For Network Interface, the number starts from 805306369 and increments with the interface count. For FC ports, the number starts from 1073741824 and increments with the existing FC ports. Similarly the index value range for the interfaces are as follows:</p> <ul style="list-style-type: none"> <li>• For GbE port the number starts from 268435456</li> <li>• For Ten GbE (FCoE ports) the number starts from 402653184</li> <li>• For FCIP Tunnel the number starts from 536870912</li> <li>• For xFCIP Tunnel the number starts from 1342177280</li> <li>• For Port channel the number starts from 671088640</li> <li>• For VLAN the number starts from 1207959552</li> </ul>
ifDescr 1.3.6.1.2.1.2.2.1.2	Read only	<p>A textual string containing information about the interface. The ifDescr for non-bladed switches includes: lo, eth0, and fc0. The ifDescr for Brocade 12000, 24000, and 48000 directors includes: lo, eth0, fc0, and sit0, as well as fc1, eth0:1, and eth0:2.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• For WAN interface - <i>GbE port for FCIP</i></li> <li>• For transport interface - <i>FCIP tunnel ID</i></li> <li>• For FC ports - <i>Port name</i> (if set), otherwise, <i>FC port &lt;slot/port&gt;</i></li> </ul>
ifType 1.3.6.1.2.1.2.2.1.3	Read only	<p>The type of interface, designated by the physical link protocols immediately below the network layer in the protocol stack.</p> <ul style="list-style-type: none"> <li>• For WAN interface, FCIP Link - ethernetCsmacd (6)</li> <li>• For transport interface - FCIPLink (224)</li> <li>• For FC ports - Fibre Channel (56)</li> <li>• For lo - softwareLoopback (24)</li> <li>• For sit0 - 131</li> <li>• For fc0/port0 - other</li> </ul>
ifMtu 1.3.6.1.2.1.2.2.1.4	Read only	<p>The size of the largest datagram that can be sent or received on the interface, specified in octets.</p> <p>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 (these values are different for Fabric OS v4.x).</p> <ul style="list-style-type: none"> <li>• eth0 returns 1500</li> <li>• lo returns 16436</li> <li>• fc0 returns 2024</li> <li>• FCIP GbE returns 1500</li> <li>• sit0 returns 1480</li> <li>• port0 returns 2112</li> </ul>

**TABLE 9**

Object and OID	Access	Description
ifSpeed 1.3.6.1.2.1.2.2.1.5	Read only	<p>An estimate (in bits per second) of the interface's current bandwidth. For interfaces that do not vary in bandwidth or interfaces for which no accurate estimation can be made, this object should contain the nominal bandwidth. For Fabric OS v4.x, 2 Gbps returns.</p> <ul style="list-style-type: none"> <li>• eth0 returns 100000000 and not null</li> <li>• fc port returns 1,000,000,000 for 1 Gbps port</li> <li>• fc port returns 2000000000 for 2 Gbps port</li> <li>• fc port returns 4000000000 for 4 Gbps port</li> <li>• For 10G, value displayed is 4294967295</li> <li>• For 8G, value displayed is 4294967295</li> <li>• For 16G, value displayed is 4294967295</li> </ul>
ifPhysAddress 1.3.6.1.2.1.2.2.1.6	Read only	<p>The interface's address at the protocol layer immediately below the network layer in the protocol stack.</p> <p>For interfaces that do not have such an address (for example, a serial line), this object should contain an octet string of zero length.</p> <ul style="list-style-type: none"> <li>• eth0 returns the MAC address for GbE ports</li> <li>• lo returns null</li> <li>• SNMP represents the FC port ID in ASCII hex representation. For example, 36:35:35:33:36 is equivalent to the decimal value of 65536. To get the decimal value 36-30 = 6; 35-30= 5 and so on. To get the FC port ID, convert the decimal into hex (the hex value of 65536 is 01 00 00, where the first two digits are the domain, the next two digits are the area, and the last two digits are the port number). ASCII hex (36:35:35:33:36) =&gt; decimal (65536) =&gt; hex (01 00 00)</li> </ul>
ifAdminStatus 1.3.6.1.2.1.2.2.1.7	Read-write	<p>The desired state of the interface.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• up (1)</li> <li>• down (2)</li> <li>• testing (3)</li> </ul> <p><b>NOTE:</b> The testing (3) state indicates that no operational packets can be passed. This object is read-only in Fabric OS v4.x and later versions.</p> <p>This object should return same value with ifOperStatus for WAN and FC ports interfaces.</p>
ifOperStatus 1.3.6.1.2.1.2.2.1.8	Read only	<p>The current operational state of the interface.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• up (1)</li> <li>• down (2) or</li> <li>• testing (3)</li> <li>• unknown (4)</li> </ul> <p>Active tunnels will be up; inactive tunnels will be down (configured but not online).</p> <p><b>NOTE:</b> 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	<p>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.</p>
ifInOctets 1.3.6.1.2.1.2.2.1.10	Read only	<p>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.</p>



TABLE 9

Object and OID	Access	Description
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. <b>NOTE:</b> This object is not supported.
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. <b>NOTE:</b> This object is not supported.
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.
ifInUnknownProtos 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. <b>NOTE:</b> This object is not supported.
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. <b>NOTE:</b> This object is not supported.
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. <b>NOTE:</b> This object is not supported.
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). <b>NOTE:</b> 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 conformer implementation of ASN.1 and BER must be able to generate and recognize this value. <ul style="list-style-type: none"> <li>• eth0 returns null OID</li> <li>• lo returns null OID</li> <li>• fc0 returns null OID</li> </ul>

## AT group

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

**TABLE 10**

Object and OID	Access	Description
atTable 1.3.6.1.2.1.3.1	Not accessible	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> .  For example, for broadcast media, where ARP is in use, the translation table is equivalent to the ARP cache; on an X.25 network, where non-algorithmic translation to X.121 addresses is required, the translation table contains the network address to X.121 address equivalences.  The Address Translation tables contain the network address to physical address equivalences. Some interfaces do not use translation tables for determining address equivalences (for example, DDN-X.25 has an algorithmic method); if all interfaces are of this type, then the Address Translation table is empty.
atEntry 1.3.6.1.2.1.3.1.1	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 IP group is mandatory for all systems.

**TABLE 11**

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.

TABLE 11

Object and OID	Access	Description
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.
ipForwDatagrams 1.3.6.1.2.1.4.6	Read only	The number of input datagrams for which this entity was not final IP destination, as a result of which an attempt was made to find a route to forward them to that final destination. In entities that do not act as IP gateways, this counter includes only those packets that were source-routed through this entity, and the Source-Route option processing was successful.
ipInUnknownProtos 1.3.6.1.2.1.4.7	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). <b>NOTE:</b> 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. <b>NOTE:</b> 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 needed to be reassembled at this entity.
ipReasmOKs 1.3.6.1.2.1.4.15	Read only	The number of IP datagrams successfully reassembled.

TABLE 11

Object and OID	Access	Description
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).  <b>NOTE:</b> 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.
ipAddrTable 1.3.6.1.2.1.4.20	Not accessible	The table of addressing information relevant to this entity's IP addresses.
ipAddrEntry 1.3.6.1.2.1.4.20.1	Not accessible	The addressing information for one of this entity's IP addresses.
ipAdEntAddr 1.3.6.1.2.1.4.20.1.1	Read only	The IP address to which this entry's addressing information 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 will be 1. This value applies to both the subnet and network broadcasts addresses used by the entity on this (logical) interface.
ipAdEntReasmMaxSize 1.3.6.1.2.1.4.20.1.5	Read only	The size of the largest IP datagram that this entity can reassemble from incoming IP fragmented datagrams received on this interface.  <b>NOTE:</b> 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 should be reached.  The interface identified by a particular value of this index is the same interface identified by the same value of ifIndex.

TABLE 11

Object and OID	Access	Description
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 route's ipRouteProto value. If this metric is not used, its value should be set to -1.
ipRouteMetric2 1.3.6.1.2.1.4.21.1.4	Read-write	An alternate routing metric for this route. The semantics of this metric are determined by the routing protocol specified in the route's ipRouteProto value. If this metric is not used, its value should be set to -1.
ipRouteMetric3 1.3.6.1.2.1.4.21.1.5	Read-write	An alternate routing metric for this route. The semantics of this metric are determined by the routing protocol specified in the route's ipRouteProto value. If this metric is not used, its value should be set to -1.
ipRouteMetric4 1.3.6.1.2.1.4.21.1.6	Read-write	An alternate routing metric for this route. The semantics of this metric are determined by the routing protocol specified in the route's ipRouteProto value. If this metric is not used, its value should be set to -1.
ipRouteNextHop 1.3.6.1.2.1.4.21.1.7	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"> <li>• other (1) - None of the following</li> <li>• invalid (2) - An invalidated route—route to directly</li> <li>• direct (3) - Connected (sub) network—route to a non-local</li> <li>• indirect (4) - Host/network/subnetwork</li> </ul> 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 should 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. <b>NOTE:</b> This object is not supported.

TABLE 11

Object and OID	Access	Description								
ipRouteMask 1.3.6.1.2.1.4.21.1.11	Read-write	<p>The mask to be logical-ANDed with the destination address before being compared to the value in the ipRouteDest field. For those systems that do not support arbitrary subnet masks, an agent constructs the value of the ipRouteMask by determining whether the value of the correspondent ipRouteDest field belong to a class-A, B, or C network, and then using one of the following:</p> <table border="1"> <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> <p><b>NOTE:</b> If the value of the ipRouteDest is 0.0.0.0 (default route), then the mask value is also 0.0.0.0.</p> <p>All IP routing subsystems implicitly use this mechanism.</p>	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	<p>An alternate routing metric for this route.</p> <p>The semantics of this metric are determined by the routing protocol specified in the route's ipRouteProto value. If this metric is not used, its value should be set to -1.</p>								
ipRouteInfo 1.3.6.1.2.1.4.21.1.13	Read only	<p>A reference to MIB definitions specific to the particular routing protocol that is responsible for this route, as determined by the value specified in the route's ipRouteProto value. If this information is not present, its value should be set to the Object Identifier {0 0}, which is a syntactically valid object identifier; any conformer implementation of ASN.1 and BER must be able to generate and recognize this value.</p>								
ipNetToMediaTable 1.3.6.1.2.1.4.22	Not accessible	<p>The IP Address Translation table used for mapping from IP addresses to physical addresses.</p> <p><b>NOTE:</b> 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.</p>								
ipNetToMediaEntry 1.3.6.1.2.1.4.22.1	Not accessible	<p>Each entry contains one IP address to physical address equivalence.</p>								
ipNetToMediaIfIndex 1.3.6.1.2.1.4.22.1.1	Read-write	<p>The interface on which this entry's equivalence is effective.</p> <p>The interface identified by a particular value of this index is the same interface identified by the same value of ifIndex.</p>								
ipNetToMediaPhysAddress 1.3.6.1.2.1.4.22.1.2	Read-write	<p>The media-dependent physical address.</p>								
ipNetToMediaNetAddress 1.3.6.1.2.1.4.22.1.3	Read-write	<p>The IpAddress corresponding to the media-dependent physical address.</p>								
ipNetToMediaType 1.3.6.1.2.1.4.22.1.4	Read-write	<p>The type of mapping.</p>								
ipRoutingDiscards 1.3.6.1.2.1.4.23	Read only	<p>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.</p> <p><b>NOTE:</b> This object is not supported.</p>								

TABLE 11

Object and OID	Access	Description
ipAddressTable 1.3.6.1.2.1.4.34	Not accessible	This table contains IPv4 and IPv6 addressing information relevant to the entity's interfaces.
ipAddressEntry 1.3.6.1.2.1.4.34.1	Not accessible	An address mapping for a particular interface.
ipAddressAddrType 1.3.6.1.2.1.4.34.1.1	Not accessible	The address type of <a href="#">ipAddressAddr</a> .
ipAddressAddr 1.3.6.1.2.1.4.34.1.2	Not accessible	The IP address to which this entry's addressing information pertains.
ipAddressIfIndex 1.3.6.1.2.1.4.34.1.3	Read create	The index value that 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 the ifIndex of IF MIB.
ipAddressType 1.3.6.1.2.1.4.34.1.4	Read create	The type of address. Valid values: <ul style="list-style-type: none"> <li>• unicast (1)</li> <li>• anycast (2)</li> <li>• broadcast (3) - This is not a valid value for IPv6 addresses.</li> </ul>
ipAddressPrefix 1.3.6.1.2.1.4.34.1.5	Read only	A pointer to the row in the prefix table to which this address belongs. May be {0 0} if there is no such row.
ipAddressOrigin 1.3.6.1.2.1.4.34.1.6	Read only	The origin of the address.
ipAddressStatus 1.3.6.1.2.1.4.34.1.7	Read create	The status of the address, describing if the address can be used for communication. Valid values: <ul style="list-style-type: none"> <li>• preferred (1)</li> <li>• deprecated (2)</li> <li>• tentative (3)</li> </ul> In the absence of other information, for an IPv4 address, the status is always preferred (1).
ipAddressCreated 1.3.6.1.2.1.4.34.1.8	Read only	The value of sysUpTime at the time this entry was created. If this entry was created prior to the last re-initialization of the local network management subsystem, then this object contains a zero value.
ipAddressLastChanged 1.3.6.1.2.1.4.34.1.9	Read only	The value of sysUpTime at the time this entry was last updated. If this entry was updated prior to the last re-initialization of the local network management subsystem, then this object contains a zero value.
ipAddressRowStatus 1.3.6.1.2.1.4.34.1.10	Read create	The status of this conceptual row.
ipAddressStorageType 1.3.6.1.2.1.4.34.1.11	Read create	The storage type for this conceptual row. If this object has a value of 'permanent', then no other objects are required to be able to be modified.

## ICMP group

Implementation of the ICMP group is mandatory for all systems.

TABLE 12

Object and OID	Access	Description
icmpInMsgs 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 icmpInErrors.
icmpInErrors 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).
icmpInDestUnreachs 1.3.6.1.2.1.5.3	Read only	The number of ICMP Destination Unreachable messages received.
icmpInTimeExcds 1.3.6.1.2.1.5.4	Read only	The number of ICMP Time Exceeded messages received.
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. <b>NOTE:</b> 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 this counter's value.
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.



TABLE 12

Object and OID	Access	Description
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.
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 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.

TABLE 13

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 3 (rsre), an object of this type has the semantics of the LBOUND quantity described in RFC 793.
tcpRtoMax 1.3.6.1.2.1.6.3	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 3 (rsre), an object of this type has the semantics of the UBOUND quantity described in RFC 793.
tcpMaxConn 1.3.6.1.2.1.6.4	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 should 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.

TABLE 13

Object and OID	Access	Description
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.
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.

TABLE 13

Object and OID	Access	Description
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"> <li>• closed</li> <li>• listen</li> <li>• synSent (3)</li> <li>• synReceived (4)</li> <li>• established (5)</li> <li>• finWait1 (6)</li> <li>• finWait2 (7)</li> <li>• closeWait (8)</li> <li>• lastAck (9)</li> <li>• closing (10)</li> <li>• timeWait (11)</li> <li>• deleteTCB (12)</li> </ul> <p><b>NOTE:</b> Fabric OS v3.1.x and v4.x do not allow the SET operation on this variable.</p>
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.
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 UDP group is mandatory for all systems that implement the UDP.

**TABLE 14**

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

TABLE 15

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 protocol 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 protocol 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 protocol 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 protocol 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 protocol 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 protocol 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 protocol 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 protocol 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 protocol 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 protocol 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 protocol 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 protocol 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 protocol 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 protocol 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 protocol entity.
snmplnGetResponses 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 protocol entity.
snmplnTraps 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 protocol entity.

**TABLE 15**

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

**NOTE**

snmpInBadTypes and snmpOutReadOnlys are not supported.

## ifMIB group

The ifMIB group is implemented in Fabric OS v5.3.0 and later versions 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.

**TABLE 16**

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 should be the name of the interface as assigned by the local device and should be suitable for use in commands entered at the devices console. This might be a text name, such as `le0 or a simple port number, such as `1, depending on the interface naming syntax of the device. If several entries in the iftable together represent a single interface as named by the device, then each will have the same value of ifName. Note that for an agent which responds to SNMP queries concerning an interface on some other (proxied) device, then the value of ifName for such an interface is the proxied devices local name for it. If there is no local name, or this object is otherwise not applicable, then this object contains a zero-length string.
ifInMulticastPkts 1.3.6.1.2.1.31.1.1.1.2	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. <b>NOTE:</b> This object is not supported.
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. <b>NOTE:</b> This object is not supported.
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. <b>NOTE:</b> This object is not supported.

TABLE 16

Object and OID	Access	Description
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. <b>NOTE:</b> This object is not supported.
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. <b>NOTE:</b> This object is not supported.
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 <b>NOTE:</b> This object is not supported.
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.



TABLE 16

Object and OID	Access	Description
ifHCOutMulticastPkts 1.3.6.1.2.1.31.1.1.1.12	Read only	<p>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</p> <p><b>NOTE:</b> This object is not supported.</p>
ifHCOutBroadcastPkts 1.3.6.1.2.1.31.1.1.1.13	Read only	<p>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.</p> <p><b>NOTE:</b> This object is not supported.</p>
ifLinkUpDownTrapEnable 1.3.6.1.2.1.31.1.1.1.14	Read-write	<p>Indicates whether linkUp or linkDown traps should be generated for this interface. By default, this object should have the value enabled (1) for interfaces which do not operate on any other interface (as defined in the ifStackTable), and disabled (2) otherwise.</p>
ifHighSpeed 1.3.6.1.2.1.31.1.1.1.15	Read only	<p>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.</p> <p>For 1 Gbps, the value is 1000.</p> <p>For 2 Gbps, the value is 2000.</p> <p>For 4 Gbps, 8 Gbps, 10 Gbps, and 16 Gbps, the value is 16000.</p>
ifPromiscuousMode 1.3.6.1.2.1.31.1.1.1.16	Read-write	<p>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.</p> <p>Hard-coded to false.</p>
ifConnectorPresent 1.3.6.1.2.1.31.1.1.1.17	Read only	<p>Set to true when media is connected, otherwise false. For virtual FC ports, it is always false.</p>

TABLE 16

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 non-volatile handle for the interface. On the first instantiation of an interface, the value of ifAlias associated with that interface is the zero-length string. As and when a value is written into an instance of ifAlias through a network management set operation, then the agent must retain the supplied value in the ifAlias instance associated with the same interface for as long as that interface remains instantiated, including across all re-initializations or reboots of the network management system, including those which result in a change of the interfaces ifIndex value. An example of the value which a network manager might store in this object for a WAN interface is the (Telcos) circuit number or identifier of the interface. Some agents may support write-access only for interfaces having particular values of iftype. An agent which supports write access to this object is required to keep the value in non-volatile storage, but it may limit the length of new values depending on how much storage is already occupied by the current values for other interfaces.</p> <p><b>NOTE:</b> 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 interfaces counters suffered a discontinuity. The relevant counters are the specific instances associated with this interface of any Counter32 or Counter64 object contained in the iftable or ifXTable. If no such discontinuities have occurred since the last re-initialization of the local management subsystem, then this object contains a zero value.</p> <p><b>NOTE:</b> This object is not supported.</p>

## Generic traps

TABLE 17

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 agent's configuration or the protocol entity implementation may be altered. This trap is generated for the following switch events:</p> <ul style="list-style-type: none"> <li>reboot</li> <li>fastboot</li> </ul>
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. This trap is generated for the following switch events:</p> <ul style="list-style-type: none"> <li>firmwaredownload</li> <li>hafailover</li> </ul>

TABLE 17

Trap name and OID	Description
linkDown 1.3.6.1.6.3.1.1.5.3	<p>A linkDown trap signifies that the sending protocol entity recognizes a failure in one of the communication links represented in the agent's configuration.</p> <p>This trap is generated for the following ports:</p> <ul style="list-style-type: none"> <li>• FCIP GE ports [Brocade 7800E/Brocade 7500/FR4-18i router blade/FX8-24 DCX Extension Blade]</li> <li>• ISCSI GE ports [FC4-16IP]</li> <li>• FCOE 10G ports [Brocade 8000, FCOE10-24 DCX Blade]</li> <li>• FCIP xGE ports [FX8-24 DCX Extension Blade]</li> <li>• FCIP tunnel on GE ports</li> <li>• FCIP tunnel on xGE ports</li> <li>• FCIP GE ports - copper</li> </ul> <p>This trap is generated for the following switch events:</p> <ul style="list-style-type: none"> <li>• portdisable</li> <li>• fcoe -disable [for FCOE ports]</li> </ul> <p>Varbinds for this trap are as follows:</p> <ul style="list-style-type: none"> <li>• ifIndex</li> <li>• ifAdminStatus</li> <li>• ifOperStatus</li> </ul>
linkUp 1.3.6.1.6.3.1.1.5.4	<p>A linkUp trap signifies that the sending protocol entity recognizes that one of the communication links represented in the agent's configuration has come up.</p> <p>This trap is generated for the following ports:</p> <ul style="list-style-type: none"> <li>• FCIP GE ports [Brocade 7800E/Brocade 7500/FR4-18i router blade/FX8-24 DCX Extension Blade]</li> <li>• ISCSI GE ports [FC4-16IP]</li> <li>• FCOE 10G ports [Brocade 8000, FCOE10-24 DCX Blade]</li> <li>• FCIP xGE ports [FX8-24 DCX Extension Blade]</li> <li>• FCIP tunnel on GE ports</li> <li>• FCIP tunnel on xGE ports</li> <li>• FCIP GE ports - copper</li> </ul> <p>This trap is generated for the following switch events:</p> <ul style="list-style-type: none"> <li>• portenable</li> <li>• fcoe -enable</li> </ul> <p>Varbinds for this trap are as follows:</p> <ul style="list-style-type: none"> <li>• ifIndex</li> <li>• ifAdminStatus</li> <li>• ifOperStatus</li> </ul>
authenticationFailure 1.3.6.1.6.3.1.1.5.5	<p>An authenticationFailure trap signifies that the sending protocol entity is the addressee of a protocol message that is not properly authenticated. While implementations of the SNMP must be capable of generating this trap, they must also be capable of suppressing the emission of such traps through an implementation-specific mechanism.</p> <p>This trap is generated when you perform GET or SET with invalid community strings (snmpv1).</p> <p><b>NOTE:</b> authTraps must be enabled in the switch with the command: <code>snmpconfig -set systemgroup</code>.</p>

## 2 Generic traps

# RMON MIB Objects

---

## In this chapter

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## RMON MIB 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.

### RMON MIB object hierarchy

Figure 17 through Figure 22 depict the organization and structure of RMON MIB.

```

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

```

FIGURE 17 RMON MIB overall 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 18** 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 19** 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 20 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 21 Event 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 22 RMON traps hierarchy**

## Textual conventions

[Table 18](#) lists the textual conventions used for RMON MIB.

**TABLE 18 MIB-II 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. 1 valid 2 createRequest 3 underCreation 4 invalid

## 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.

## Statistics group

**TABLE 19**

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 <b>rmon collection stats &lt;stats-index&gt;</b> 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 will identify the instance of the ifIndex object, defined in RFC 1213 and RFC 1573 [4,6], for the desired interface.
etherStatsDropEvents 1.3.6.1.2.1.16.1.1.1.3	Read only	The total number of events in which packets were dropped by the probe due to lack of resources.  <b>NOTE:</b> This number is not necessarily the number of packets dropped; it is just the number of times this condition has been detected.
etherStatsOctets 1.3.6.1.2.1.16.1.1.1.4	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.



TABLE 19

Object and OID	Access	Description
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. <b>NOTE:</b> 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. <b>NOTE:</b> 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"> <li>FCS error: A bad Frame Check Sequence (FCS) with an integral number of octets.</li> <li>Alignment error: A bad FCS with a non-integral number of octets.</li> </ul>
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"> <li>FCS error: A bad FCS with an integral number of octets.</li> <li>Alignment error: A bad FCS with a non-integral number of octets.</li> </ul> <b>NOTE:</b> 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"> <li>FCS error: A bad FCS with an integral number of octets.</li> <li>Alignment error: A bad FCS with a non-integral number of octets.</li> </ul>
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 will depend 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).
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).

## 3 History group

TABLE 19

Object and OID	Access	Description
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

TABLE 20

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. History is collected using the <b>rmon collection history</b> command.
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.

TABLE 20

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

TABLE 21

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. <b>NOTE:</b> 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. <b>NOTE:</b> 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).

### 3 Alarm group

**TABLE 21**

Object and OID	Access	Description
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.
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

**TABLE 22**

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 <b>rmon alarm &lt;alarm-id&gt;</b> 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.

TABLE 22

Object and OID	Access	Description
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 will be compared directly with the thresholds at the end of the sampling interval. If the value of this object is deltaValue(2), the value of the selected variable at the last sample will be subtracted from the current value, and the difference compared with the thresholds. This object may not be modified if the associated alarmStatus object is equal to valid(1).
alarmValue 1.3.6.1.2.1.16.3.1.1.5	Read only	The value of the statistic during the last sampling period.
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 will be generated. After a rising event is generated, another such event will not be generated until the sampled value falls below this threshold and reaches the alarmFallingThreshold.
alarmFallingThreshold 1.3.6.1.2.1.16.3.1.1.8	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 will be generated. After a falling event is generated, another such event will not be generated until the sampled value rises above this threshold and reaches the alarmRisingThreshold.
alarmRisingEventIndex 1.3.6.1.2.1.16.3.1.1.9	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

TABLE 23

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 <b>rmon event</b> <event-id> command.
eventTable 1.3.6.1.2.1.16.9.1	Not accessible	A list of events to be generated.

**TABLE 23**

Object and OID	Access	Description
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 will make about this event. In the case of a log, an entry is made in the log table for each event. In the case of snmp-trap, an SNMP trap is sent to one or more management stations.
eventCommunity 1.3.6.1.2.1.16.9.1.1.4	Read-write	If an SNMP trap is to be sent, it will be sent to the SNMP community specified by this octet string.
eventLastTimeSent 1.3.6.1.2.1.16.9.1.1.5	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 will be 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 'monitor' and has associated entries in the log table, all connected management stations should retrieve those log entries, as they may have significance to all management stations connected to this device.
eventStatus 1.3.6.1.2.1.16.9.1.1.7	Read-write	The status of this event entry. If this object is not equal to valid (1), all associated log entries will be deleted by the agent.
logTable 1.3.6.1.2.1.16.9.2	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.

## RMON Traps

**TABLE 24**

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.

### 3 RMON Traps



# FE MIB Objects

---

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## FE MIB overview

Brocade supports two versions of the FE MIB:

- FIBRE-CHANNEL-FE-MIB (RFC2837) in the MIB-II branch.
- FCFABRIC-ELEMENT-MIB in the experimental branch.

The version of the FE MIB supported depends on the version of the Fabric OS. [Table 25](#) lists which FE MIB is supported in which Fabric OS version.

**TABLE 25** FE MIBs and supported Fabric OS versions

Fabric OS version	FIBRE-CHANNEL-FE-MIB (MIB-II branch)	FCFABRIC-ELEMENT-MIB (experimental branch)
v7.1.0	Yes	No
v7.0.0	Yes	No
v6.4.1_fcoe	Yes	No
v6.4.0	Yes	No
v6.3.0	Yes	No
v6.2.0	Yes	No
v6.1.2_CEE	Yes	No

**TABLE 25 FE MIBs and supported Fabric OS versions (Continued)**

Fabric OS version	FIBRE-CHANNEL-FE-MIB (MIB-II branch)	FCFABRIC-ELEMENT-MIB (experimental branch)
v6.1.0	Yes	No
v6.0.0	Yes	No
v5.x	Yes	No
v4.x	Yes	No
v3.1.x	Yes	No
v3.0.x	Yes	Yes
v2.6.x	No	Yes

**NOTE**

The port swap feature does not have any effect on SNMP for FE MIB.

## FIBRE-CHANNEL-FE-MIB (MIB-II branch)

This section contains descriptions and other information specific to FIBRE-CHANNEL-FE-MIB (*in the MIB-II branch*), including:

- [FIBRE-CHANNEL-FE-MIB organization](#) ..... 71
- [Definitions for FIBRE-CHANNEL-FE-MIB](#) ..... 74
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The descriptions of each of the MIB variables in this chapter come directly from the FIBRE-CHANNEL-FE-MIB itself. The notes that follows the descriptions typically pertain to Brocade-specific information and are provided by Brocade.

**NOTE**

Brocade does not support the settable “Write” function for any of the Fibre Channel FE MIB objects except **fcFxCPortPhysAdminStatus**.

The object types in FIBRE-CHANNEL-FE-MIB are organized into the following groupings:

- Configuration
- Operational
- Error
- Accounting
- Capability

## FIBRE-CHANNEL-FE-MIB organization

Figure 23 through Figure 28 depict the organization and structure of FIBRE-CHANNEL-FE-MIB.

```
- iso
  - org
    - dod
      - internet
        - mgmt
          - mib-2
            - fcFeMIB
              - fcFeMIBObjects
                - fcFeConfig
                - fcFeStatus
                - fcFeError
                - fcFeAccounting
                - fcFeCapabilities
              - fcFeMIBConformance
                - fcFeMIBCompliances
                  - fcFeMIBMinimumCompliance
                  - fcFeMIBFullCompliance
                - fcFeMIBGroups
                  - fcFeConfig
                  - fcFeStatus
                  - fcFeError
                  - fcFeClass1Accounting
                  - fcFeClass2Accounting
                  - fcFeClass3Accounting
                  - fcFeCapabilities
```

FIGURE 23 fcFeMIB hierarchy

## 4 FIBRE-CHANNEL-FE-MIB (MIB-II branch)

```
- fcFeConfig
- fcFeFabricName 1.3.6.1.2.1.75.1.1.1
- fcFeElementName 1.3.6.1.2.1.75.1.1.2
- fcFeModuleCapacity 1.3.6.1.2.1.75.1.1.3
- fcFeModuleTable 1.3.6.1.2.1.75.1.1.4
  - fcFeModuleEntry 1.3.6.1.2.1.75.1.1.4.1
    - fcFeModuleIndex 1.3.6.1.2.1.75.1.1.4.1.1
    - fcFeModuleDescr 1.3.6.1.2.1.75.1.1.4.1.2
    - fcFeModuleObjectID 1.3.6.1.2.1.75.1.1.4.1.3
    - fcFeModuleOperStatus 1.3.6.1.2.1.75.1.1.4.1.4
    - fcFeModuleLastChange 1.3.6.1.2.1.75.1.1.4.1.5
    - fcFeModuleFxpPortCapacity 1.3.6.1.2.1.75.1.1.4.1.6
    - fcFeModuleName 1.3.6.1.2.1.75.1.1.4.1.7
- fcFxpPortTable 1.3.6.1.2.1.75.1.1.5
  - fcFxpPortEntry 1.3.6.1.2.1.75.1.1.5.1
    - fcFxpPortIndex 1.3.6.1.2.1.75.1.1.5.1.1
    - fcFxpPortName 1.3.6.1.2.1.75.1.1.5.1.2
    - fcFxpPortFcphVersionHigh 1.3.6.1.2.1.75.1.1.5.1.3
    - fcFxpPortFcphVersionLow 1.3.6.1.2.1.75.1.1.5.1.4
    - fcFxpPortBbCredit 1.3.6.1.2.1.75.1.1.5.1.5
    - fcFxpPortRxBufSize 1.3.6.1.2.1.75.1.1.5.1.6
    - fcFxpPortRatov 1.3.6.1.2.1.75.1.1.5.1.7
    - fcFxpPortEdtov 1.3.6.1.2.1.75.1.1.5.1.8
    - fcFxpPortCosSupported 1.3.6.1.2.1.75.1.1.5.1.9
    - fcFxpPortIntermixSupported 1.3.6.1.2.1.75.1.1.5.1.10
    - fcFxpPortStackedConnMode 1.3.6.1.2.1.75.1.1.5.1.11
    - fcFxpPortClass2SeqDeliv 1.3.6.1.2.1.75.1.1.5.1.12
    - fcFxpPortClass3SeqDeliv 1.3.6.1.2.1.75.1.1.5.1.13
    - fcFxpPortHoldTime 1.3.6.1.2.1.75.1.1.5.1.14
```

**FIGURE 24** fcFeConfig hierarchy

```

- fcFeStatus
  - fcFxpPortStatusTable 1.3.6.1.2.1.75.1.2.1
    - fcFxpPortStatusEntry 1.3.6.1.2.1.75.1.2.1.1
      - fcFxpPortID 1.3.6.1.2.1.75.1.2.1.1.1
      - fcFxpPortBbCreditAvailable 1.3.6.1.2.1.75.1.2.1.1.2
      - fcFxpPortOperMode 1.3.6.1.2.1.75.1.2.1.1.3
      - fcFxpPortAdminMode 1.3.6.1.2.1.75.1.2.1.1.4
  - fcFxpPortPhysTable 1.3.6.1.2.1.75.1.2.2
    - fcFxpPortPhysEntry 1.3.6.1.2.1.75.1.2.2.1
      - fcFxpPortPhysAdminStatus 1.3.6.1.2.1.75.1.2.2.1.1
      - fcFxpPortPhysOperStatus 1.3.6.1.2.1.75.1.2.2.1.2
      - fcFxpPortPhysLastChange 1.3.6.1.2.1.75.1.2.2.1.3
      - fcFxpPortPhysRttov 1.3.6.1.2.1.75.1.2.2.1.4
  - fcFxpLoginTable 1.3.6.1.2.1.75.1.2.3
    - fcFxpLoginEntry 1.3.6.1.2.1.75.1.2.3.1
      - fcFxpPortNxLoginIndex 1.3.6.1.2.1.75.1.2.3.1.1
      - fcFxpPortFcphVersionAgreed 1.3.6.1.2.1.75.1.2.3.1.2
      - fcFxpPortNxPortBbCredit 1.3.6.1.2.1.75.1.2.3.1.3
      - fcFxpPortNxPortRxDatFieldSize 1.3.6.1.2.1.75.1.2.3.1.4
      - fcFxpPortCosSuppAgreed 1.3.6.1.2.1.75.1.2.3.1.5
      - fcFxpPortIntermixSuppAgreed 1.3.6.1.2.1.75.1.2.3.1.6
      - fcFxpPortStackedConnModeAgreed 1.3.6.1.2.1.75.1.2.3.1.7
      - fcFxpPortClass2SeqDelivAgreed 1.3.6.1.2.1.75.1.2.3.1.8
      - fcFxpPortClass3SeqDelivAgreed 1.3.6.1.2.1.75.1.2.3.1.9
      - fcFxpPortNxPortName 1.3.6.1.2.1.75.1.2.3.1.10
      - fcFxpPortConnectedNxPort 1.3.6.1.2.1.75.1.2.3.1.11
      - fcFxpPortBbCreditModel 1.3.6.1.2.1.75.1.2.3.1.12

```

FIGURE 25 fcFeStatus hierarchy

```

- fcFeError
  - fcFxpPortErrorTable 1.3.6.1.2.1.75.1.3.1
    - fcFxpPortErrorEntry 1.3.6.1.2.1.75.1.3.1.1
      - fcFxpPortLinkFailures 1.3.6.1.2.1.75.1.3.1.1.1
      - fcFxpPortSyncLosses 1.3.6.1.2.1.75.1.3.1.1.2
      - fcFxpPortSigLosses 1.3.6.1.2.1.75.1.3.1.1.3
      - fcFxpPortPrimSeqProtoErrors 1.3.6.1.2.1.75.1.3.1.1.4
      - fcFxpPortInvalidTxWords 1.3.6.1.2.1.75.1.3.1.1.5
      - fcFxpPortInvalidCrcs 1.3.6.1.2.1.75.1.3.1.1.6
      - fcFxpPortDelimiterErrors 1.3.6.1.2.1.75.1.3.1.1.7
      - fcFxpPortAddressIdErrors 1.3.6.1.2.1.75.1.3.1.1.8
      - fcFxpPortLinkResetIns 1.3.6.1.2.1.75.1.3.1.1.9
      - fcFxpPortLinkResetOuts 1.3.6.1.2.1.75.1.3.1.1.10
      - fcFxpPortOlsIns 1.3.6.1.2.1.75.1.3.1.1.11
      - fcFxpPortOlsOuts 1.3.6.1.2.1.75.1.3.1.1.12

```

FIGURE 26 fcFeError hierarchy

## 4 FIBRE-CHANNEL-FE-MIB (MIB-II branch)

```
- fcFeAccounting
  - fcFxpPortC1AccountingTable 1.3.6.1.2.1.75.1.4.1
    - fcFxpPortC1AccountingEntry 1.3.6.1.2.1.75.1.4.1.1
      - fcFxpPortC1InFrames 1.3.6.1.2.1.75.1.4.1.1.1
      - fcFxpPortC1OutFrames 1.3.6.1.2.1.75.1.4.1.1.2
      - fcFxpPortC1InOctets 1.3.6.1.2.1.75.1.4.1.1.3
      - fcFxpPortC1OutOctets 1.3.6.1.2.1.75.1.4.1.1.4
      - fcFxpPortC1Discards 1.3.6.1.2.1.75.1.4.1.1.5
      - fcFxpPortC1FbsyFrames 1.3.6.1.2.1.75.1.4.1.1.6
      - fcFxpPortC1FrjtFrames 1.3.6.1.2.1.75.1.4.1.1.7
      - fcFxpPortC1InConnections 1.3.6.1.2.1.75.1.4.1.1.8
      - fcFxpPortC1OutConnections 1.3.6.1.2.1.75.1.4.1.1.9
      - fcFxpPortC1ConnTime 1.3.6.1.2.1.75.1.4.1.1.10
    - fcFxpPortC2AccountingTable 1.3.6.1.2.1.75.1.4.2
      - fcFxpPortC2AccountingEntry 1.3.6.1.2.1.75.1.4.2.1
        - fcFxpPortC2InFrames 1.3.6.1.2.1.75.1.4.2.1.1
        - fcFxpPortC2OutFrames 1.3.6.1.2.1.75.1.4.2.1.2
        - fcFxpPortC2InOctets 1.3.6.1.2.1.75.1.4.2.1.3
        - fcFxpPortC2OutOctets 1.3.6.1.2.1.75.1.4.2.1.4
        - fcFxpPortC2Discards 1.3.6.1.2.1.75.1.4.2.1.5
        - fcFxpPortC2FbsyFrames 1.3.6.1.2.1.75.1.4.2.1.6
        - fcFxpPortC2FrjtFrames 1.3.6.1.2.1.75.1.4.2.1.7
      - fcFxpPortC3AccountingTable 1.3.6.1.2.1.75.1.4.3
        - fcFxpPortC3AccountingEntry 1.3.6.1.2.1.75.1.4.3.1
          - fcFxpPortC3InFrames 1.3.6.1.2.1.75.1.4.3.1.1
          - fcFxpPortC3OutFrames 1.3.6.1.2.1.75.1.4.3.1.2
          - fcFxpPortC3InOctets 1.3.6.1.2.1.75.1.4.3.1.3
          - fcFxpPortC3OutOctets 1.3.6.1.2.1.75.1.4.3.1.4
          - fcFxpPortC3Discards 1.3.6.1.2.1.75.1.4.3.1.5
```

**FIGURE 27** fcFeAccounting hierarchy

```
- fcFeCapabilities
  - fcFxpPortCapTable 1.3.6.1.2.1.75.1.5.1
    - fcFxpPortCapEntry 1.3.6.1.2.1.75.1.5.1.1
      - fcFxpPortCapFcphVersionHigh 1.3.6.1.2.1.75.1.5.1.1.1
      - fcFxpPortCapFcphVersionLow 1.3.6.1.2.1.75.1.5.1.1.2
      - fcFxpPortCapBbCreditMax 1.3.6.1.2.1.75.1.5.1.1.3
      - fcFxpPortCapBbCreditMin 1.3.6.1.2.1.75.1.5.1.1.4
      - fcFxpPortCapRxDataFieldSizeMax 1.3.6.1.2.1.75.1.5.1.1.5
      - fcFxpPortCapRxDataFieldSizeMin 1.3.6.1.2.1.75.1.5.1.1.6
      - fcFxpPortCapCos 1.3.6.1.2.1.75.1.5.1.1.7
      - fcFxpPortCapIntermix 1.3.6.1.2.1.75.1.5.1.1.8
      - fcFxpPortCapStackedConnMode 1.3.6.1.2.1.75.1.5.1.1.9
      - fcFxpPortCapClass2SeqDeliv 1.3.6.1.2.1.75.1.5.1.1.10
      - fcFxpPortCapClass3SeqDeliv 1.3.6.1.2.1.75.1.5.1.1.11
      - fcFxpPortCapHoldTimeMax 1.3.6.1.2.1.75.1.5.1.1.12
      - fcFxpPortCapHoldTimeMin 1.3.6.1.2.1.75.1.5.1.1.13
```

**FIGURE 28** fcFeCapabilities hierarchy

## Definitions for FIBRE-CHANNEL-FE-MIB

Table 26 lists the definitions for fcFeMIB.

TABLE 26 FIBRE-CHANNEL-FE-MIB definitions

Type definition	Value	Description
Display string	Octet string of size 0 to 255	Represents textual information taken from the NVT ASCII character set, as defined in pages 4, 10-11 of RFC 854.
Milliseconds	Integer from 0 to 2147383647	Represents time unit value in milliseconds.
Microseconds	Integer from 0 to 2147383647	Represents time unit value in microseconds.
FcNameId	Octet string of size 8	World Wide Name or Fibre Channel name associated with an FC entity. It is a Network_Destination_ID or Network_Source_ID composed of a value up to 60 bits wide, occupying the remaining 8 bytes while the first nibble identifies the format of the Name_Identifier. Name_Identifier hex values: 0 (ignored) 1 (IEEE 48-bit address) 2 (IEEE extended) 3 (locally assigned) 4 (32-bit IP address)
FabricName	Octet string of size 8	The name identifier of a fabric. Each fabric provides a unique fabric name. Valid formats include: IEEE 48 Local
FcPortName	Octet string of size 8	The name identifier associated with a port. Valid formats include: IEEE 48 IEEE extended Local
FcAddressId	Octet string of size 3	A 24-bit value unique within the address space of a fabric.
FcRxDataFieldSize	Integer from 128 to 2112	Receive data field size of an Nx_Port or Fx_Port.
FcBbCredit	Integer from 0 to 32767	Buffer-to-buffer credit of an Nx_Port or Fx_Port.
FcphVersion	Integer from 0 to 255	Version of FC-PH supported by an Nx_Port or Fx_Port.
FcStackedConnMode	Integer from 1 to 3	Indicates the Class 1 Stacked Connect Mode supported by an Nx_Port or Fx_Port. 1 (none) 2 (transparent) 3 (lockedDown)
FcCosCap	Integer from 1 to 127	Class of service capability of an Nx_Port or Fx_Port. bit 0 (Class F) bit 1 (Class 1) bit 2 (Class 2) bit 3 (Class 3) bit 4 (Class 4) bit 5 (Class 5) bit 6 (Class 6) bit 7 (reserved for future)

## 4 FIBRE-CHANNEL-FE-MIB (MIB-II branch)

**TABLE 26 FIBRE-CHANNEL-FE-MIB definitions (Continued)**

Type definition	Value	Description
FcOBaudRate	Integer according to FC-0 baud rates	1 (other) None of below 2 (one-eighth) 155 Mbaud (12.5 MB/s) 4 (quarter) 266 Mbaud (25.0 MB/s) 8 (half) 532 Mbaud (50.0 MB/s) 16 (full) 1 Gbaud (100 MB/s) 32 (double) 2 Gbaud (200 MB/s) 64 (quadruple) 4 Gbaud (400 MB/s)
FcOBaudRateCap	Integer from 0 to 127	bit 0 (other) bit 1 (one-eighth) bit 2 (quarter) bit 3 (half) bit 4 (full) bit 5 (double) bit 6 (quadruple) bit 7 (Reserved for future)
FcOMediaCap	Integer from 0 to 65535	bit 0 (unknown) bit 1 (single mode fibre (sm)) bit 2 (multimode fibre 50 micron (m5)) bit 3 (multimode fibre 62.5 micron (m6)) bit 4 (video cable (tv)) bit 5 (miniature cable (mi)) bit 6 (shielded twisted pair (stp)) bit 7 (twisted wire (tw)) bit 8 (long video (lv)) bits 9-15 (Reserved for future use)
FcOMedium	Integer	1 (unknown) 2 (sm) 4 (m5) 8 (m6) 16 (tv) 32 (mi) 64 (stp) 128 (tw) 256 (lv)
FcOTxType	Integer	1 (unknown) 2 (longWaveLaser (LL)) 3 (shortWaveLaser (SL)) 4 (longWaveLED (LE)) 5 (electrical (EL)) 6 (shortWaveLaser-noOFC (SN))
FcODistance	Integer	The FC-0 distance range associated with a port transmitter: 1 (unknown) 2 (long) 3 (intermediate) 4 (short)
FcFeModuleCapacity	Integer from 1 to 256	Maximum number of modules within a fabric element; returns 1 for all devices.



TABLE 26 FIBRE-CHANNEL-FE-MIB definitions (Continued)

Type definition	Value	Description
FcFeFxPortCapacity	Integer from 1 to 640	Maximum number of Fx_Ports within a module. For the Brocade 300, this value is 24. For the Brocade 4100, this value is 32. For the Brocade 4900, this value is 64. For the Brocade 5000, this value is 32. For the Brocade 5100, this value is 40. For the Brocade 5300, this value is 80. For the Brocade 7500 or 7500E, this value is 32. For the Brocade 7600, this value is 16. For the Brocade 7800 Extension Switch, this value is 24. For the Brocade 8000, this value is 32. For the Brocade Encryption switch, this value is 32. For the Brocade DCX, this value is 640. For the Brocade DCX-4S, this value is 320. For the Brocade 48000, this value is 384. For the Brocade 6505, this value is 24. For the Brocade 6510, this value is 48. For the Brocade 6520, this value is 96. For the Brocade DCX 8510-4 Backbone, this value is 320. For the Brocade DCX 8510-8 Backbone, this value is 640. For the Brocade VA-40FC, this value is 40.
FcFeModuleIndex	Integer from 1 to 256	Module index within a conceptual table.
FcFeFxPortIndex	Integer from 1 to 256	Fx_Port index within a conceptual table.
FcFeNxPortIndex	Integer from 1 to 256	Nx_Port index within a conceptual table.
FcFxPortMode	Integer	1 (unknown) 2 (F_Port) 3 (FL_Port)
FcBbCreditModel	Integer	BB_Credit model of an Fx_Port. 1 (regular) 2 (alternate)
fcfeModuleFxPortCapacity	Integer from 1 to 640	Maximum number of Fx_Ports within a module. For the Brocade 8000, this value is 32.

## fcFeConfig group

This group consists of scalar objects and tables. It contains the configuration and service parameters of the fabric element and the Fx\_Ports.

The group represents a set of parameters associated with the fabric element or an Fx\_Port to support its Nx\_Ports.

TABLE 27

Object and OID	Access	Description
fcFeFabricName 1.3.6.1.2.1.75.1.1.1	Read-write	The Name_Identifier of the fabric to which this fabric element belongs. This object returns the WWN of the primary switch in the fabric.
fcFeElementName 1.3.6.1.2.1.75.1.1.2	Read-write	The Name_Identifier of the fabric element. This object returns the WWN of the switch.
fcFeModuleCapacity 1.3.6.1.2.1.75.1.1.3	Read only	The maximum number of modules in the fabric element, regardless of their current state. The valid value for all Brocade switches is 1.
fcFeModuleTable 1.3.6.1.2.1.75.1.1.4	Not accessible	A table that contains information about the modules, one entry for each module in the fabric element.
fcFeModuleEntry 1.3.6.1.2.1.75.1.1.4.1	Not accessible	An entry containing the configuration parameters of a module.
fcFeModuleIndex 1.3.6.1.2.1.75.1.1.4.1.1	Not accessible	Identifies the module within the fabric element for which this entry contains information. This value is never greater than fcFeModuleCapacity. This entry never shows any value as it is shown as non accessible in the browser.
fcFeModuleDescr 1.3.6.1.2.1.75.1.1.4.1.2	Read only	A textual description of the module. This value should include the full name and version identification of the module. It should contain printable ASCII characters. Refer to “ <a href="#">sysDescr</a> ” on page 33.
fcFeModuleObjectID 1.3.6.1.2.1.75.1.1.4.1.3	Read only	The vendor’s authoritative identification of the module. This value might be allocated within the SMI enterprises subtree (1.3.6.1.4.1) and provides a straightforward and unambiguous means for determining what kind of module is being managed. For example, this object could take the value 1.3.6.1.4.1.99649.3.9 if vendor “Neufe Inc.” was assigned the subtree 1.3.6.1.4.1.99649 and had assigned the identifier 1.3.6.1.4.1.99649.3.9 to its “FeFiFo-16 PlugInCard.” Refer to “ <a href="#">sysObjectID</a> ” on page 33.
fcFeModuleOperStatus 1.3.6.1.2.1.75.1.1.4.1.4	Read only	Indicates the operational status of the module. Valid values: <ul style="list-style-type: none"> <li>• 1 - online, module functioning properly</li> <li>• 2 - offline, module not available</li> <li>• 3 - testing, module in test mode</li> <li>• 4 - faulty, module is defective</li> </ul>
fcFeModuleLastChange 1.3.6.1.2.1.75.1.1.4.1.5	Read only	Contains the value of sysUpTime when the module entered its current operational status. A value of 0 indicates that the operational status of the module has not changed since the agent last restarted.

TABLE 27

Object and OID	Access	Description
fcFeModuleFxpPortCapacity 1.3.6.1.2.1.75.1.1.4.1.6	Read only	<p>The number of Fx_Ports that can be contained within the module. Within each module, the ports are uniquely numbered in the range from 1 to fcFeModuleFxpPortCapacity, inclusive. However, the numbers are not required to be contiguous.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• Brocade 300 24 ports</li> <li>• Brocade 4100 32 ports</li> <li>• Brocade 4900 64 ports</li> <li>• Brocade 5000 32 ports</li> <li>• Brocade 5100 40 ports</li> <li>• Brocade 5300 80 ports</li> <li>• Brocade 7500 or 7500E 32 ports</li> <li>• Brocade 7600 16 ports</li> <li>• Brocade 7800 Extension Switch 24 ports</li> <li>• Brocade 8000 32 ports</li> <li>• Brocade Encryption Switch 32 ports</li> <li>• Brocade DCX 640 ports</li> <li>• Brocade DCX-4S 320 ports</li> <li>• Brocade 48000 384 ports</li> <li>• Brocade 6505 24 ports</li> <li>• Brocade 6510 48 ports</li> <li>• Brocade 6520 96 ports</li> <li>• Brocade DCX 8510-4 Backbone 320 ports</li> <li>• Brocade DCX 8510-8 Backbone 640 ports</li> <li>• Brocade VA-40FC 40 ports</li> </ul>
fcFeModuleName 1.3.6.1.2.1.75.1.1.4.1.7	Read-write	<p>The Name_Identifier of the module.</p> <p>This object returns the WWN of the switch.</p>
fcFxpPortTable 1.3.6.1.2.1.75.1.1.5	Not accessible	A table that contains configuration and service parameters of the Fx_Ports, one entry for each Fx_Port in the fabric element.
fcFxpPortEntry 1.3.6.1.2.1.75.1.1.5.1	Not accessible	An entry containing the configuration and service parameters of an Fx_Port.
fcFxpPortIndex 1.3.6.1.2.1.75.1.1.5.1.1	Not accessible	Identifies the Fx_Port within the module. This number ranges from 1 to the value of fcFeModulePortCapacity for the associated module. The value remains constant for the identified Fx_Port until the module is re-initialized.
fcFxpPortName 1.3.6.1.2.1.75.1.1.5.1.2	Read only	<p>The World Wide Name of this Fx_Port. Each Fx_Port has a unique port World Wide Name within the fabric.</p> <p>This object returns the WWN of the port.</p>
fcFxpPortFcphVersionHigh 1.3.6.1.2.1.75.1.1.5.1.3	Read only	The highest or most recent version of FC-PH that the Fx_Port is configured to support. This value is always 32.
fcFxpPortFcphVersionLow 1.3.6.1.2.1.75.1.1.5.1.4	Read only	The lowest or earliest version of FC-PH that the Fx_Port is configured to support. This value is always six.
fcFxpPortBbCredit 1.3.6.1.2.1.75.1.1.5.1.5	Read only	The total number of receive buffers available for holding Class 1 connect-request, and Class 2 or 3 frames from the attached Nx_Port. It is for buffer-to-buffer flow control in the direction from the attached Nx_Port (if applicable) to Fx_Port.

TABLE 27

Object and OID	Access	Description
fcFxpPortRxBufSize 1.3.6.1.2.1.75.1.1.5.1.6	Read only	The largest Data_Field Size (in octets) for an FT_1 frame that can be received by the Fx_Port.
fcFxpPortRatov 1.3.6.1.2.1.75.1.1.5.1.7	Read only	The Resource_Allocation_Timeout value configured for the Fx_Port. This is used as the time-out value for determining when to reuse an Nx_Port resource such as a Recovery_Qualifier. It represents E_D_TOV (Refer to "fcFxpPortEdtov" on page 80) plus twice the maximum time that a frame might be delayed within the fabric and still be delivered.
fcFxpPortEdtov 1.3.6.1.2.1.75.1.1.5.1.8	Read only	The E_D_TOV value configured for the Fx_Port. The Error_Detect_Timeout value is used as the time-out value for detecting an error condition.
fcFxpPortCosSupported 1.3.6.1.2.1.75.1.1.5.1.9	Read only	A value indicating the set of Classes of Service supported by the Fx_Port.
fcFxpPortIntermixSupported 1.3.6.1.2.1.75.1.1.5.1.10	Read only	A flag indicating whether the Fx_Port supports an Intermixed Dedicated Connection. Valid values: <ul style="list-style-type: none"> <li>• 1 - true</li> <li>• 2 - false</li> </ul>
fcFxpPortStackedConnMode 1.3.6.1.2.1.75.1.1.5.1.11	Read only	A value indicating the mode of Stacked Connect supported by the Fx_Port. Valid values: <ul style="list-style-type: none"> <li>• 1 - none</li> <li>• 2 - transparent</li> <li>• 3 - locked down</li> </ul>
fcFxpPortClass2SeqDeliv 1.3.6.1.2.1.75.1.1.5.1.12	Read only	A flag indicating whether Class 2 Sequential Delivery is supported by the Fx_Port. Valid values: <ul style="list-style-type: none"> <li>• 1 - true</li> <li>• 2 - false</li> </ul>
fcFxpPortClass3SeqDeliv 1.3.6.1.2.1.75.1.1.5.1.13	Read only	A flag indicating whether Class 3 Sequential Delivery is supported by the Fx_Port. Valid values: <ul style="list-style-type: none"> <li>• 1 - true</li> <li>• 2 - false</li> </ul>
fcFxpPortHoldTime 1.3.6.1.2.1.75.1.1.5.1.14	Read only	The maximum time (in microseconds) that the Fx_Port holds a frame before discarding the frame if it is unable to deliver the frame. The value 0 means that the Fx_Port does not support this parameter. The formula used to calculate this object is $(RATOV - EDTOV - (2 * WAN\_TOV)) / (MAX\_HOPS + 1) / 2$ .

## fcFeStatus group

This group consists of tables that contain operational status and established service parameters for the fabric element and the attached Nx\_Ports.

TABLE 28

Object and OID	Access	Description
fcFxPortStatusTable 1.3.6.1.2.1.75.1.2.1	Not accessible	A table that contains operational status and parameters of the Fx_Ports, one entry for each Fx_Port in the fabric element.
fcFxPortStatusEntry 1.3.6.1.2.1.75.1.2.1.1	Not accessible	An entry containing operational status and parameters of an Fx_Port.
fcFxPortID 1.3.6.1.2.1.75.1.2.1.1.1	Read only	The address identifier by which this Fx_Port is identified within the fabric. The Fx_Port might assign its address identifier to its attached Nx_Ports during fabric login.
fcFxPortBbCreditAvailable 1.3.6.1.2.1.75.1.2.1.1.2	Read only	The number of buffers currently available for receiving frames from the attached port in the buffer-to-buffer flow control. The value should be less than or equal to fcFxPortBbCredit. <b>NOTE:</b> This object is not supported on the FC10-6 port blade.
fcFxPortOperMode 1.3.6.1.2.1.75.1.2.1.1.3	Read only	The current operational mode of the Fx_Port. Valid values: <ul style="list-style-type: none"> <li>• unknown (1)</li> <li>• fPort (2)</li> <li>• flPort (3)</li> </ul>
fcFxPortAdminMode 1.3.6.1.2.1.75.1.2.1.1.4	Read only	The desired operational mode of the Fx_Port.
fcFxPortPhysTable 1.3.6.1.2.1.75.1.2.2	Not accessible	A table that contains the physical level status and parameters of the Fx_Ports, one entry for each Fx_Port in the fabric element.
fcFxPortPhysEntry 1.3.6.1.2.1.75.1.2.2.1	Not accessible	An entry containing physical level status and parameters of an Fx_Port.
fcFxPortPhysAdminStatus 1.3.6.1.2.1.75.1.2.2.1.1	Read only	The desired state of the Fx_Port. A management station might place the Fx_Port in a desired state by setting this object accordingly. Valid values: <ul style="list-style-type: none"> <li>• online (1)</li> <li>• offline (2)</li> <li>• testing (3)</li> </ul> The testing state (3) indicates that no operational frames can be passed. When a fabric element initializes, all Fx_Ports start with fcFxPortPhysAdminStatus in the offline state (2). As the result of either explicit management action or per configuration information accessible by the fabric element, fcFxPortPhysAdminStatus is then changed to either the online (1) or testing (3) states or remains in the offline state (2).
fcFxPortPhysOperStatus 1.3.6.1.2.1.75.1.2.2.1.2	Read only	The current operational status of the Fx_Port. Valid values: <ul style="list-style-type: none"> <li>• online (1)</li> <li>• offline (2)</li> <li>• testing (3)</li> <li>• linkFailure (4)</li> </ul> The testing state (3) indicates that no operational frames can be passed. If fcFxPortPhysAdminStatus is offline (2), then fcFxPortPhysOperStatus should be offline (2). If fcFxPortPhysAdminStatus is changed to online (1), then fcFxPortPhysOperStatus should change to online (1) if the Fx_Port is ready to accept fabric login request from the attached Nx_Port; it should proceed and remain in the linkFailure (4) state only if there is a fault that prevents it from going to the online state (1).

TABLE 28

Object and OID	Access	Description
fcFxFxPortPhysLastChange 1.3.6.1.2.1.75.1.2.2.1.3	Read only	The value of sysUpTime at the time the Fx_Port entered its current operational status. A value of 0 indicates that the Fx_Port operational status has not changed since the agent last restarted.
fcFxFxPortPhysRttov 1.3.6.1.2.1.75.1.2.2.1.4	Read only	The Receiver_Transmitter_Timeout value of the Fx_Port. This is used by the receiver logic to detect loss of synchronization. This value is displayed in milliseconds.
fcFxFxLoginTable 1.3.6.1.2.1.75.1.2.3	Not accessible	This table contains one entry for each Fx_Port in the fabric element and the service parameters that have been established from the most recent fabric login, whether implicit or explicit.
fcFxFxloginEntry 1.3.6.1.2.1.75.1.2.3.1	Not accessible	An entry containing service parameters established from a successful fabric login.
fcFxFxPortNxLoginIndex 1.3.6.1.2.1.75.1.2.3.1.1	Not accessible	The associated Nx_Port in the attachment for which the entry contains information.
fcFxFxPortFcphVersionAgreed 1.3.6.1.2.1.75.1.2.3.1.2	Read only	The version of FC-PH that the Fx_Port has agreed to support from the fabric login.
fcFxFxPortNxPortBbCredit 1.3.6.1.2.1.75.1.2.3.1.3	Read only	The total number of buffers available for holding Class 1 connect-request, and Class 2 or Class 3 frames to be transmitted to the attached Nx_Port. It is for buffer-to-buffer flow control in the direction from Fx_Port to Nx_Port. The buffer-to-buffer flow control mechanism is indicated in the respective fcFxFxPortBbCreditModel.
fcFxFxPortNxPortRxDataFieldSize 1.3.6.1.2.1.75.1.2.3.1.4	Read only	The Receive Data Field Size of the attached Nx_Port. This is a binary value that specifies the largest Data Field Size for an FT_1 frame that can be received by the Nx_Port. The value is a number of bytes in the range 128 to 2112, inclusive.
fcFxFxPortCosSuppAgreed 1.3.6.1.2.1.75.1.2.3.1.5	Read only	Indicates that the attached Nx_Port has requested the Fx_Port for the support of classes of services and the Fx_Port has granted the request.
fcFxFxPortIntermixSuppAgreed 1.3.6.1.2.1.75.1.2.3.1.6	Read only	A variable indicating that the attached Nx_Port has requested the Fx_Port for Intermix support, and the Fx_Port has granted the request. This flag is only valid if Class 1 service is supported.
fcFxFxPortStackedConnModeAgreed 1.3.6.1.2.1.75.1.2.3.1.7	Read only	Indicates whether the Fx_Port has agreed to support stacked connect from the fabric login. This is only meaningful if Class 1 service has been agreed to.
fcFxFxPortClass2SeqDelivAgreed 1.3.6.1.2.1.75.1.2.3.1.8	Read only	Indicates whether the Fx_Port has agreed to support Class 2 sequential delivery from the fabric login. This is only meaningful if Class 2 service has been agreed to. Valid values: <ul style="list-style-type: none"> <li>• yes (1) - The Fx_Port has agreed to support Class 2 sequential delivery from the fabric login.</li> <li>• no (2) - The Fx_Port has not agreed to support Class 2 sequential delivery from the fabric login.</li> </ul>

TABLE 28

Object and OID	Access	Description
fcFxpPortClass3SeqDelivAgreed 1.3.6.1.2.1.75.1.2.3.1.9	Read only	A flag indicating whether the Fx_Port has agreed to support Class 3 sequential delivery from the fabric login. This is only meaningful if Class 3 service has been agreed to. Valid values: <ul style="list-style-type: none"> <li>yes (1) - The Fx_Port has agreed to support Class 3 sequential delivery from the fabric login.</li> <li>no (2) - The Fx_Port has not agreed to support Class 3 sequential delivery from the fabric login.</li> </ul>
fcFxpPortNxPortName 1.3.6.1.2.1.75.1.2.3.1.10	Read only	The port name of the attached Nx_Port, if applicable. If the value of this object is '0000000000000000'H, this Fx_Port has no Nx_Port attached to it. If the Fx_Port has no attached Nx_Port then the instance of the port is not displayed.
fcFxpPortConnectedNxPort 1.3.6.1.2.1.75.1.2.3.1.11	Read only	The address identifier of the destination Fx_Port with which this Fx_Port is currently engaged in either a Class 1 or loop connection. If the value of this object is '000000'H, this Fx_Port is not engaged in a connection. If the Fx_Port has no attached Nx_Port then the instance of the port is not displayed.
fcFxpPortBbCreditModel 1.3.6.1.2.1.75.1.2.3.1.12	Read only	Identifies the BB_Credit model used by the Fx_Port. The regular model refers to the buffer-to-buffer flow control mechanism defined in FC-PH [1] used between the F_Port and the N_Port. For FL_Ports, the alternate buffer-to-buffer flow control mechanism as defined in FC-AL [4] is used between the FL_Port and any attached NL_Ports.

## fcFeError group

This group consists of tables that contain information about the various types of errors detected. The management station might use the information in this group to determine the quality of the link between the Fx\_Port and its attached Nx\_Port.

Implementation of this group is optional.

TABLE 29

Object and OID	Access	Description
fcFxpPortErrorTable 1.3.6.1.2.1.75.1.3.1	Not accessible	A table that contains counters that record the numbers of errors detected, one entry for each Fx_Port. This table contains counters recording numbers of errors detected since the management agent re-initialized, one entry for each Fx_Port in the fabric element. The first six columnar objects after the port index correspond to the counters in the link error status block.
fcFxpPortErrorEntry 1.3.6.1.2.1.75.1.3.1.1	Not accessible	An entry containing error counters of a Fx_Port.
fcFxpPortLinkFailures 1.3.6.1.2.1.75.1.3.1.1.1	Read only	The number of link failures detected by this Fx_Port.
fcFxpPortSyncLosses 1.3.6.1.2.1.75.1.3.1.1.2	Read only	The number of loss of synchronization errors detected by the Fx_Port.

TABLE 29

Object and OID	Access	Description
fcFxpPortSigLosses 1.3.6.1.2.1.75.1.3.1.1.3	Read only	The number of loss of signal errors detected by the Fx_Port.
fcFxpPortPrimSeqProtoErr ors 1.3.6.1.2.1.75.1.3.1.1.4	Read only	The number of primitive sequence protocol errors detected by the Fx_Port.
fcFxpPortInvalidTxWords 1.3.6.1.2.1.75.1.3.1.1.5	Read only	The number of invalid transmission word errors detected by the Fx_Port.
fcFxpPortInvalidCrcs 1.3.6.1.2.1.75.1.3.1.1.6	Read only	The number of invalid cyclic redundancy checks (CRC) detected by this Fx_Port.
fcFxpPortDelimiterErrors 1.3.6.1.2.1.75.1.3.1.1.7	Read only	The number of delimiter errors detected by this Fx_Port.
fcFxpPortAddressIdErrors 1.3.6.1.2.1.75.1.3.1.1.8	Read only	The number of address identifier errors detected by this Fx_Port.
fcFxpPortLinkResetIns 1.3.6.1.2.1.75.1.3.1.1.9	Read only	The number of Link Reset Protocol errors received by this Fx_Port from the attached Nx_Port.
fcFxpPortLinkResetOuts 1.3.6.1.2.1.75.1.3.1.1.10	Read only	The number of Link Reset Protocol errors issued by this Fx_Port to the attached Nx_Port.
fcFxpPortOIsIns 1.3.6.1.2.1.75.1.3.1.1.11	Read only	The number of Offline Sequence errors received by this Fx_Port.
fcFxpPortOIsOuts 1.3.6.1.2.1.75.1.3.1.1.12	Read only	The number of Offline Sequence issued by this Fx_Port.

## fcFeAccounting group

The Accounting group is supported only in Fabric OS v4.x.

The Accounting group consists of the following tables:

- Class 1 accounting table
- Class 2 accounting table
- Class 3 accounting table

Each table contains accounting information for the Fx\_Ports in the fabric element.

TABLE 30

Object and OID	Access	Description
fcFxpPortC1AccountingTable 1.3.6.1.2.1.75.1.4.1	Not accessible	A table that contains Class 1 accounting information recorded since the management agent re-initialized, one entry for each Fx_Port in the fabric element.
fcFxpPortC1AccountingEntry 1.3.6.1.2.1.75.1.4.1.1	Not accessible	An entry containing Class 1 accounting information for each Fx_Port.
fcFxpPortC1InFrames 1.3.6.1.2.1.75.1.4.1.1.1	Read only	The number of Class 1 frames (other than Class 1 connect-request) received by this Fx_Port from its attached Nx_Port.



TABLE 30

Object and OID	Access	Description
fcFxpPortC1OutFrames 1.3.6.1.2.1.75.1.4.1.1.2	Read only	The number of Class 1 frames (other than Class 1 connect-request) delivered through this Fx_Port to its attached Nx_Port.
fcFxpPortC1InOctets 1.3.6.1.2.1.75.1.4.1.1.3	Read only	The number of Class 1 frame octets, including the frame delimiters, received by this Fx_Port from its attached Nx_Port.
fcFxpPortC1OutOctets 1.3.6.1.2.1.75.1.4.1.1.4	Read only	The number of Class 1 frame octets, including the frame delimiters, delivered through this Fx_Port to its attached Nx_Port.
fcFxpPortC1Discards 1.3.6.1.2.1.75.1.4.1.1.5	Read only	The number of Class 1 frames discarded by this Fx_Port.
fcFxpPortC1FbsyFrames 1.3.6.1.2.1.75.1.4.1.1.6	Read only	The number of F_BSY frames generated by this Fx_Port against Class 1 connect-request.
fcFxpPortC1FrjtFrames 1.3.6.1.2.1.75.1.4.1.1.7	Read only	The number of F_RJT frames generated by this Fx_Port against Class 1 connect-request.
fcFxpPortC1InConnections 1.3.6.1.2.1.75.1.4.1.1.8	Read only	The number of Class 1 connections successfully established in which the attached Nx_Port is the source of the connect-request.
fcFxpPortC1OutConnections 1.3.6.1.2.1.75.1.4.1.1.9	Read only	The number of Class 1 connections successfully established in which the attached Nx_Port is the destination of the connect-request.
fcFxpPortC1ConnTime 1.3.6.1.2.1.75.1.4.1.1.10	Read only	The cumulative time that this Fx_Port has been engaged in Class 1 connection. The amount of time is counted from after a connect-request has been accepted until the connection is disengaged, either by an EOFdt or Link Reset.
fcFxpPortC2AccountingTable 1.3.6.1.2.1.75.1.4.2	Not accessible	A table that contains Class 2 accounting information recorded since the management agent has re-initialized, one entry for each Fx_Port in the fabric element.
fcFxpPortC2AccountingEntry 1.3.6.1.2.1.75.1.4.2.1	Not accessible	An entry containing Class 2 accounting information for each Fx_Port.
fcFxpPortC2InFrames 1.3.6.1.2.1.75.1.4.2.1.1	Read only	The number of Class 2 frames received by this Fx_Port from its attached Nx_Port.
fcFxpPortC2OutFrames 1.3.6.1.2.1.75.1.4.2.1.2	Read only	The number of Class 2 frames delivered through this Fx_Port to its attached Nx_Port.
fcFxpPortC2InOctets 1.3.6.1.2.1.75.1.4.2.1.3	Read only	The number of Class 2 frame octets, including the frame delimiters, received by this Fx_Port from its attached Nx_Port.
fcFxpPortC2OutOctets 1.3.6.1.2.1.75.1.4.2.1.4	Read only	The number of Class 2 frame octets, including the frame delimiters, delivered through this Fx_Port to its attached Nx_Port.
fcFxpPortC2Discards 1.3.6.1.2.1.75.1.4.2.1.5	Read only	The number of Class 2 frames discarded by this Fx_Port.
fcFxpPortC2FbsyFrames 1.3.6.1.2.1.75.1.4.2.1.6	Read only	The number of F_BSY frames generated by this Fx_Port against Class 2 frames.
fcFxpPortC2FrjtFrames 1.3.6.1.2.1.75.1.4.2.1.7	Read only	The number of F_RJT frames generated by this Fx_Port against Class 2 frames.
fcFxpPortC3AccountingTable 1.3.6.1.2.1.75.1.4.3	Not accessible	A table that contains Class 3 accounting information recorded since the management agent has re-initialized, one entry for each Fx_Port in the fabric element.
fcFxpPortC3AccountingEntry 1.3.6.1.2.1.75.1.4.3.1	Not accessible	An entry containing Class 3 accounting information for each Fx_Port.

TABLE 30

Object and OID	Access	Description
fcFxpPortC3InFrames 1.3.6.1.2.1.75.1.4.3.1.1	Read only	The number of Class 3 frames received by this Fx_Port from its attached Nx_Port.
fcFxpPortC3OutFrames 1.3.6.1.2.1.75.1.4.3.1.2	Read only	The number of Class 3 frames delivered through this Fx_Port to its attached Nx_Port.
fcFxpPortC3InOctets 1.3.6.1.2.1.75.1.4.3.1.3	Read only	The number of Class 3 frame octets, including the frame delimiters, received by this Fx_Port from its attached Nx_Port.
fcFxpPortC3OutOctets 1.3.6.1.2.1.75.1.4.3.1.4	Read only	The number of Class 3 frame octets, including the frame delimiters, delivered through this Fx_Port to its attached Nx_Port.
fcFxpPortC3Discards 1.3.6.1.2.1.75.1.4.3.1.5	Read only	The number of Class 3 frames discarded by this Fx_Port.

## fcFeCapabilities group

This group consists of a table describing information about what each Fx\_Port is inherently capable of operating or supporting. A capability might be used, as expressed in its respective object value in the Configuration group.

Implementation of this group is optional.

TABLE 31

Object and OID	Access	Description
fcFxpPortCapTable 1.3.6.1.2.1.75.1.5.1	Not accessible	A table that contains the capabilities of the port within the fabric element, one entry for each Fx_Port.
fcFxpPortCapEntry 1.3.6.1.2.1.75.1.5.1.1	Not accessible	An entry containing the capabilities of a Fx_Port.
fcFxpPortCapFcphVersionHigh 1.3.6.1.2.1.75.1.5.1.1.1	Read only	The highest or most recent version of FC-PH that the Fx_Port is capable of supporting.
fcFxpPortCapFcphVersionLow 1.3.6.1.2.1.75.1.5.1.1.2	Read only	The lowest or earliest version of FC-PH that the Fx_Port is capable of supporting.
fcFxpPortCapBbCreditMax 1.3.6.1.2.1.75.1.5.1.1.3	Read only	The maximum number of receive buffers available for holding Class 1 connect-request, and Class 2 or Class 3 frames from the attached Nx_Port.
fcFxpPortCapBbCreditMin 1.3.6.1.2.1.75.1.5.1.1.4	Read only	The minimum number of receive buffers available for holding Class 1 connect-request, and Class 2 or Class 3 frames from the attached Nx_Port.
fcFxpPortCapRxDataFieldSizeMax 1.3.6.1.2.1.75.1.5.1.1.5	Read only	The maximum size (in bytes) of the data field in a frame that the Fx_Port is capable of receiving from its attached Nx_Port.
fcFxpPortCapRxDataFieldSizeMin 1.3.6.1.2.1.75.1.5.1.1.6	Read only	The minimum size (in bytes) of the data field in a frame that the Fx_Port is capable of receiving from its attached Nx_Port.
fcFxpPortCapCos 1.3.6.1.2.1.75.1.5.1.1.7	Read only	A value indicating the set of Classes of Service that the Fx_Port is capable of supporting.

TABLE 31

Object and OID	Access	Description
fcFxCapIntermix 1.3.6.1.2.1.75.1.5.1.1.8	Read only	A flag indicating whether the Fx_Port is capable of supporting the intermixing of Class 2 and Class 3 frames during a Class 1 connection. This flag is only valid if the port is capable of supporting Class 1 service.
fcFxCapStackedConnMode 1.3.6.1.2.1.75.1.5.1.1.9	Read only	A value indicating the mode of Stacked Connect request that the Fx_Port is capable of supporting.
fcFxCapClass2SeqDeliv 1.3.6.1.2.1.75.1.5.1.1.10	Read only	A flag indicating whether the Fx_Port is capable of supporting Class 2 Sequential Delivery.
fcFxCapClass3SeqDeliv 1.3.6.1.2.1.75.1.5.1.1.11	Read only	A flag indicating whether the Fx_Port is capable of supporting Class 3 Sequential Delivery.
fcFxCapHoldTimeMax 1.3.6.1.2.1.75.1.5.1.1.12	Read only	The maximum holding time (in microseconds) that the Fx_Port is capable of supporting.
fcFxCapHoldTimeMin 1.3.6.1.2.1.75.1.5.1.1.13	Read only	The minimum holding time (in microseconds) that the Fx_Port is capable of supporting.

## FCFABRIC-ELEMENT-MIB (experimental branch)

### NOTE

The FCFABRIC-ELEMENT-MIB is supported only in Fabric OS v2.6.x and v3.0.x.

This section contains descriptions and other information that is specific to FCFABRIC-ELEMENT-MIB (*in the experimental branch*), including the following:

- [FCFABRIC-ELEMENT-MIB organization](#) . . . . . 88
- [Definitions for FCFABRIC-ELEMENT-MIB](#) . . . . . 91
- [fcFeConfig group](#) . . . . . 93
- [fcFeOp group](#) . . . . . 96
- [fcFeError group](#) . . . . . 99
- [fcFeAcct group](#) . . . . . 100
- [fcFeCap group](#) . . . . . 101

### NOTE

Brocade does not support the settable “Write” function for any of the Fibre Channel FE MIB objects except “[fcFxCapPhysAdminStatus](#)”.

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

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

- Configuration
- Operational
- Error
- Accounting (not supported)

- Capability

## FCFABRIC-ELEMENT-MIB organization

Figures 29 through 34 depict the organization and structure of FCFABRIC-ELEMENT-MIB.

```
- iso
  - org
    - dod
      - internet
        - experimental
          - fibreChannel
            - fcFabric
              - fcFe
                - fcFeConfig
                  - fcFabricName
                  - fcElementName
                  - fcFeModuleCapacity
                  - fcFeModuleTable
                  - fcFxConfTable
                - fcFeOp
                  - fcFxPortOperTable
                  - fcFxPortPhysTable
                  - fcFxlogiTable
                - fcFeError
                  - fcFxPortErrorTable
                - fcFeAcct
                  - fcFxPortC1AcctTable
                  - fcFxPortC2AcctTable
                  - fcFxPortC3AcctTable
                - fcFeCap
                  - fcFxPortCapTable
```

**FIGURE 29** FCFABRIC-ELEMENT-MIB overall tree structure

```

- fcFeConfig
  - fcFabricName 1.3.6.1.3.42.2.1.1.1
  - fcElementName 1.3.6.1.3.42.2.1.1.2
  - fcFeModuleCapacity 1.3.6.1.3.42.2.1.1.3
  - fcFeModuleTable 1.3.6.1.3.42.2.1.1.4
    - fcFeModuleEntry 1.3.6.1.3.42.2.1.1.4.1
      - fcFeModuleIndex 1.3.6.1.3.42.2.1.1.4.1.1
      - fcFeModuleDescr 1.3.6.1.3.42.2.1.1.4.1.2
      - fcFeModuleObjectID 1.3.6.1.3.42.2.1.1.4.1.3
      - fcFeModuleOperStatus 1.3.6.1.3.42.2.1.1.4.1.4
      - fcFeModuleLastChange 1.3.6.1.3.42.2.1.1.4.1.5
      - fcFeModuleFxFxPortCapacity 1.3.6.1.3.42.2.1.1.4.1.6
      - fcFeModuleName 1.3.6.1.3.42.2.1.1.4.1.7
  - fcFxFxConfTable 1.3.6.1.3.42.2.1.1.5
    - fcFxFxConfEntry 1.3.6.1.3.42.2.1.1.5.1
      - fcFxFxConfModuleIndex 1.3.6.1.3.42.2.1.1.5.1.1
      - fcFxFxConfFxFxPortIndex 1.3.6.1.3.42.2.1.1.5.1.2
      - fcFxFxPortName 1.3.6.1.3.42.2.1.1.5.1.3
      - fcFxFxPortFcphVersionHigh 1.3.6.1.3.42.2.1.1.5.1.4
      - fcFxFxPortFcphVersionLow 1.3.6.1.3.42.2.1.1.5.1.5
      - fcFxFxPortBbCredit 1.3.6.1.3.42.2.1.1.5.1.6
      - fcFxFxPortRxBufSize 1.3.6.1.3.42.2.1.1.5.1.7
      - fcFxFxPortRatov 1.3.6.1.3.42.2.1.1.5.1.8
      - fcFxFxPortEdtov 1.3.6.1.3.42.2.1.1.5.1.9
      - fcFxFxPortCosSupported 1.3.6.1.3.42.2.1.1.5.1.10
      - fcFxFxPortIntermixSupported 1.3.6.1.3.42.2.1.1.5.1.11
      - fcFxFxPortStackedConnMode 1.3.6.1.3.42.2.1.1.5.1.12
      - fcFxFxPortClass2SeqDeliv 1.3.6.1.3.42.2.1.1.5.1.13
      - fcFxFxPortClass3SeqDeliv 1.3.6.1.3.42.2.1.1.5.1.14
      - fcFxFxPortHoldTime 1.3.6.1.3.42.2.1.1.5.1.15
      - fcFxFxPortBaudRate 1.3.6.1.3.42.2.1.1.5.1.16
      - fcFxFxPortMedium 1.3.6.1.3.42.2.1.1.5.1.17
      - fcFxFxPortTxType 1.3.6.1.3.42.2.1.1.5.1.18
      - fcFxFxPortDistance 1.3.6.1.3.42.2.1.1.5.1.19

```

**FIGURE 30** fcFeConfig hierarchy

## 4 FCFABRIC-ELEMENT-MIB (experimental branch)

```
- fcFeOp
  - fcFxpPortOperTable 1.3.6.1.3.42.2.1.2.1
    - fcFxpPortOperEntry 1.3.6.1.3.42.2.1.2.1.1
      - fcFxpPortOperModuleIndex 1.3.6.1.3.42.2.1.2.1.1.1
      - fcFxpPortOperFxpPortIndex 1.3.6.1.3.42.2.1.2.1.1.2
      - fcFxpPortID 1.3.6.1.3.42.2.1.2.1.1.3
      - fcFxpPortAttachedPortName 1.3.6.1.3.42.2.1.2.1.1.4
      - fcFxpPortConnectedPort 1.3.6.1.3.42.2.1.2.1.1.5
      - fcFxpPortBbCreditAvailable 1.3.6.1.3.42.2.1.2.1.1.6
      - fcFxpPortOperMode 1.3.6.1.3.42.2.1.2.1.1.7
      - fcFxpPortAdminMode 1.3.6.1.3.42.2.1.2.1.1.8
  - fcFxpPortPhysTable 1.3.6.1.3.42.2.1.2.3
    - fcFxpPortPhysEntry 1.3.6.1.3.42.2.1.2.3.1
      - fcFxpPortPhysModuleIndex 1.3.6.1.3.42.2.1.2.3.1.1
      - fcFxpPortPhysFxpPortIndex 1.3.6.1.3.42.2.1.2.3.1.2
      - fcFxpPortPhysAdminStatus 1.3.6.1.3.42.2.1.2.3.1.3
      - fcFxpPortPhysOperStatus 1.3.6.1.3.42.2.1.2.3.1.4
      - fcFxpPortPhysLastChange 1.3.6.1.3.42.2.1.2.3.1.5
      - fcFxpPortPhysRttov 1.3.6.1.3.42.2.1.2.3.1.6
  - fcFxpLogiTable 1.3.6.1.3.42.2.1.2.4
    - fcFxpLogiEntry 1.3.6.1.3.42.2.1.2.4.1
      - fcFxpLogiModuleIndex 1.3.6.1.3.42.2.1.2.4.1.1
      - fcFxpLogiFxpPortIndex 1.3.6.1.3.42.2.1.2.4.1.2
      - fcFxpLogiNxPortIndex 1.3.6.1.3.42.2.1.2.4.1.3
      - fcFxpPortFcphVersionAgreed 1.3.6.1.3.42.2.1.2.4.1.4
      - fcFxpPortNxPortBbCredit 1.3.6.1.3.42.2.1.2.4.1.5
      - fcFxpPortNxPortRxDataFieldSize 1.3.6.1.3.42.2.1.2.4.1.6
      - fcFxpPortCosSuppAgreed 1.3.6.1.3.42.2.1.2.4.1.7
      - fcFxpPortIntermixSuppAgreed 1.3.6.1.3.42.2.1.2.4.1.8
      - fcFxpPortStackedConnModeAgreed 1.3.6.1.3.42.2.1.2.4.1.9
      - fcFxpPortClass2SeqDelivAgreed 1.3.6.1.3.42.2.1.2.4.1.10
      - fcFxpPortClass3SeqDelivAgreed 1.3.6.1.3.42.2.1.2.4.1.11
      - fcFxpPortNxPortName 1.3.6.1.3.42.2.1.2.4.1.12
      - fcFxpPortConnectedNxPort 1.3.6.1.3.42.2.1.2.4.1.13
      - fcFxpPortBbCreditModel 1.3.6.1.3.42.2.1.2.4.1.14
```

FIGURE 31 fcFeOp hierarchy

```
- fcFeError (1.3.6.1.3.42.2.1.3)
  - fcFxpPortErrorTable 1.3.6.1.3.42.2.1.3.1
    - fcFxpPortErrorEntry 1.3.6.1.3.42.2.1.3.1.1
      - fcFxpPortErrorModuleIndex 1.3.6.1.3.42.2.1.3.1.1.1
      - fcFxpPortErrorFxpPortIndex 1.3.6.1.3.42.2.1.3.1.1.2
      - fcFxpPortLinkFailures 1.3.6.1.3.42.2.1.3.1.1.3
      - fcFxpPortSyncLosses 1.3.6.1.3.42.2.1.3.1.1.4
      - fcFxpPortSigLosses 1.3.6.1.3.42.2.1.3.1.1.5
      - fcFxpPortPrimSeqProtoErrors 1.3.6.1.3.42.2.1.3.1.1.6
      - fcFxpPortInvalidTxWords 1.3.6.1.3.42.2.1.3.1.1.7
      - fcFxpPortInvalidCrcs 1.3.6.1.3.42.2.1.3.1.1.8
      - fcFxpPortDelimiterErrors 1.3.6.1.3.42.2.1.3.1.1.9
      - fcFxpPortAddressIdErrors 1.3.6.1.3.42.2.1.3.1.1.10
      - fcFxpPortLinkResetIns 1.3.6.1.3.42.2.1.3.1.1.11
      - fcFxpPortLinkResetOuts 1.3.6.1.3.42.2.1.3.1.1.12
      - fcFxpPortOlsIns 1.3.6.1.3.42.2.1.3.1.1.13
      - fcFxpPortOlsOuts 1.3.6.1.3.42.2.1.3.1.1.14
```

FIGURE 32 fcFeError hierarchy

```
- fcFeAcct
  (-- Not Supported --)
```

**FIGURE 33** fcFeAcct hierarchy

```
- fcFeCap
  - fcFxCapTable 1.3.6.1.3.42.2.1.5.1
    - fcFxCapEntry 1.3.6.1.3.42.2.1.5.1.1
      - fcFxCapModuleIndex 1.3.6.1.3.42.2.1.5.1.1.1
      - fcFxCapPortIndex 1.3.6.1.3.42.2.1.5.1.1.2
      - fcFxCapFcphVersionHigh 1.3.6.1.3.42.2.1.5.1.1.3
      - fcFxCapFcphVersionLow 1.3.6.1.3.42.2.1.5.1.1.4
      - fcFxCapBbCreditMax 1.3.6.1.3.42.2.1.5.1.1.5
      - fcFxCapBbCreditMin 1.3.6.1.3.42.2.1.5.1.1.6
      - fcFxCapRxDataFieldSizeMax 1.3.6.1.3.42.2.1.5.1.1.7
      - fcFxCapRxDataFieldSizeMin 1.3.6.1.3.42.2.1.5.1.1.8
      - fcFxCapCos 1.3.6.1.3.42.2.1.5.1.1.9
      - fcFxCapIntermix 1.3.6.1.3.42.2.1.5.1.1.10
      - fcFxCapStackedConnMode 1.3.6.1.3.42.2.1.5.1.1.11
      - fcFxCapClass2SeqDeliv 1.3.6.1.3.42.2.1.5.1.1.12
      - fcFxCapClass3SeqDeliv 1.3.6.1.3.42.2.1.5.1.1.13
      - fcFxCapHoldTimeMax 1.3.6.1.3.42.2.1.5.1.1.14
      - fcFxCapHoldTimeMin 1.3.6.1.3.42.2.1.5.1.1.15
      - fcFxCapBaudRates 1.3.6.1.3.42.2.1.5.1.1.16
      - fcFxCapMedia 1.3.6.1.3.42.2.1.5.1.1.17
```

**FIGURE 34** fcFeCap hierarchy

## Definitions for FCFABRIC-ELEMENT-MIB

Table 32 lists the definitions used for FCFABRIC-ELEMENT-MIB.

**TABLE 32** FCFABRIC-ELEMENT-MIB definitions

Type definition	Value	Description
Display string	Octet string of size 0 to 255	Represents textual information taken from the NVT ASCII character set, as defined in pages 4, 10-11 of RFC 854.
Milliseconds	Integer from 0 to 2147383647	Represents time unit value in milliseconds.
Microseconds	Integer from 0 to 2147383647	Represents time unit value in microseconds.
FcNameId	Octet string of size 8	World Wide Name or Fibre Channel name associated with an FC entry. This is a Network_Destination_ID or Network_Source_ID composed of a value up to 60 bits wide, occupying the remaining 8 bytes while the first nibble identifies the format of the Name_Identifier. Name_Identifier hex values: 0 (Ignored) 1 (IEEE 48-bit address) 2 (IEEE extended) 3 (Locally assigned) 4 (32-bit IP address)

## 4 FCFABRIC-ELEMENT-MIB (experimental branch)

**TABLE 32 FCFABRIC-ELEMENT-MIB definitions (Continued)**

Type definition	Value	Description
FabricName	FcNameId	The name identifier of a fabric. Each fabric provides a unique fabric name. Only the following formats are allowed: IEEE48 Local
FcPortName	FcNameId	The name identifier associated with a port. Only the following formats are allowed: IEEE48 IEEE extended Local
FcAddressId	Octet string of size 3	A 24-bit value unique within the address space of a fabric.
FcRxDataFieldSize	Integer from 128 to 2112	Receive Data_Field size.
FcBbCredit	Integer from 0 to 32767	Buffer-to-buffer credit.
FcphVersion	Integer from 0 to 255	Represents the version of FC-PH supported by an Nx_Port or Fx_Port.
FcStackedConnMode	Integer from 1 to 3	1 (none) 2 (transparent) 3 (lockedDown)
FcCosCap	Integer from 1 to 127	bit 0 (Class F) bit 1 (Class 1) bit 2 (Class 2) bit 3 (Class 3) bit 4 (Class 4) bit 5 (Class 5) bit 6 (Class 6) bit 7 (reserved for future)
FcOBaudRate	Integer according to FC-0 baud rates	1 (other) None of below 2 (one-eighth) 155 Mbaud (12.5 MB/s) 4 (quarter) 266 Mbaud (25.0 MB/s) 8 (half) 532 Mbaud (50.0 MB/s) 16 (full) 1 Gbaud (100 MB/s) 32 (double) 2 Gbaud (200 MB/s) 64 (quadruple) 4 Gbaud (400 MB/s) 8 Gbaud (800 MB/s)
FcOBaudRateCap	Integer from 0 to 127	bit 0 (other) bit 1 (one-eighth) bit 2 (quarter) bit 3 (half) bit 4 (full) bit 5 (double) bit 6 (quadruple) bit 7 (reserved for future)



TABLE 32 FCFABRIC-ELEMENT-MIB definitions (Continued)

Type definition	Value	Description
Fc0MediaCap	Integer from 0 to 65535	bit 0 (unknown) bit 1 (single mode fibre (sm)) bit 2 (multimode fiber 50 micron (m5)) bit 3 (multimode fiber 62.5 micron (m6)) bit 4 (video cable (tv)) bit 5 (miniature cable (mi)) bit 6 (shielded twisted pair (stp)) bit 7 (twisted wire (tw)) bit 8 (long video (lv)) bits 9-15 (reserved for future use)
Fc0Medium	Integer	1 (unknown) 2 (sm) 4 (m5) 8 (m6) 16 (tv) 32 (mi) 64 (stp) 128 (tw) 256 (lv)
Fc0TxType	Integer	1 (unknown) 2 (longWaveLaser (LL)) 3 (shortWaveLaser (SL)) 4 (longWaveLED (LE)) 5 (electrical (EL)) 6 (shortWaveLaser-noOFC (SN))
Fc0Distance	Integer	The FC-0 distance range associated with a port transmitter: 1 (unknown) 2 (long) 3 (intermediate) 4 (short)
FcFeModuleCapacity	Integer from 1 to 256	Represents the maximum number of modules within a fabric element.
FcFeFxPortCapacity	Integer from 1 to 256	Represents the maximum number of Fx_Ports within a module.
FcFeModuleIndex	Integer from 1 to 256	Represents the module index within a conceptual table.
FcFeFxPortIndex	Integer from 1 to 256	Represents the Fx_Port index within a conceptual table.
FcFeNxPortIndex	Integer from 1 to 256	Represents the Nx_Port index within a conceptual table.
FcFxPortMode	Integer	1 (unknown) 2 (fPort) 3 (flPort)
FcBbCreditModel	Integer	1 (regular) 2 (alternate)

## fcFeConfig group

This group consists of scalar objects and tables. It contains the configuration and service parameters of the fabric element and the Fx\_Ports.

The group represents a set of parameters associated with the fabric element or an Fx\_Port to support its Nx\_Ports.

Implementation of this group is mandatory.

**TABLE 33**

Object and OID	Access	Description
fcFabricName 1.3.6.1.3.42.2.1.1.1	Read only	The Name_Identifier of the fabric to which this fabric element belongs. This object returns the WWN of the primary switch in the fabric.
fcElementName 1.3.6.1.3.42.2.1.1.2	Read only	The Name_Identifier of the fabric element. This object returns the WWN of the switch.
fcFeModuleCapacity 1.3.6.1.3.42.2.1.1.3	Read only	The maximum number of modules in the fabric element, regardless of their current state. The Brocade 12000, 24000, and 48000 directors do not support this MIB variable. The Value for fcFeModuleCapacity is always one for all the supported switches.
fcFeModuleTable 1.3.6.1.3.42.2.1.1.4	Not accessible	A table that contains, one entry for each module in the fabric element, information of the modules.
fcFeModuleEntry 1.3.6.1.3.42.2.1.1.4.1	Not accessible	An entry containing the configuration parameters of a module.
fcFeModuleIndex 1.3.6.1.3.42.2.1.1.4.1.1	Read only	Identifies the module within the fabric element for which this entry contains information. This value is never greater than fcFeModuleCapacity.
fcFeModuleDescr 1.3.6.1.3.42.2.1.1.4.1.2	Read only	A textual description of the module. This value should include the full name and version identification of the module. It should contain printable ASCII characters. Refer to “ <a href="#">sysDescr</a> ” on page 33.
fcFeModuleObjectID 1.3.6.1.3.42.2.1.1.4.1.3	Read only	The vendor’s authoritative identification of the module. This value might be allocated within the SMI enterprises subtree (1.3.6.1.4.1) and provides a straight-forward and unambiguous means for determining what kind of module is being managed. For example, this object could take the value 1.3.6.1.4.1.99649.3.9 if vendor “Neufe Inc.” was assigned the subtree 1.3.6.1.4.1.99649, and had assigned the identifier 1.3.6.1.4.1.99649.3.9 to its ‘FeFiFo-16 PlugInCard.’ Refer to “ <a href="#">sysObjectID</a> ” on page 33.
fcFeModuleOperStatus 1.3.6.1.3.42.2.1.1.4.1.4	Read only	Indicates the operational status of the module: <ul style="list-style-type: none"> <li>• online (1) - The module is functioning properly.</li> <li>• offline (2) - The module is not available.</li> <li>• testing (3) - The module is under testing.</li> <li>• faulty (4) - The module is defective in some way.</li> </ul>
fcFeModuleLastChange 1.3.6.1.3.42.2.1.1.4.1.5	Read only	Contains the value of “ <a href="#">sysUpTime</a> ” when the module entered its current operational status. A value of 0 indicates that the operational status of the module has not changed since the agent last restarted.
fcFeModuleFxFPortCapacity 1.3.6.1.3.42.2.1.1.4.1.6	Read only	The number of Fx_Port that can be contained within the module. Within each module, the ports are uniquely numbered in the range from 1 to fcFeModuleFxFPortCapacity, inclusive; however, the numbers are not required to be contiguous.
fcFeModuleName 1.3.6.1.3.42.2.1.1.4.1.7	Read only	The Name_Identifier of the module. The return value is the WWN of the switch.

TABLE 33

Object and OID	Access	Description
fcFxConfTable 1.3.6.1.3.42.2.1.1.5	Not accessible	A table that contains, one entry for each Fx_Port in the fabric element, configuration and service parameters of the Fx_Ports.
fcFxConfEntry 1.3.6.1.3.42.2.1.1.5.1	Not accessible	An entry containing the configuration and service parameters of an Fx_Port.
fcFxConfModuleIndex 1.3.6.1.3.42.2.1.1.5.1.1	Read only	Identifies the module containing the Fx_Port for which this entry contains information.
fcFxConfFxPortIndex 1.3.6.1.3.42.2.1.1.5.1.2	Read only	Identifies the Fx_Port within the module. This number ranges from 1 to the value of fcFeModulePortCapacity for the associated module. The value remains constant for the identified Fx_Port until the module is re-initialized.
fcFxPortName 1.3.6.1.3.42.2.1.1.5.1.3	Read only	The name identifier of this Fx_Port. Each Fx_Port has a unique port name within the address space of the fabric. The return value is the WWN of the port.
fcFxPortFcphVersionHigh 1.3.6.1.3.42.2.1.1.5.1.4	Read only	The highest or most recent version of FC-PH that the Fx_Port is configured to support.
fcFxPortFcphVersionLow 1.3.6.1.3.42.2.1.1.5.1.5	Read only	The lowest or earliest version of FC-PH that the Fx_Port is configured to support.
fcFxPortBbCredit 1.3.6.1.3.42.2.1.1.5.1.6	Read only	The total number of receive buffers available for holding Class 1 connect-request Class 2 or 3 frames from the attached Nx_Port. It is for buffer-to-buffer flow control in the direction from the attached Nx_Port (if applicable) to Fx_Port.
fcFxPortRxBufSize 1.3.6.1.3.42.2.1.1.5.1.7	Read only	The largest Data_Field Size (in octets) for an FT_1 frame that can be received by the Fx_Port.
fcFxPortRatov 1.3.6.1.3.42.2.1.1.5.1.8	Read only	The Resource_Allocation_Timeout Value configured for the Fx_Port. This is used as the time-out value for determining when to reuse an Nx_Port resource such as a Recovery_Qualifier. It represents E_D_TOV (Refer to “fcFxPortEdtov” on page 80) plus twice the maximum time that a frame might be delayed within the fabric and still be delivered.
fcFxPortEdtov 1.3.6.1.3.42.2.1.1.5.1.9	Read only	The E_D_TOV value configured for the Fx_Port. The Error_Detect_Timeout Value is used as the time-out value for detecting an error condition.
fcFxPortCosSupported 1.3.6.1.3.42.2.1.1.5.1.10	Read only	A value indicating the set of Classes of Service supported by the Fx_Port. Valid values: <ul style="list-style-type: none"> <li>• Class F (0)</li> <li>• Class 1 (1)</li> <li>• Class 2 (2)</li> <li>• Class 3 (3)</li> <li>• Class 4 (4)</li> <li>• Class 5 (5)</li> <li>• Class 6 (6)</li> </ul>
fcFxPortIntermixSupported 1.3.6.1.3.42.2.1.1.5.1.11	Read only	A flag indicating whether the Fx_Port supports an Intermixed Dedicated Connection. Valid values: <ul style="list-style-type: none"> <li>• yes (1)</li> <li>• no (2)</li> </ul>

TABLE 33

Object and OID	Access	Description
fcFxpPortStackedConnMode 1.3.6.1.3.42.2.1.1.5.1.12	Read only	A value indicating the mode of stacked connect supported by the Fx_Port.
fcFxpPortClass2SeqDeliv 1.3.6.1.3.42.2.1.1.5.1.13	Read only	A flag indicating whether Class 2 sequential delivery is supported by the Fx_Port. Valid values: <ul style="list-style-type: none"> <li>• yes (1)</li> <li>• no (2)</li> </ul>
fcFxpPortClass3SeqDeliv 1.3.6.1.3.42.2.1.1.5.1.14	Read only	A flag indicating whether Class 3 sequential delivery is supported by the Fx_Port. Valid values: <ul style="list-style-type: none"> <li>• yes (1)</li> <li>• no (2)</li> </ul>
fcFxpPortHoldTime 1.3.6.1.3.42.2.1.1.5.1.15	Read only	The maximum time (in microseconds) that the Fx_Port holds a frame before discarding the frame if it is unable to deliver the frame. The value 0 means that the Fx_Port does not support this parameter.
fcFxpPortBaudRate 1.3.6.1.3.42.2.1.1.5.1.16	Read only	The FC-0 baud rate of the Fx_Port. The Brocade 12000, 24000, 48000, and DCX directors do not support this MIB variable.
fcFxpPortMedium 1.3.6.1.3.42.2.1.1.5.1.17	Read only	The FC-0 medium of the Fx_Port.
fcFxpPortTxType 1.3.6.1.3.42.2.1.1.5.1.18	Read only	The FC-0 transmitter type of the Fx_Port.
fcFxpPortDistance 1.3.6.1.3.42.2.1.1.5.1.19	Read only	The FC-0 distance range of the Fx_Port transmitter.

## fcFeOp group

This group consists of tables that contain operational status and established service parameters for the fabric element and the attached Nx\_Ports.

Implementation of this group is mandatory.

TABLE 34

Object and OID	Access	Description
fcFxpPortOperTable 1.3.6.1.3.42.2.1.2.1	Not accessible	A table that contains one entry for each Fx_Port in the fabric element, operational status, and parameters of the Fx_Ports.
fcFxpPortOperEntry 1.3.6.1.3.42.2.1.2.1.1	Not accessible	An entry containing operational status and parameters of an Fx_Port.
fcFxpPortOperModuleIndex 1.3.6.1.3.42.2.1.2.1.1.1	Read only	Identifies the module containing the Fx_Port for which this entry contains information.
fcFxpPortOperFxpPortIndex 1.3.6.1.3.42.2.1.2.1.1.2	Read only	Identifies the Fx_Port within the module. This number ranges from 1 to the value of fcFeModulePortCapacity for the associated module. The value remains constant for the identified Fx_Port until the module is re-initialized.

TABLE 34

Object and OID	Access	Description
fcFxFPortID 1.3.6.1.3.42.2.1.2.1.1.3	Read only	The address identifier by which this Fx_Port is identified within the fabric. The Fx_Port might assign its address identifier to its attached Nx_Ports during fabric login.
fcFxFPortAttachedPortName 1.3.6.1.3.42.2.1.2.1.1.4	Read only	The port name of the attached N_Port, if applicable. If the value of this object is '0000000000000000'H, this Fx_Port has no Nx_Port attached to it. This variable has been deprecated and might be implemented for backward compatibility.
fcFxFPortConnectedPort 1.3.6.1.3.42.2.1.2.1.1.5	Read only	The address identifier of the destination Fx_Port with which this Fx_Port is currently engaged in either a Class 1 or loop connection. If the value of this object is '000000'H, this Fx_Port is not engaged in a connection. This variable has been deprecated and might be implemented for backward compatibility.
fcFxFPortBbCreditAvailable 1.3.6.1.3.42.2.1.2.1.1.6	Read only	The number of buffers currently available for receiving frames from the attached port in the buffer-to-buffer flow control. The value should be less than or equal to fcFxFPortBbCredit.
fcFxFPortOperMode 1.3.6.1.3.42.2.1.2.1.1.7	Read only	The current operational mode of the Fx_Port.
fcFxFPortAdminMode 1.3.6.1.3.42.2.1.2.1.1.8	Read only	The desired operational mode of the Fx_Port.
fcFxFPortPhysTable 1.3.6.1.3.42.2.1.2.3	Not accessible	A table that contains, one entry for each Fx_Port in the fabric element, physical level status and parameters of the Fx_Ports.
fcFxFPortPhysEntry 1.3.6.1.3.42.2.1.2.3.1	Not accessible	An entry containing physical level status and parameters of an Fx_Port.
fcFxFPortPhysModuleIndex 1.3.6.1.3.42.2.1.2.3.1.1	Read only	Identifies the module containing the Fx_Port for which this entry contains information.
fcFxFPortPhysFxFPortIndex 1.3.6.1.3.42.2.1.2.3.1.2	Read only	Identifies the Fx_Port within the module. This number ranges from 1 to the value of fcFeModulePortCapacity for the associated module. The value remains constant for the identified Fx_Port until the module is re-initialized.
fcFxFPortPhysAdminStatus 1.3.6.1.3.42.2.1.2.3.1.3	Read only	The desired state of the Fx_Port: <ul style="list-style-type: none"> <li>• online (1) Place port online</li> <li>• offline (2) Take port offline</li> <li>• testing (3) Initiate test procedures</li> </ul> A management station might place the Fx_Port in a desired state by setting this object accordingly. The testing state (3) indicates that no operational frames can be passed. When a fabric element initializes, all Fx_Ports start with fcFxFPortPhysAdminStatus in the offline state (2). As the result of either explicit management action or per configuration information accessible by the fabric element, fcFxFPortPhysAdminStatus is then changed to either the online (1) or testing (3) states or remains in the offline state (2).

TABLE 34

Object and OID	Access	Description
fcFxPortPhysOperStatus 1.3.6.1.3.42.2.1.2.3.1.4	Read only	The current operational status of the Fx_Port: <ul style="list-style-type: none"> <li>• online (1) Log in might proceed.</li> <li>• offline (2) Log in cannot proceed.</li> <li>• testing (3) Port is under test.</li> </ul> link-failure (4) Failure after online/testing. The testing state (3) indicates that no operational frames can be passed. If fcFxPortPhysAdminStatus is offline (2), then fcFxPortPhysOperStatus should be offline (2). If fcFxPortPhysAdminStatus is changed to online (1), then fcFxPortPhysOperStatus should change to 1 (online) if the Fx_Port is ready to accept fabric login request from the attached Nx_Port; it should proceed and remain in the link-failure state (4) if and only if there is a fault that prevents it from going to the online state (1).
fcFxPortPhysLastChange 1.3.6.1.3.42.2.1.2.3.1.5	Read only	The value of sysUpTime at the time the Fx_Port entered its current operational status. A value of 0 indicates that the Fx_Port's operational status has not changed since the agent last restarted.
fcFxPortPhysRttov 1.3.6.1.3.42.2.1.2.3.1.6	Read only	The Receiver_Transmitter_Timeout value of the Fx_Port. This is used by the receiver logic to detect Loss of Synchronization.
fcFxlogiTable 1.3.6.1.3.42.2.1.2.4	Not accessible	This table contains one entry for each Fx_Port in the fabric element, and the Service Parameters that have been established from the most recent fabric login, whether implicit or explicit.
fcFxlogiEntry 1.3.6.1.3.42.2.1.2.4.1	Not accessible	An entry containing service parameters established from a successful fabric login.
fcFxlogiModuleIndex 1.3.6.1.3.42.2.1.2.4.1.1	Read only	Identifies the module containing the Fx_Port for which this entry contains information.
fcFxlogiFxPortIndex 1.3.6.1.3.42.2.1.2.4.1.2	Read only	Identifies the Fx_Port within the module. This number ranges from 1 to the value of fcFeModulePortCapacity for the associated module. The value remains constant for the identified Fx_Port until the module is re-initialized.
fcFxlogiNxPortIndex 1.3.6.1.3.42.2.1.2.4.1.3	Read only	The object identifies the associated Nx_Port in the attachment for which the entry contains information.
fcFxPortFcphVersionAgreed 1.3.6.1.3.42.2.1.2.4.1.4	Read only	The version of FC-PH that the Fx_Port has agreed to support from the fabric login.
fcFxPortNxPortBbCredit 1.3.6.1.3.42.2.1.2.4.1.5	Read only	The total number of buffers available for holding Class 1 connect-request Class 2 or Class 3 frames to be transmitted to the attached Nx_Port. It is for buffer-to-buffer flow control in the direction from Fx_Port to Nx_Port. The buffer-to-buffer flow control mechanism is indicated in the respective fcFxPortBbCreditModel.
fcFxPortNxPortRxDataFieldSize 1.3.6.1.3.42.2.1.2.4.1.6	Read only	The Receive Data Field Size of the attached Nx_Port. This is a binary value that specifies the largest Data Field Size for an FT_1 frame that can be received by the Nx_Port. The value is a number of bytes in the range 128 to 2112, inclusive.
fcFxPortCosSuppAgreed 1.3.6.1.3.42.2.1.2.4.1.7	Read only	Indicates that the attached Nx_Port has requested the Fx_Port for the support of classes of services and the Fx_Port has granted the request.

TABLE 34

Object and OID	Access	Description
fcFxFPortIntermixSuppAgreed 1.3.6.1.3.42.2.1.2.4.1.8	Read only	A variable indicating that the attached Nx_Port has requested the Fx_Port for Intermix support and the Fx_Port has granted the request. This flag is only valid if Class 1 service is supported. Valid values: <ul style="list-style-type: none"> <li>• yes (1)</li> <li>• no (2)</li> </ul>
fcFxFPortStackedConnModeAgreed 1.3.6.1.3.42.2.1.2.4.1.9	Read only	Indicates whether the Fx_Port has agreed to support stacked connect from the fabric login. This is only meaningful if Class 1 service has been agreed to.
fcFxFPortClass2SeqDelivAgreed 1.3.6.1.3.42.2.1.2.4.1.10	Read only	A variable indicating whether the Fx_Port has agreed to support Class 2 sequential delivery from the fabric login. This is only meaningful if Class 2 service has been agreed to. Valid values: <ul style="list-style-type: none"> <li>• yes (1)</li> <li>• no (2)</li> </ul>
fcFxFPortClass3SeqDelivAgreed 1.3.6.1.3.42.2.1.2.4.1.11	Read only	A flag indicating whether the Fx_Port has agreed to support Class 3 sequential delivery from the fabric login. This is only meaningful if Class 3 service has been agreed to. Valid values: <ul style="list-style-type: none"> <li>• yes (1)</li> <li>• no (2)</li> </ul>
fcFxFPortNxPortName 1.3.6.1.3.42.2.1.2.4.1.12	Read only	The port name of the attached Nx_Port, if applicable. If the value of this object is '0000000000000000'H, this Fx_Port has no Nx_Port attached to it.
fcFxFPortConnectedNxPort 1.3.6.1.3.42.2.1.2.4.1.13	Read only	The address identifier of the destination Fx_Port with which this Fx_Port is currently engaged in either a Class 1 or loop connection. If the value of this object is '000000'H, this Fx_Port is not engaged in a connection.
fcFxFPortBbCreditModel 1.3.6.1.3.42.2.1.2.4.1.14	Read only	Identifies the BB_Credit model used by the Fx_Port. The regular model refers to the buffer-to-buffer flow control mechanism defined in FC-PH [1] used between the F_Port and the N_Port. For FL_Ports, the alternate buffer-to-buffer flow control mechanism as defined in FC-AL [4] is used between the FL_Port and any attached NL_Ports.

## fcFeError group

This group consists of tables that contain information about the various types of errors detected. The management station might use the information in this group to determine the quality of the link between the Fx\_Port and its attached Nx\_Port.

Implementation of this group is optional.

**TABLE 35**

Object and OID	Access	Description
fcFxFPortErrorTable 1.3.6.1.3.42.2.1.3.1	Not accessible	This table contains one entry for each Fx_Port in the fabric element, and counters recording numbers of errors detected since the management agent re-initialized. The first six columnar objects after the port index correspond to the counters in the Link ErrorStatus Block.
fcFxFPortErrorEntry 1.3.6.1.3.42.2.1.3.1.1	Not accessible	An entry containing error counters of an Fx_Port.
fcFxFPortErrorModuleIndex 1.3.6.1.3.42.2.1.3.1.1.1	Read only	Identifies the module containing the Fx_Port for which this entry contains information.
fcFxFPortErrorFxFPortIndex 1.3.6.1.3.42.2.1.3.1.1.2	Read only	Identifies the Fx_Port within the module. This number ranges from 1 to the value of fcFeModulePortCapacity for the associated module. The value remains constant for the identified Fx_Port until the module is re-initialized.
fcFxFPortLinkFailures 1.3.6.1.3.42.2.1.3.1.1.3	Read only	The number of link failures detected by this Fx_Port.
fcFxFPortSyncLosses 1.3.6.1.3.42.2.1.3.1.1.4	Read only	The number of loss of synchronization errors detected by the Fx_Port.
fcFxFPortSigLosses 1.3.6.1.3.42.2.1.3.1.1.5	Read only	The number of loss of signal errors detected by the Fx_Port.
fcFxFPortPrimSeqProtoErrors 1.3.6.1.3.42.2.1.3.1.1.6	Read only	The number of primitive sequence protocol errors detected by the Fx_Port.
fcFxFPortInvalidTxWords 1.3.6.1.3.42.2.1.3.1.1.7	Read only	The number of invalid transmission word errors detected by the Fx_Port.
fcFxFPortInvalidCrcs 1.3.6.1.3.42.2.1.3.1.1.8	Read only	The number of invalid Cyclic Redundancy Checks (CRCs) detected by this Fx_Port.
fcFxFPortDelimiterErrors 1.3.6.1.3.42.2.1.3.1.1.9	Read only	The number of Delimiter errors detected by this Fx_Port.
fcFxFPortAddressIdErrors 1.3.6.1.3.42.2.1.3.1.1.10	Read only	The number of address identifier errors detected by this Fx_Port.
fcFxFPortLinkResetIns 1.3.6.1.3.42.2.1.3.1.1.11	Read only	The number of Link Reset Protocol errors received by this Fx_Port from the attached Nx_Port.
fcFxFPortLinkResetOuts 1.3.6.1.3.42.2.1.3.1.1.12	Read only	The number of Link Reset Protocol errors issued by this Fx_Port to the attached Nx_Port.
fcFxFPortOIsIns 1.3.6.1.3.42.2.1.3.1.1.13	Read only	The number of Offline Sequence errors received by this Fx_Port.
fcFxFPortOIsOuts 1.3.6.1.3.42.2.1.3.1.1.14	Read only	The number of Offline Sequence errors issued by this Fx_Port.

## fcFeAcct group

Brocade supports fcFxFPortC2AccountingTable and fcFxFPortC3AccountingTable.



## fcFeCap group

This group consists of a table describing information about what each Fx\_Port is inherently capable of operating or supporting. A capability might be used or not, as expressed in its respective object value in the configuration group.

Implementation of this group is optional.

**TABLE 36**

Object and OID	Access	Description
fcFxPortCapTable 1.3.6.1.3.42.2.1.5.1	Not accessible	A table that contains one entry for each Fx_Port, and the capabilities of the port within the fabric element.
fcFxPortCapEntry 1.3.6.1.3.42.2.1.5.1.1	Not accessible	An entry containing the capabilities of a Fx_Port.
fcFxPortCapModuleIndex 1.3.6.1.3.42.2.1.5.1.1.1	Read only	Identifies the module containing the Fx_Port for which this entry contains information.
fcFxPortCapFxPortIndex 1.3.6.1.3.42.2.1.5.1.1.2	Read only	Identifies the Fx_Port within the module. This number ranges from 1 to the value of fcFeModulePortCapacity for the associated module. The value remains constant for the identified Fx_Port until the module is re-initialized.
fcFxPortCapFcphVersionHigh 1.3.6.1.3.42.2.1.5.1.1.3	Read only	The highest or most recent version of FC-PH that the Fx_Port is capable of supporting.
fcFxPortCapFcphVersionLow 1.3.6.1.3.42.2.1.5.1.1.4	Read only	The lowest or earliest version of FC-PH that the Fx_Port is capable of supporting.
fcFxPortCapBbCreditMax 1.3.6.1.3.42.2.1.5.1.1.5	Read only	The maximum number of receive buffers available for holding Class 1 connect-request Class 2 or Class 3 frames from the attached Nx_Port.
fcFxPortCapBbCreditMin 1.3.6.1.3.42.2.1.5.1.1.6	Read only	The minimum number of receive buffers available for holding Class 1 connect-request Class 2 or Class 3 frames from the attached Nx_Port.
fcFxPortCapRxDataFieldSizeMax 1.3.6.1.3.42.2.1.5.1.1.7	Read only	The maximum size (in bytes) of the Data Field in a frame that the Fx_Port is capable of receiving from its attached Nx_Port.
fcFxPortCapRxDataFieldSizeMin 1.3.6.1.3.42.2.1.5.1.1.8	Read only	The minimum size (in bytes) of the Data Field in a frame that the Fx_Port is capable of receiving from its attached Nx_Port.
fcFxPortCapCos 1.3.6.1.3.42.2.1.5.1.1.9	Read only	A value indicating the set of Classes of Service that the Fx_Port is capable of supporting.
fcFxPortCapIntermix 1.3.6.1.3.42.2.1.5.1.1.10	Read only	A flag indicating whether the Fx_Port is capable of supporting the intermixing of Class 2 and Class 3 frames during a Class 1 connection. This flag is only valid if the port is capable of supporting Class 1 service. Valid values: <ul style="list-style-type: none"> <li>• yes (1)</li> <li>• no (2)</li> </ul>
fcFxPortCapStackedConnMode 1.3.6.1.3.42.2.1.5.1.1.11	Read only	A value indicating the mode of Stacked Connect request that the Fx_Port is capable of supporting.

**TABLE 36**

Object and OID	Access	Description
fcFxpPortCapClass2SeqDeliv 1.3.6.1.3.42.2.1.5.1.1.12	Read only	A flag indicating whether the Fx_Port is capable of supporting Class 2 Sequential Delivery. Valid values: <ul style="list-style-type: none"> <li>• yes (1)</li> <li>• no (2)</li> </ul>
fcFxpPortCapClass3SeqDeliv 1.3.6.1.3.42.2.1.5.1.1.13	Read only	A flag indicating whether the Fx_Port is capable of supporting Class 3 Sequential Delivery. Valid values: <ul style="list-style-type: none"> <li>• yes (1)</li> <li>• no (2)</li> </ul>
fcFxpPortCapHoldTimeMax 1.3.6.1.3.42.2.1.5.1.1.14	Read only	The maximum holding time (in microseconds) that the Fx_Port is capable of supporting.
fcFxpPortCapHoldTimeMin 1.3.6.1.3.42.2.1.5.1.1.15	Read only	The minimum holding time (in microseconds) that the Fx_Port is capable of supporting.
fcFxpPortCapBaudRates 1.3.6.1.3.42.2.1.5.1.1.16	Read only	A value indicating the set of baud rates that the Fx_Port is capable of supporting. This variable has been deprecated and might be implemented for backward compatibility.
fcFxpPortCapMedia 1.3.6.1.3.42.2.1.5.1.1.17	Read only	A value indicating the set of media that the Fx_Port is capable of supporting. This variable has been deprecated and might be implemented for backward compatibility.

# Entity MIB Objects

---

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## Entity MIB overview

Entity MIB is the module for representing multiple logical entities supported by a single SNMP agent. This MIB is supported only in Fabric OS v5.x, v6.0, v6.1, v6.1.2\_CEE, v6.2.0, v6.3.0, v6.4.0, v6.4.1\_fcoe, v7.0.0, and v7.1.0.

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

The object types in Entity MIB are organized into the following groupings:

- Entity MIB objects ..... 108
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## Entity MIB system organization of MIB objects

Figure 35 through Figure 41 depict the organization and structure of the Entity MIB file system.

## 5 Entity MIB overview

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

**FIGURE 35 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 36 entityPhysical hierarchy**

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

**FIGURE 37 entityLogical hierarchy**

```

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

```

**FIGURE 38** entityMapping hierarchy

```

- entityGeneral
  - entLastChangeTime 1.3.6.1.2.1.47.1.4.1

```

**FIGURE 39** entityGeneral hierarchy

```

- entityMIBTraps
  - entityMIBTrapPrefix (1.3.6.1.2.1.47.2.0)
    - entConfigChange 1.3.6.1.2.1.47.2.0.1

```

**FIGURE 40** entityMIBTrapPrefix hierarchy

```

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

```

**FIGURE 41** entityConformance hierarchy

## Definitions for Entity MIB

[Table 37](#) lists the objects or definitions that are imported into the Entity MIB and the modules from which they are imported.

**TABLE 37** Objects imported into the Entity MIB

Object	Imported from this module
MODULE-IDENTITY	SNMPv2-SMI
OBJECT-TYPE	
NOTIFICATION-TYPE	
mib-2	

**TABLE 37** Objects imported into the Entity MIB (Continued)

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

## Textual conventions for Entity MIB

### PhysicalIndex

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

**Syntax** Integer (1... 2147483647)

### PhysicalClass

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

**Syntax** Integer

[Table 38](#) lists the possible values for PhysicalClass.

**TABLE 38** 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.

**TABLE 38** Possible values for PhysicalClass (Continued)

Values	Description
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 should be modeled within a container entity, such as field-replaceable modules, fans, or power supplies. Note that all known containers, including empty containers, should be modeled by the agent.
powerSupply (6)	The physical entity class is a power-supplying component.
fan (7)	The physical entity class is a fan or other heat-reduction component.
sensor (8)	The physical entity class is a sensor, such as a temperature sensor within a router chassis.
module (9)	The physical entity class is a self-contained subsystem (such as a plug-in card or daughter-card). If it is removable, then it should be modeled within a container entity; otherwise, it should be modeled directly within another physical entity (for example, a chassis or another module).
port (10)	The physical entity class is a networking port, capable of receiving or transmitting networking traffic.
stack (11)	The physical entity class is a super-container (possibly virtual), intended to group together multiple chassis entities (such as a stack of multiple chassis entities). A stack might be realized by a virtual cable or a real interconnect cable attached to multiple chassis, or it can comprise multiple interconnect cables. A stack should not be modeled within any other physical entities, but a stack might be contained within another stack. Only chassis entities should be contained within a stack.

## SnmEngineIdOrNone

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).

- For the Brocade 3016 or Brocade 4020 blades, the snmpEngineID takes the UUID value. For example, if the UUID value is **A9914D56-1E5A-0E59-C51E-528802B06E4F**, the snmpEngineID displays `80.00.06.34.B1.A9.91.4D.56.1E.5A.0E.59.C5.1E.52.88.02.B0.6E.4F` (hex)
- For other switches, the snmpEngineID takes the WWN. For example, if the WWN value is **10:00:00:05:1e:35:d5:ee**, the snmpEngineID displays `80.00.06.34.B2.10.00.00.05.1E.35.D5.EE` (hex)
- If the WWN cannot be taken, the snmpEngineID takes the IP address + port number along with the private enterprise number and algorithm type used. An example of this type of snmpEngineID would be `00.00.06.34.00.00.00.A1.0A.20.93.CA` (hex)

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

## Entity MIB objects

The Entity MIB objects are divided into the following groups:

- [Physical entity group](#) ..... 108
- [Logical entity group](#) ..... 119
- [Entity mapping group](#) ..... 119
- [General group](#) ..... 119

The following sections list the MIBs in each group.

## Physical entity group

TABLE 39

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 40 contains one row per physical entity (Figure 42). The table always contains at least one row for an “overall” physical entity. This object is implemented for Fabric OS v6.4.0. The “overall” physical entry for Brocade is the chassis, and in Fabric OS v6.4.0 and later, it is marked as a 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.
entPhysicalDescr 1.3.6.1.2.1.47.1.1.1.1.2	Read only	A textual description of the physical entity (physical name of the entity, such as chassis, blade, port, and so on). This object should contain a string that identifies the entity manufacturer’s name and should be set to a distinct value for each version or model of the physical entity. The name provides the entity type and number (for example, slot 1, power supply, and so on). The description gives the textual description of the type of the entry (for example, power supply, module, and so on).
entPhysicalVendorType 1.3.6.1.2.1.47.1.1.1.1.3	Read only	An indication of the vendor-specific hardware type of the physical entity. Note that this is different from the definition of MIB-II sysObjectID.  An agent should set this object to an enterprise-specific registration identifier value, indicating the specific equipment type in detail. The associated instance of entPhysicalClass indicates the general type of hardware device.  If no vendor-specific registration identifier exists for this physical entity, or if the value is unknown by this agent, then the value {0, 0} is returned.  Currently, NULL OID {0, 0} is returned.



TABLE 39

Object and OID	Access	Description
entPhysicalContainedIn 1.3.6.1.2.1.47.1.1.1.1.4	Read only	The value of entPhysicalIndex for the physical entity that “contains” this physical entity. A value of 0 indicates this physical entity is not contained in any other physical entity. Note that the set of containment relationships define a strict hierarchy; that is, recursion is not allowed. In the event a physical entity is contained by more than one physical entity (for example, double-wide modules), this object should identify the containing entity with the lowest value of entPhysicalIndex. Value 0 for chassis entry. All containers have ContainedIn set to 1. All FRUs are contained in their respective slot container entries.
entPhysicalClass 1.3.6.1.2.1.47.1.1.1.1.5	Read only	<p>An indication of the general hardware type of the physical entity. An agent should set this object to the standard enumeration value that most accurately indicates the general class of the physical entity, or the primary class if there is more than one.</p> <p>If no appropriate standard registration identifier exists for this physical entity, then the value other (1) is returned. If the value is unknown by this agent, then the value unknown (2) is returned.</p> <p>Brocade 300 switches can have the following hierarchy of physical objects:</p> <ul style="list-style-type: none"> <li>• Chassis: One entry (one row)</li> <li>• Container: One entry for each FRU slot (one blade, one power supply, three fans)</li> <li>• Module: One entry for blades, one entry for power supply, and three entries for fans</li> </ul> <p>Brocade 5100 switches can have the following hierarchy of physical objects:</p> <ul style="list-style-type: none"> <li>• Chassis: One entry (one row)</li> <li>• Container: One entry for each FRU slot (one blade, two power supplies, two fans)</li> <li>• Module: One entry for blades, two entries for power supplies, and two entries for fans</li> </ul> <p>Brocade 5300 switches can have the following hierarchy of physical objects:</p> <ul style="list-style-type: none"> <li>• Chassis: One entry (one row)</li> <li>• Container: One entry for each FRU slot (one blade, two power supplies, three fans)</li> <li>• Module: One entry for blades, two entries for power supplies, and three entries for fans</li> </ul>

TABLE 39

Object and OID	Access	Description
entPhysicalClass 1.3.6.1.2.1.47.1.1.1.1.5 (continued)	Read only	<p>Brocade DCX directors can have the following hierarchy of physical objects:</p> <ul style="list-style-type: none"> <li>• Chassis: One entry (one row)</li> <li>• Container: One entry for each FRU slot (eight port blades, two CPs, four power supplies, three fans)</li> <li>• Module: Eight entries for port blades, two entries for CPs, four entries for power supplies, and three entries for fans</li> </ul> <p>Brocade DCX-4S directors can have the following hierarchy of physical objects:</p> <ul style="list-style-type: none"> <li>• Chassis: One entry (one row)</li> <li>• Container: One entry for each FRU slot (four port blades, two CPs, two power supplies, two fans)</li> <li>• Module: Eight entries for port blades, two entries for CPs, four entries for power supplies, and three entries for fans</li> </ul> <p>Brocade 12000, 24000, and 48000 directors can have the following hierarchy of physical objects:</p> <ul style="list-style-type: none"> <li>• Chassis: One entry (one row)</li> <li>• Container: One entry for each FRU slot (eight port blades, two CPs, four power supplies, three fans)</li> <li>• Module: Eight entries for port blades, two entries for CPs, four entries for power supplies, and three entries for fans</li> </ul> <p>Brocade 3900 switches can have the following hierarchy of physical objects:</p> <ul style="list-style-type: none"> <li>• Chassis: One entry (one row)</li> <li>• Container: One entry for each FRU slot (one switch blade, two power supplies, six fans)</li> <li>• Module: One entry for switch blade, up to two entries for power supplies, and up to six entries for fans</li> </ul> <p>Brocade 4100 switches can have the following hierarchy of physical objects:</p> <ul style="list-style-type: none"> <li>• Chassis: One entry (one row)</li> <li>• Container: One entry for each FRU slot (one switch blade, two power supplies, three fans)</li> <li>• Module: One entry for switch blade, up to two entries for power supplies, and up to three entries for fans</li> </ul> <p>Brocade 7500 and 7600 switches can have the following hierarchy of physical objects:</p> <ul style="list-style-type: none"> <li>• Chassis: One entry (one row)</li> <li>• Container: One entry for each FRU slot (one switch blade, two power supplies, three fans)</li> <li>• Module: One entry for switch blade, up to two entries for power supplies, and up to three entries for fans</li> </ul> <p>Brocade 8000 switch can have the following hierarchy of physical objects:</p> <ul style="list-style-type: none"> <li>• Chassis: One entry (one row)</li> <li>• Container: One entry for each FRU slot (one switch blade, two power supplies, three fans)</li> <li>• Module: One entry for switch blade, up to two entries for power supplies, and up to three entries for fans</li> </ul>

TABLE 39

Object and OID	Access	Description
entPhysicalClass 1.3.6.1.2.1.47.1.1.1.1.5 (continued)	Read only	<p>Brocade 7800 Extension switch can have the following hierarchy of physical objects:</p> <ul style="list-style-type: none"> <li>• Chassis: One entry (one row)</li> <li>• Container: One entry for each FRU slot (one switch blade, two power supplies, two fans)</li> <li>• Module: One entry for switch blade, up to two entries for power supplies, and up to two entries for fans</li> </ul> <p>Brocade 6505 switch can have the following hierarchy of physical objects:</p> <ul style="list-style-type: none"> <li>• Chassis: One entry (one row)</li> <li>• Container: One entry for each FRU slot (one switch blade, two power supplies, two fans)</li> <li>• Module: One entry for switch blade, up to two entries for power supplies, and up to two entries for fans.</li> </ul> <p>Brocade 6510 switch can have the following hierarchy of physical objects:</p> <ul style="list-style-type: none"> <li>• Chassis: One entry (one row)</li> <li>• Container: One entry for each FRU slot (one switch blade, two power supplies, two fans)</li> <li>• Module: One entry for switch blade, up to two entries for power supplies, and up to two entries for fans</li> </ul> <p>Brocade 6520 switch can have the following hierarchy of physical objects:</p> <ul style="list-style-type: none"> <li>• Chassis: One entry (one row)</li> <li>• Container: One entry for each FRU slot (one switch blade, two power supplies, three fans)</li> <li>• Module: One entry for switch blade, up to two entries for power supplies, and up to three entries for fans</li> </ul> <p>Brocade DCX 8510-4 Backbone can have the following hierarchy of physical objects:</p> <ul style="list-style-type: none"> <li>• Chassis: One entry (one row)</li> <li>• Container: One entry for each FRU slot (four port blades, two CPs, two power supplies, two fans)</li> <li>• Module: Eight entries for port blades, two entries for CPs, four entries for power supplies, and three entries for fans</li> </ul> <p>Brocade DCX 8510-8 Backbone can have the following hierarchy of physical objects:</p> <ul style="list-style-type: none"> <li>• Chassis: One entry (one row)</li> <li>• Container: One entry for each FRU slot (eight port blades, two CPs, four power supplies, three fans)</li> <li>• Module: Eight entries for port blades, two entries for CPs, four entries for power supplies, and three entries for fans</li> </ul> <p>Brocade VA-40FC switch can have the following hierarchy of physical objects:</p> <ul style="list-style-type: none"> <li>• Chassis: One entry (one row)</li> <li>• Container: One entry for each FRU slot (one blade, two power supplies, two fans)</li> <li>• Module: One entry for blades, two entries for power supplies, and two entries for fans</li> </ul>

TABLE 39

Object and OID	Access	Description
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>This value should match any external labeling of the physical component if possible. For example, for a container (such as a card slot) labeled slot #3, entPhysicalParentRelPos should have the value 3. Note that the entPhysicalEntry for the module plugged into slot 3 should have an entPhysicalParentRelPos value of 1.</p> <p>If the physical position of this component does not match any external numbering or clearly visible ordering, then user documentation or other external reference material should be used to determine the parent-relative position. If this is not possible, then the agent should assign a consistent (but possibly arbitrary) ordering to a given set of sibling components, perhaps based on internal representation of the components.</p>
entPhysicalParentRelPos 1.3.6.1.2.1.47.1.1.1.1.6 (continued)	Read only	<p>If the agent cannot determine the parent-relative position for some reason, or if the associated value of entPhysicalContainedIn is 0, then the value -1 is returned; otherwise, a non-negative integer is returned, indicating the parent-relative position of this physical entity.</p> <p>Parent-relative ordering normally starts from 1 and continues to n, where n represents the highest-positioned child entity. However, if the physical entities (for example, slots) are labeled from a starting position of zero, then the first sibling should be associated with an entPhysicalParentRelPos value of 0. Note that this ordering might be sparse or dense, depending on agent implementation.</p> <p>The actual values returned are not globally meaningful, as each parent component might use different numbering algorithms. The ordering is meaningful only among siblings of the same parent component.</p> <p>The agent should retain parent-relative position values across reboots, either through algorithmic assignment or use of nonvolatile storage.</p>
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 should be the name of the component as assigned by the local device and should be suitable for use in commands entered at the device's "console." This might be a text name, such as "console," or a simple component number (for example, port or module number) such as 1, depending on the physical component naming syntax of the device.</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>

TABLE 39

Object and OID	Access	Description
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>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 hardware revision string is associated with the physical component, or if this information is unknown to the agent, then this object will contain a zero-length string.</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>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 firmware programs are associated with the physical component, or if this information is unknown to the agent, then this object will contain a zero-length string.</p> <p>Set to an empty 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 will contain a zero-length string.</p> <p>Set to empty string.</p>

TABLE 39

Object and OID	Access	Description
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> <p>On the first instantiation of a physical entity, the value of entPhysicalSerialNum associated with that entity is set to the correct vendor-assigned serial number, if this information is available to the agent. If a serial number is unknown or nonexistent, the entPhysicalSerialNum is set to a zero-length string instead.</p> <p>Note that implementations that can correctly identify the serial numbers of all installed physical entities do not need to provide write access to the entPhysicalSerialNum object. Agents that cannot provide nonvolatile storage for the entPhysicalSerialNum strings are not required to implement write access for this object.</p> <p>Not every physical component has a serial number or even needs one. Physical entities for which the associated value of the entPhysicalsFRU object is equal to “false(2)” (for example, the repeater ports within a repeater module), do not need their own unique serial number. An agent does not have to provide write access for such entities and might return a zero-length string.</p> <p>If write access is implemented for an instance of entPhysicalSerialNum and a value is written into the instance, the agent must retain the supplied value in the entPhysicalSerialNum instance associated with the same physical entity for as long as that entity remains instantiated. This includes instantiations across all re-initializations or reboots of the network management system, including those that result in a change of the physical entity’s entPhysicalIndex value.</p> <p>Set to serial number and part number (if available), respectively.</p> <p><b>NOTE:</b> For the Brocade 4024 blade, entPhysicalSerialNum displays the vendor-specific serial number; for other switches it displays the factory serial number.</p>
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>Note that comparisons between instances of the entPhysicalModelName, entPhysicalFirmwareRev, entPhysicalSoftwareRev, and the entPhysicalSerialNum objects are meaningful only amongst entPhysicalEntries with the same value of entPhysicalMfgName.</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> <p>Set to empty 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>

TABLE 39

Object and OID	Access	Description
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> <p>Set to empty string.</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>On the first instantiation of a physical entity, the value of entPhysicalAssetID associated with that entity is set to the zero-length string.</p> <p>Not every physical component has an asset tracking identifier or even need one. Physical entities for which the associated value of the entPhysicalsFRU object is equal to "false (2)" (for example, the repeater ports within a repeater module) do not need their own unique asset tracking identifier. An agent does not have to provide write access for such entities and might instead return a zero-length string.</p> <p>If write access is implemented for an instance of entPhysicalAssetID and a value is written into the instance, the agent must retain the supplied value in the entPhysicalAssetID instance associated with the same physical entity for as long as that entity remains instantiated. This includes instantiations across all re-initializations/reboots of the network management system, including those that result in a change of the physical entity's entPhysicalIndex value.</p> <p>If no asset tracking information is associated with the physical component, then this object contains a zero-length string.</p> <p>Set to empty string.</p>
entPhysicalsFRU 1.3.6.1.2.1.47.1.1.1.1.16	Read only	<p>The entPhysicalsFRU object indicates whether this physical entity is considered a field replaceable unit by the vendor. If this object contains the value "true (1)," then this entPhysicalEntry identifies a field replaceable unit. For all entPhysicalEntries representing components that are permanently contained within a field replaceable unit, the value "false (2)" should be returned for this object.</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 40 entPhysicalTable entries for Brocade switches

Platform	Blades	Fans	Power supply	WWN card
Brocade 200E	1	3 fans not a FRU	1 PS not a FRU	1 WWN unit not a FRU
Brocade 3016	1	NA	NA	1 WWN unit not a FRU

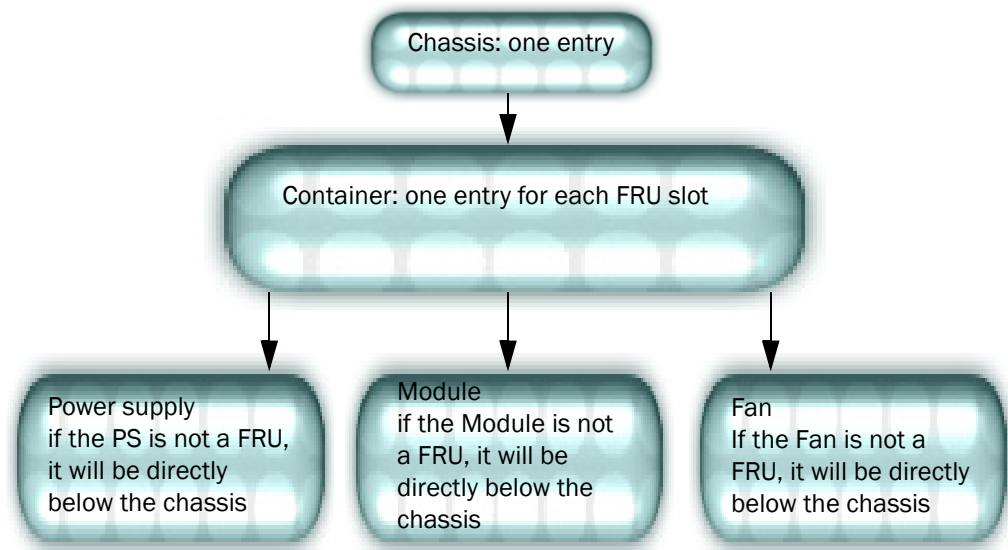
**TABLE 40** entPhysicalTable entries for Brocade switches (Continued)

Platform	Blades	Fans	Power supply	WWN card
Brocade 3250	1	3 fans not a FRU	1 PS not a FRU	1 WWN unit not a FRU
Brocade 3850	1	4 fans not a FRU	2 PS not a FRU	1 WWN unit not a FRU
Brocade 3900	1	6 fans in 3 FRUs	2 PS	1 WWN unit not a FRU
Brocade 4012	NA	NA	NA	NA
Brocade 4100	1	3 FRUs	2 PS	1 WWN unit not a FRU
Brocade 4900	1	3 FRUs	2 PS	1 WWN unit not a FRU
Brocade 5000	1	3 FRUs	2 PS	1 WWN unit not a FRU
Brocade 7500	1	3 FRUs	2 PS	1 WWN unit not a FRU
Brocade 7600	1	3 FRUs	2 PS	1 WWN unit not a FRU
Brocade 12000 / 24000	10 blades	3 fans	4 PS	2 WWN units in 1 FRU
Brocade 48000	10 blades	3 fans	4 PS	2 WWN units in 1 FRU
Brocade DCX	8 blades	3 fans	4 PS	2 WWN units
Brocade DCX-4S	4 blades	2 fans	2 PS	2 WWN units
Brocade Encryption Switch	NA	3 fans	2 PS	1 WWN unit
Brocade 300	1 blade	3 fans	1 PS	1 WWN unit. Not a FRU.
Brocade 5100	1 blade	2 fans	2 PS	1 WWN unit. Not a FRU.
Brocade 5300	1 blade	3 fans	2 PS	1 WWN unit. Not a FRU.
Brocade 8000	1 blade	3 FRUs	2 PS	1 WWN unit. Not a FRU.
Brocade 6505	1	2 fans	2 PS	1 WWN unit. Not a FRU.
Brocade 6510	1 blade	2 fans	2 PS	1 WWN unit. Not a FRU.
Brocade 6520	1 blade	3 fans	2 PS	1 WWN unit
Brocade DCX 8510-8 Backbone	8 blades	3 fans	4 PS	2 WWN units
Brocade DCX 8510-4 Backbone	4 blades	2 fans	2 PS	2 WWN units



**TABLE 40** entPhysicalTable entries for Brocade switches (Continued)

Platform	Blades	Fans	Power supply	WWN card
Brocade 7800 Extension Switch	1	2 fans	2 PS	1 WWN unit. Not a FRU.
Brocade VA-40FC	1	2 fans	2 PS	1 WWN unit. Not a FRU.



**FIGURE 42** 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.

## Entity MIB conformance information

This section lists the entityConformance MIBs. [Figure 41](#) on page 105 shows the structure of the entityConformance group.

**TABLE 41**

object and OID	Access	Description
entityCompliance 1.3.6.1.2.1.47.3.1.1	Not accessible	<p>The compliance statement for SNMP entities that implement version 1 of the Entity MIB.</p> <p>Mandatory groups:</p> <ul style="list-style-type: none"> <li>entityPhysicalGroup</li> <li>entityLogicalGroup</li> <li>entityMappingGroup</li> <li>entityGeneralGroup</li> <li>entityNotificationsGroup</li> </ul> <p><b>NOTE:</b> This object is deprecated.</p>
entity2Compliance 1.3.6.1.2.1.47.3.1.2	Not accessible	<p>The compliance statement for SNMP entities that implement version 2 of the Entity MIB.</p> <p>Mandatory groups:</p> <ul style="list-style-type: none"> <li>1: entityPhysicalGroup</li> <li>2: entityPhysical2Group</li> <li>3: entityGeneralGroup</li> <li>4: entityNotificationsGroup</li> </ul> <p>Components:</p> <ul style="list-style-type: none"> <li>Type: Group Group: entityLogical2Group Description: Implementation of this group is not mandatory for agents which model all MIB object instances within a single naming scope.</li> <li>Type: Group Group: entityMappingGroup Description: Implementation of the entPhysicalContainsTable is mandatory for all agents. Implementation of the entLPMappingTable and entAliasMappingTables are not mandatory for agents which model all MIB object instances within a single naming scope. Note that the entAliasMappingTable may be useful for all agents, however implementation of the entityLogicalGroup or entityLogical2Group is required to support this table.</li> <li>Type: Object Object: entPhysicalSerialNum Min access: not-accessible Description: Read and write access is not required for agents which cannot identify serial number information for physical entities, or cannot provide non-volatile storage for NMS-assigned serial numbers. Write access is not required for agents which can identify serial number information for physical entities, but cannot provide non-volatile storage for NMS-assigned serial.</li> </ul>

TABLE 41

object and OID	Access	Description
entityPhysicalGroup 1.3.6.1.2.1.47.3.2.1	Not accessible	The collection of objects used to represent physical system components, for which a single agent provides management information. Objects: <ul style="list-style-type: none"> <li>entPhysicalDescr</li> <li>entPhysicalVendorType</li> <li>entPhysicalContainedIn</li> <li>entPhysicalClass</li> <li>entPhysicalParentRelPos</li> <li>entPhysicalName</li> </ul>
entityLogicalGroup 1.3.6.1.2.1.47.3.2.2	Not accessible	The collection of objects used to represent the list of logical entities, for which a single agent provides management information. Objects: <ul style="list-style-type: none"> <li>entLogicalDescr</li> <li>entLogicalType</li> <li>entLogicalCommunity</li> <li>entLogicalTAddress</li> <li>entLogicalTDomain</li> </ul> <p><b>NOTE:</b> This group is deprecated.</p>
entityMappingGroup 1.3.6.1.2.1.47.3.2.3	Not accessible	The collection of objects used to represent the associations between multiple logical entities, physical components, interfaces, and port identifiers, for which a single agent provides management information. Objects: <ul style="list-style-type: none"> <li>entLPPhysicalIndex</li> <li>entAliasMappingIdentifier</li> <li>entPhysicalChildIndex</li> </ul>
entityGeneralGroup 1.3.6.1.2.1.47.3.2.4	Not accessible	The collection of objects that are used to represent general entity information for which a single agent provides management information. Objects: <ul style="list-style-type: none"> <li>entLastChangeTime</li> </ul>
entityNotificationsGroup 1.3.6.1.2.1.47.3.2.5	Not accessible	The collection of notifications used to indicate Entity MIB data consistency and general status information. Notifications: entConfigChange

## 5 Entity MIB conformance information

**TABLE 41**

object and OID	Access	Description
entityPhysical2Group 1.3.6.1.2.1.47.3.2.6	Not accessible	The collection of objects used to represent physical system components, for which a single agent provides management information. This group augments the objects contained in the entityPhysicalGroup. Objects: <ul style="list-style-type: none"><li>• entPhysicalHardwareRev</li><li>• entPhysicalFirmwareRev</li><li>• entPhysicalSoftwareRev</li><li>• entPhysicalSerialNum</li><li>• entPhysicalMfgName</li><li>• entPhysicalModelName</li><li>• entPhysicalAlias</li><li>• entPhysicalAssetID</li><li>• entPhysicalIsFRU</li></ul>
entityLogical2Group 1.3.6.1.2.1.47.3.2.7	Not accessible	The collection of objects used to represent the list of logical entities, for which a single SNMP entity provides management information. Objects: <ul style="list-style-type: none"><li>• entLogicalDescr</li><li>• entLogicalType</li><li>• entLogicalAddress</li><li>• entLogicalDomain</li><li>• entLogicalContextEngineID</li><li>• entLogicalContextName</li></ul>



## 5 Entity MIB conformance information

# SW-MIB Objects

---

## In this chapter

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## SW-MIB overview

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

---

### NOTE

The port swap feature does not have any effect on SNMP for SW MIB.

---

## SW-MIB system organization of MIB objects

Figure 43 through Figure 59 depict the organization and structure of SW-MIB.

## 6 SW-MIB overview

```
- iso
  - org
    - dod
      - internet
        - private
          - enterprises
            - bcsi
              - commDev
                - fibreChannel
                  - fcSwitch
                    - sw
                      - swTrapsV2
                      - swSystem
                      - swFabric
                      - swModule
                      - swAgtCfg
                      - swFCport
                      - swNs
                      - swEvent
                      - swFwSystem
                      - swEndDevice
                      - swGroup
                      - swBlmPerfMnt
                      - swTrunk
                      - swTopTalker
                      - swCpuorMemoryUsage
                      - swConnUnitPortStatExtentionTable
                    - sw28k
                    - sw21kN24k
                    - sw20x0
              - bcsiReg
                - bcsiModules
                  - bcsiModculeTC
                  - swMibModule
```

FIGURE 43 SW-MIB overall tree structure

```
- swTrapsV2
  - swFault 1.3.6.1.4.1.1588.2.1.1.1.0.1
  - swSensorScn 1.3.6.1.4.1.1588.2.1.1.1.0.2
  - 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
  - swFabricWatchTrap 1.3.6.1.4.1.1588.2.1.1.1.0.5
  - swTrackChangesTrap 1.3.6.1.4.1.1588.2.1.1.1.0.6
  - swIPv6ChangeTrap 1.3.6.1.4.1.1588.2.1.1.1.0.7
  - swPmgrEventTrap 1.3.6.1.4.1.1588.2.1.1.1.0.8
  - swFabricReconfigTrap 1.3.6.1.4.1.1588.2.1.1.1.0.9
  - swFabricSegmentTrap 1.3.6.1.4.1.1588.2.1.1.1.0.10
  - swExtTrap 1.3.6.1.4.1.1588.2.1.1.1.0.11
  - swStateChangeTrap 1.3.6.1.4.1.1588.2.1.1.1.0.12
  - swPortMoveTrap 1.3.6.1.4.1.1588.2.1.1.1.0.13
  - swBrcdGenericTrap 1.3.6.1.4.1.1588.2.1.1.1.0.14
  - swDeviceStatusTrap 1.3.6.1.4.1.1588.2.1.1.1.0.15
```

FIGURE 44 swTrapsV2 hierarchy



```

- swSystem
  - 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
  - swAdmStatus 1.3.6.1.4.1.1588.2.1.1.1.1.8
  - swTelnetShellAdmStatus 1.3.6.1.4.1.1588.2.1.1.1.1.9
  - 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
  - swFlashDLHost 1.3.6.1.4.1.1588.2.1.1.1.1.13
  - swFlashDLUser 1.3.6.1.4.1.1588.2.1.1.1.1.14
  - swFlashDLFile 1.3.6.1.4.1.1588.2.1.1.1.1.15
  - swFlashDLPassword 1.3.6.1.4.1.1588.2.1.1.1.1.16
  - 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
  - swTrackChangesInfo 1.3.6.1.4.1.1588.2.1.1.1.1.23
  - swID 1.3.6.1.4.1.1588.2.1.1.1.1.24
  - 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
  - swFCIPAddress 1.3.6.1.4.1.1588.2.1.1.1.1.27
  - swFCIPMask 1.3.6.1.4.1.1588.2.1.1.1.1.28
  - 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
  - swModel 1.3.6.1.4.1.1588.2.1.1.1.1.31
  - swTestString 1.3.6.1.4.1.1588.2.1.1.1.1.32
  - swPortList 1.3.6.1.4.1.1588.2.1.1.1.1.33
  - swBrcdTrapBitMask 1.3.6.1.4.1.1588.2.1.1.1.1.34
  - swFCPortPrevType 1.3.6.1.4.1.1588.2.1.1.1.1.35
  - swDeviceStatus 1.3.6.1.4.1.1588.2.1.1.1.1.36

```

**FIGURE 45** swSystem hierarchy

```
- swFabric
- swDomainID 1.3.6.1.4.1.1588.2.1.1.1.2.1
- swPrincipalSwitch 1.3.6.1.4.1.1588.2.1.1.1.2.2
- swNumNbs 1.3.6.1.4.1.1588.2.1.1.1.2.8
- swNbTable 1.3.6.1.4.1.1588.2.1.1.1.2.9
  - swNbEntry 1.3.6.1.4.1.1588.2.1.1.1.2.9.1
    - swNbIndex 1.3.6.1.4.1.1588.2.1.1.1.2.9.1.1
    - swNbMyPort 1.3.6.1.4.1.1588.2.1.1.1.2.9.1.2
    - swNbRemDomain 1.3.6.1.4.1.1588.2.1.1.1.2.9.1.3
    - swNbRemPort 1.3.6.1.4.1.1588.2.1.1.1.2.9.1.4
    - swNbBaudRate 1.3.6.1.4.1.1588.2.1.1.1.2.9.1.5
    - swNbIslState 1.3.6.1.4.1.1588.2.1.1.1.2.9.1.6
    - swNbIslCost 1.3.6.1.4.1.1588.2.1.1.1.2.9.1.7
    - swNbRemPortName 1.3.6.1.4.1.1588.2.1.1.1.2.9.1.8
  - swFabricMemTable 1.3.6.1.4.1.1588.2.1.1.1.2.10
- swIDIDMode 1.3.6.1.4.1.1588.2.1.1.1.2.11
- swPmgrEventType 1.3.6.1.4.1.1588.2.1.1.1.2.12
- swPmgrEventTime 1.3.6.1.4.1.1588.2.1.1.1.2.13
- swPmgrEventDescr 1.3.6.1.4.1.1588.2.1.1.1.2.14
- swVfId 1.3.6.1.4.1.1588.2.1.1.1.2.15
- swVfName 1.3.6.1.4.1.1588.2.1.1.1.2.16
```

**FIGURE 46** swFabric hierarchy

```
- swModule (1.3.6.1.4.1.1588.2.1.1.1.3)
```

**FIGURE 47** swModule hierarchy

```
- swAgtCfg
  - swAgtCmtyTable 1.3.6.1.4.1.1588.2.1.1.1.4.11
    - swAgtCmtyEntry 1.3.6.1.4.1.1588.2.1.1.1.4.11.1
      - swAgtCmtyIdx 1.3.6.1.4.1.1588.2.1.1.1.4.11.1.1
      - swAgtCmtyStr 1.3.6.1.4.1.1588.2.1.1.1.4.11.1.2
      - swAgtTrapRcp 1.3.6.1.4.1.1588.2.1.1.1.4.11.1.3
      - swAgtTrapSeverityLevel 1.3.6.1.4.1.1588.2.1.1.1.4.11.1.4
```

**FIGURE 48** swAgtCfg hierarchy

```

- swFCport (1.3.6.1.4.1.1588.2.1.1.1.6)
  - swFCPortCapacity 1.3.6.1.4.1.1588.2.1.1.1.6.1
  - 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
      - swFCPortRxCs 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.17
      - swFCPortRxMcasts 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
      - swFCPortBrccdType 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.39

```

**FIGURE 49** swFCport hierarchy

## 6 SW-MIB overview

```
- swNs
- swNsLocalNumEntry 1.3.6.1.4.1.1588.2.1.1.1.7.1
- swNsLocalTable 1.3.6.1.4.1.1588.2.1.1.1.7.2
  - swNsLocalEntry 1.3.6.1.4.1.1588.2.1.1.1.7.2.1
    - swNsEntryIndex 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.1
    - swNsPortID 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.2
    - swNsPortType 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.3
    - swNsPortName 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.4
    - swNsPortSymb 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.5
    - swNsNodeName 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.6
    - swNsNodeSymb 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.7
    - swNsIPA 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.8
    - swNsIpAddress 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.9
    - swNsCos 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.10
    - swNsFc4 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.11
    - swNsIpNxPort 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.12
    - swNsWwn 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.13
    - swNsHardAddr 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.14
```

**FIGURE 50** swNs hierarchy

```
- swEvent
- swEventTrapLevel 1.3.6.1.4.1.1588.2.1.1.1.8.1
- swEventNumEntries 1.3.6.1.4.1.1588.2.1.1.1.8.4
- 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 51** swEvent hierarchy

```

- swFwSystem
- swFwFabricWatchLicense 1.3.6.1.4.1.1588.2.1.1.1.10.1
- swFwClassAreaTable 1.3.6.1.4.1.1588.2.1.1.1.10.2
  - swFwClassAreaEntry 1.3.6.1.4.1.1588.2.1.1.1.10.2.1
    - swFwClassAreaIndex 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.1
    - swFwWriteThVals 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.2
    - swFwDefaultUnit 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.3
    - swFwDefaultTimebase 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.4
    - swFwDefaultLow 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.5
    - swFwDefaultHigh 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.6
    - swFwDefaultBufSize 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.7
    - swFwCustUnit 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.8
    - swFwCustTimebase 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.9
    - swFwCustLow 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.10
    - swFwCustHigh 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.11
    - swFwCustBufSize 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.12
    - swFwThLevel 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.13
    - swFwWriteActVals 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.14
    - swFwDefaultChangedActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.15
    - swFwDefaultExceededActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.16
    - swFwDefaultBelowActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.17
    - swFwDefaultAboveActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.18
    - swFwDefaultInBetweenActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.19
    - swFwCustChangedActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.20
    - swFwCustExceededActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.21
    - swFwCustBelowActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.22
    - swFwCustAboveActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.23
    - swFwCustInBetweenActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.24
    - swFwValidActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.25
    - swFwActLevel 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.26
- swFwThresholdTable 1.3.6.1.4.1.1588.2.1.1.1.10.3
  - swFwThresholdEntry 1.3.6.1.4.1.1588.2.1.1.1.10.3.1
    - swFwThresholdIndex 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.1
    - swFwStatus 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.2
    - swFwName 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.3
    - swFwLabel 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.4
    - swFwCurVal 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.5
    - swFwLastEvent 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.6
    - swFwLastEventVal 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.7
    - swFwLastEventTime 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.8
    - swFwLastState 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.9
    - swFwBehaviorType 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.10
    - swFwBehaviorInt 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.11
    - swFwLastSeverityLevel 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.12

```

FIGURE 52 swFwSystem hierarchy

```

- swEndDevice
  - swEndDeviceRlsTable 1.3.6.1.4.1.1588.2.1.1.1.21.1
    - swEndDeviceRlsEntry 1.3.6.1.4.1.1588.2.1.1.1.21.1.1
      - swEndDevicePort 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.1
      - swEndDeviceAlpa 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.2
      - swEndDevicePortID 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.3
      - swEndDeviceLinkFailure 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.4
      - swEndDeviceSyncLoss 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.5
      - swEndDeviceSigLoss 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.6
      - swEndDeviceProtoErr 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.7
      - swEndDeviceInvalidWord 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.8
      - swEndDeviceInvalidCRC 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.9

```

FIGURE 53 swEndDevice hierarchy

```

- swGroup
  - swGroupTable 1.3.6.1.4.1.1588.2.1.1.1.22.1
    - swGroupEntry 1.3.6.1.4.1.1588.2.1.1.1.22.1.1
      - swGroupIndex 1.3.6.1.4.1.1588.2.1.1.1.22.1.1.1
      - swGroupName 1.3.6.1.4.1.1588.2.1.1.1.22.1.1.2
      - swGroupType 1.3.6.1.4.1.1588.2.1.1.1.22.1.1.3
    - swGroupMemTable 1.3.6.1.4.1.1588.2.1.1.1.22.2
      - swGroupMemEntry 1.3.6.1.4.1.1588.2.1.1.1.22.2.1
        - swGroupID 1.3.6.1.4.1.1588.2.1.1.1.22.2.1.1
        - swGroupMemWwn 1.3.6.1.4.1.1588.2.1.1.1.22.2.1.2
        - swGroupMemPos 1.3.6.1.4.1.1588.2.1.1.1.22.2.1.

```

FIGURE 54 swGroup hierarchy

```

- swBlmPerfMnt
  - swBlmPerfALPAMntTable 1.3.6.1.4.1.1588.2.1.1.1.23.1
    - swBlmPerfALPAMntEntry 1.3.6.1.4.1.1588.2.1.1.1.23.1.1
      - swBlmPerfAlpaPort 1.3.6.1.4.1.1588.2.1.1.1.23.1.1.1
      - swBlmPerfAlpaIndx 1.3.6.1.4.1.1588.2.1.1.1.23.1.1.2
      - swBlmPerfAlpa 1.3.6.1.4.1.1588.2.1.1.1.23.1.1.3
      - swBlmPerfAlpaCRCCnt 1.3.6.1.4.1.1588.2.1.1.1.23.1.1.4
    - swBlmPerfEEMntTable 1.3.6.1.4.1.1588.2.1.1.1.23.2
      - swBlmPerfEEMntEntry 1.3.6.1.4.1.1588.2.1.1.1.23.2.1
        - swBlmPerfEEPort 1.3.6.1.4.1.1588.2.1.1.1.23.2.1.1
        - swBlmPerfEERefKey 1.3.6.1.4.1.1588.2.1.1.1.23.2.1.2
        - swBlmPerfEECRC 1.3.6.1.4.1.1588.2.1.1.1.23.2.1.3
        - swBlmPerfEEFCWRx 1.3.6.1.4.1.1588.2.1.1.1.23.2.1.4
        - swBlmPerfEEFCWTx 1.3.6.1.4.1.1588.2.1.1.1.23.2.1.5
        - swBlmPerfEESid 1.3.6.1.4.1.1588.2.1.1.1.23.2.1.6
        - swBlmPerfEEDid 1.3.6.1.4.1.1588.2.1.1.1.23.2.1.7
      - swBlmPerfFltMntTable 1.3.6.1.4.1.1588.2.1.1.1.23.3
        - swBlmPerfFltMntEntry 1.3.6.1.4.1.1588.2.1.1.1.23.3.1
          - swBlmPerfFltPort 1.3.6.1.4.1.1588.2.1.1.1.23.3.1.1
          - swBlmPerfFltRefkey 1.3.6.1.4.1.1588.2.1.1.1.23.3.1.2
          - swBlmPerfFltCnt 1.3.6.1.4.1.1588.2.1.1.1.23.3.1.3
          - swBlmPerfFltAlias 1.3.6.1.4.1.1588.2.1.1.1.23.3.1.4

```

FIGURE 55 swBlmPerfMnt hierarchy

```

- swTrunk
  - swSwitchTrunkable 1.3.6.1.4.1.1588.2.1.1.1.24.1
  - swTrunkTable 1.3.6.1.4.1.1588.2.1.1.1.24.2
    - swTrunkEntry 1.3.6.1.4.1.1588.2.1.1.1.24.2.1
      - swTrunkPortIndex 1.3.6.1.4.1.1588.2.1.1.1.24.2.1.1
      - swTrunkGroupNumber 1.3.6.1.4.1.1588.2.1.1.1.24.2.1.2
      - swTrunkMaster 1.3.6.1.4.1.1588.2.1.1.1.24.2.1.3
      - swPortTrunked 1.3.6.1.4.1.1588.2.1.1.1.24.2.1.4
    - swTrunkGrpTable 1.3.6.1.4.1.1588.2.1.1.1.24.3
      - swTrunkGrpEntry 1.3.6.1.4.1.1588.2.1.1.1.24.3.1
        - swTrunkGrpNumber 1.3.6.1.4.1.1588.2.1.1.1.24.3.1.1
        - swTrunkGrpMaster 1.3.6.1.4.1.1588.2.1.1.1.24.3.1.2
        - swTrunkGrpTx 1.3.6.1.4.1.1588.2.1.1.1.24.3.1.3
        - swTrunkGrpRx 1.3.6.1.4.1.1588.2.1.1.1.24.3.1.4

```

**FIGURE 56** swTrunk hierarchy

```

- swTopTalker
  - swTopTalkerMntMode 1.3.6.1.4.1.1588.2.1.1.1.25.1
  - swTopTalkerMntNumEntries 1.3.6.1.4.1.1588.2.1.1.1.25.2
  - swTopTalkerMntTable 1.3.6.1.4.1.1588.2.1.1.1.25.3
    - swTopTalkerMntEntry 1.3.6.1.4.1.1588.2.1.1.1.25.3.1
      - swTopTalkerMntIndex 1.3.6.1.4.1.1588.2.1.1.1.25.3.1.1
      - swTopTalkerMntPort 1.3.6.1.4.1.1588.2.1.1.1.25.3.1.2
      - swTopTalkerMntSpid 1.3.6.1.4.1.1588.2.1.1.1.25.3.1.3
      - swTopTalkerMntDpid 1.3.6.1.4.1.1588.2.1.1.1.25.3.1.4
      - swTopTalkerMntflow 1.3.6.1.4.1.1588.2.1.1.1.25.3.1.5
      - swTopTalkerMntSwn 1.3.6.1.4.1.1588.2.1.1.1.25.3.1.6
      - swTopTalkerMntDwn 1.3.6.1.4.1.1588.2.1.1.1.25.3.1.7

```

**FIGURE 57** swTopTalker hierarchy

```

- swCpuorMemoryUsage
  - 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
  - swMemUsageLimit1 1.3.6.1.4.1.1588.2.1.1.1.26.11
  - swMemUsageLimit3 1.3.6.1.4.1.1588.2.1.1.1.26.12

```

**FIGURE 58** swCpuorMemoryUsage hierarchy

- swConnUnitPortStatExtentionTable
  - swConnUnitPortStatEntry 1.3.6.1.4.1.1588.2.1.1.1.27.1
  - swConnUnitCRCWithBadEOF 1.3.6.1.4.1.1588.2.1.1.1.27.1.1
  - swConnUnitZeroTenancy 1.3.6.1.4.1.1588.2.1.1.1.27.1.2
  - swConnUnitFLNumOfTenancy 1.3.6.1.4.1.1588.2.1.1.1.27.1.3
  - swConnUnitNLNumOfTenancy 1.3.6.1.4.1.1588.2.1.1.1.27.1.4
  - swConnUnitStopTenancyStarVation 1.3.6.1.4.1.1588.2.1.1.1.27.1.5
  - swConnUnitOpend 1.3.6.1.4.1.1588.2.1.1.1.27.1.6
  - swConnUnitTransferConnection 1.3.6.1.4.1.1588.2.1.1.1.27.1.7
  - swConnUnitOpen 1.3.6.1.4.1.1588.2.1.1.1.27.1.8
  - swConnUnitInvalidARB 1.3.6.1.4.1.1588.2.1.1.1.27.1.9
  - swConnUnitFTB1Miss 1.3.6.1.4.1.1588.2.1.1.1.27.1.10
  - swConnUnitFTB2Miss 1.3.6.1.4.1.1588.2.1.1.1.27.1.11
  - swConnUnitFTB6Miss 1.3.6.1.4.1.1588.2.1.1.1.27.1.12
  - swConnUnitZoneMiss 1.3.6.1.4.1.1588.2.1.1.1.27.1.13
  - swConnUnitLunZoneMiss 1.3.6.1.4.1.1588.2.1.1.1.27.1.14
  - swConnUnitBadEOF 1.3.6.1.4.1.1588.2.1.1.1.27.1.15
  - swConnUnitLCRX 1.3.6.1.4.1.1588.2.1.1.1.27.1.16
  - swConnUnitRDYPriority 1.3.6.1.4.1.1588.2.1.1.1.27.1.17
  - swConnUnitLli 1.3.6.1.4.1.1588.2.1.1.1.27.1.18
  - swConnUnitInterrupts 1.3.6.1.4.1.1588.2.1.1.1.27.1.19
  - swConnUnitUnknownInterrupts 1.3.6.1.4.1.1588.2.1.1.1.27.1.20
  - swConnUnitTimedOut 1.3.6.1.4.1.1588.2.1.1.1.27.1.21
  - swConnUnitProcRequired 1.3.6.1.4.1.1588.2.1.1.1.27.1.22
  - swConnUnitTxBufferUnavailable 1.3.6.1.4.1.1588.2.1.1.1.27.1.23
  - swConnUnitStateChange 1.3.6.1.4.1.1588.2.1.1.1.27.1.24
  - swConnUnitC3DiscardDueToRXTimeout 1.3.6.1.4.1.1588.2.1.1.1.27.1.25
  - swConnUnitC3DiscardDueToDestUnreachable 1.3.6.1.4.1.1588.2.1.1.1.27.1.26
  - swConnUnitC3DiscardDueToTXTimeout 1.3.6.1.4.1.1588.2.1.1.1.27.1.27
  - swConnUnitC3DiscardOther 1.3.6.1.4.1.1588.2.1.1.1.27.1.28
  - swConnUnitPCSErrorCounter 1.3.6.1.4.1.1588.2.1.1.1.27.1.29

FIGURE 59 swConnUnitPortStatExtentionTable hierarchy

## Textual conventions for SW-MIB

Table 42 lists the textual conventions used for SW-MIB.

TABLE 42 SW-MIB textual conventions

Type definition	Value	Description
FcWwn	Octet String of size 8	The World Wide Name (WWN) of Brocade-specific products and ports.
SwDomainIndex	Integer of size 1 to 239	Fibre Channel domain ID of the switch.
SwNbIndex	Integer of size 1 to 2048	Index of the neighbor inter-switch link (ISL) entry.
SwSensorIndex	Integer of size 1 to 1024	Index of the sensor entry.
SwPortIndex	Integer32	Index of the port, starting from 1 up to the maximum number of ports on the Brocade switch.
SwTrunkMaster	Integer32	Index of the trunk master, starting from 1 up to the maximum number of trunk groups on the Brocade switch.



TABLE 42 SW-MIB textual conventions (Continued)

Type definition	Value	Description
SwFwActs	Integer	Valid Fabric Watch actions: 0 swFwNoAction 1 swFwErrlog 2 swFwSnmpttrap 3 swFwErrlogSnmpttrap 4 swFwPortloglock 5 swFwErrlogPortloglock 6 swFwSnmpttrapPortloglock 7 swFwErrlogSnmpttrapPortloglock 8 swFwRn 9 swFwElRn 10 swFwStRn 11 swFwElStRn 12 swFwPIRn 13 swFwElPIRn 14 swFwStPIRn 15 swFwElStPIRn 16 swFwMailAlert 17 swFwMailAlertErrlog 18 swFwMailAlertSnmpttrap 19 swFwMailAlertErrlogSnmpttrap 20 swFwMailAlertPortloglock 21 swFwMailAlertErrlogPortloglock 22 swFwMailAlertSnmpttrapPortloglock 23 swFwMailAlertErrlogSnmpttrapPortloglock 24 swFwMailAlertRn 25 swFwElMailAlertRn 26 swFwMailAlertStRn 27 swFwMailAlertElStRn 28 swFwMailAlertPIRn 29 swFwMailAlertElPIRn 30 swFwMailAlertStPIRn 55 swFwMailAlertElStPIPf 63 swFwMailAlertElStPIRnPf
SwFwLevels	Integer	Threshold or Action levels: 1 swFwReserved (Not supported) 2 swFwDefault 3 swFwCustom Commands: <ul style="list-style-type: none"> <li>• portthconfig To set port thresholds</li> <li>• thconfig To set other thresholds</li> <li>• sysmonitor --config To set ENV/RES class ENV- Environment, RES - Resource</li> </ul>

TABLE 42 SW-MIB textual conventions (Continued)

Type definition	Value	Description	
SwFwClassesAreas	Integer	Index of Fabric Watch classes and areas where thresholds can be monitored:	EE Performance Monitor class: 54 swFwPerfEToERxCnt 55 swFwPerfEToETxCnt
		Environment class: 1 swFwEnvTemp 2 swFwEnvFan (Not supported) 3 swFwEnvPS (Not supported)	Filter Performance Monitor class: 56 swFwPerffitCusDef
		SFP class: 4 swFwTransceiverTemp 5 swFwTransceiverRxp 6 swFwTransceiverTxp 7 swFwTransceiverCurrent 57 swFwTransceiverVoltage	Security class: 58 swFwSecTelnetViolations 59 swFwSecHTTPViolations 60 swFwSecAPIViolations (not supported) 61 swFwSecRSNMPViolations (not supported) 62 swFwSecWSNMPViolations (not supported) 63 swFwSecSESViolations (not supported) 64 swFwSecMSViolations (not supported) 65 swFwSecSerialViolations (not supported) 66 swFwSecFPViolations (not supported) 67 swFwSecSCCViolations 68 swFwSecDCCViolations 69 swFwSecLoginViolations 70 swFwSecInvaldedTS (not supported) 71 swFwSecInvalidSign (not supported) 72 swFwSecInvalidCert 73 swFwSecSlapFail 74 swFwSecSlapBadPkt (not supported) 75 swFwSecTSOutSync 76 swFwSecNoFcs 77 swFwSecIncompDB 78 swFwSecIllegalCmd
		Port class: 8 swFwPortLink 9 swFwPortSync 10 swFwPortSignal 11 swFwPortPe 12 swFwPortWords 13 swFwPortCrcs 14 swFwPortRXPerf 15 swFwPortTXPerf 16 swFwPortState 86 swFwPortLr 90 swFwPortC3Discard	E_Port class: 25 swFwEPortLink 26 swFwEPortSync 27 swFwEPortSignal 28 swFwEPortPe 29 swFwEPortWords 30 swFwEPortCrcs 31 swFwEPortRXPerf 32 swFwEPortTXPerf 33 swFwEPortState 84 swFwEPortUtil (not supported) 87 swFwEPortLr 91 swFwEPortC3Discard 97 swFwEPortTrunkUtil 94 swFwVEPortStateChange 95 swFwVEPortUtil 96 swFwVEPortPktLoss
		Fabric class: 17 swFwFabricEd 18 swFwFabricFr 19 swFwFabricDi 20 swFwFabricSc 21 swFwFabricZc 23 swFwFabricFl 24 swFwFabricGs	Resource class: 83 swFwResourceFlash
		F/FL Port (Optical) class: 43 swFwFOPPortLink 44 swFwFOPPortSync 45 swFwFOPPortSignal 46 swFwFOPPortPe 47 swFwFOPPortWords 48 swFwFOPPortCrcs 49 swFwFOPPortRXPerf 50 swFwFOPPortTXPerf 51 swFwFOPPortState 52 swFwFOPPortWords 89 swFwFOPPortLr 93 swFwFOPPortC3Discard 99 swFwFOPPortTrunkUtil	

**TABLE 42 SW-MIB textual conventions (Continued)**

Type definition	Value	Description
EportUtil and EportPktl are the MIB defines used for VE ports for Legacy FCIP (FR4-18i router blade/Brocade 7500), while VEPortUtil and VEPortPktlLoss are used for VE ports for Brocade 7800 Extension Switch/FX8-24 DCX Extension Blade.		
In the index swFwEnvTemp, Env refers to Environment class and Temp refers to the area Temperature.		
SwFwWriteVals	Integer	Write-only variable for applying or canceling values or action matrix changes: 1 swFwCancelWrite 2 swFwApplyWrite
SwFwTimebase	Integer	Timebase for thresholds: 1 swFwTbNone 2 swFwTbSec 3 swFwTbMin 4 swFwTbHour 5 swFwTbDay
SwFwStatus	Integer	Status for thresholds: 1 disabled 2 enabled
SwFwEvent	Integer	Possible events available: 1 started 2 changed 3 exceeded 4 below 5 above 6 inBetween 7 lowBufferCrspd
SwFwBehavior	Integer	Behavior type for thresholds: 1 triggered 2 continuous
SwFwState	Integer	State type for last events: 1 swFwInformative 2 swFwNormal 3 swFwfaulty
SwFwLicense	Integer	Fabric Watch License state: 1 swFwLicensed 2 swFwNotLicensed

## sw traps

This section contains descriptions and other information that is specific to sw traps.

From Fabric OS v6.2.0, the sw traps will have an extra binding associated to indicate the Virtual Fabric (VF). The traps will have a Virtual Fabric ID (VFID) associated with them.

For the fourteen traps defined in the SW-MIB and how to configure the trap, refer to [Table 43](#).

TABLE 43 SW-MIB traps

Trap name	Commands to configure
<a href="#">“swFault”</a> on page 137 (not supported)	N.A.
<a href="#">“swSensorScn”</a> on page 137	N.A.
<a href="#">“swFCPortScn”</a> on page 137	Always on
<a href="#">“swEventTrap”</a> on page 138	For more information, refer to the <b>snmpConfig</b> command in the <i>Fabric OS Command Reference</i> .
<a href="#">“swFabricWatchTrap”</a> on page 138	Fabric OS Command: <b>portthconfig, thconfig, sysmonitor –config</b>
<a href="#">“swTrackChangesTrap”</a> on page 139	Fabric OS Command: <b>trackChangesSet</b> and <b>trackChangesShow</b>
<a href="#">“swIPv6ChangeTrap”</a> on page 139	For more information, refer to the <b>snmpConfig</b> command in the <i>Fabric OS Command Reference</i> .
<a href="#">“swPmgrEventTrap”</a> on page 139	
<a href="#">“swFabricReconfigTrap”</a> on page 139	
<a href="#">“swFabricSegmentTrap”</a> on page 140	
<a href="#">“swExtTrap”</a> on page 140	
<a href="#">“swStateChangeTrap”</a> on page 140	
<a href="#">“swPortMoveTrap”</a> on page 140	
<a href="#">“swBrddGenericTrap”</a> on page 140	
<a href="#">“swDeviceStatusTrap”</a> on page 140	

The swSsn variable is optional in trap messages.

Select either the previous behavior in which the Enterprise field is taken from sysObjectID or the new behavior in which the value in the Enterprise field will always be “sw”:

- Set the value of this variable to 0, to use the sysObjectID.
- Set the value to 1 to use the fixed enterprise value, “sw” (1.3.6.1.4.1.1588.2.1.1.1.).

TABLE 44

Trap name and OID	Variables	Description
swFault 1.3.6.1.4.1.1588.2.1.1.1 .0.1	swDiagResult swSsn	<p>This trap is no longer generated.</p> <p>A swFault is generated whenever the diagnostics detect a fault with the switch.</p> <p>#TYPE Switch is faulty. #SUMMARY Faulty reason: %d and SSN is #%s #ARGUMENTS 0, 1 #SEVERITY Critical #TIMEINDEX 1 #STATE Nonoperational</p>
swSensorScn 1.3.6.1.4.1.1588.2.1.1.1 .0.2	swSensorStatus swSensorIndex swSensorType swSensorValue swSensorInfo swSsn	<p>This object is obsoleted by <a href="#">swFabricWatchTrap</a>.</p> <p>A swSensorScn (2) is generated whenever an environment sensor changes its operational state: for instance, if a fan stop working. The VarBind in the Trap Data Unit contain the corresponding instance of the sensor status, sensor index, sensor type, sensor value (reading), and sensor information. Note that the sensor information contains the type of sensor and its number, in textual format.</p> <p>#TYPE A sensor (temperature, fan, or other) changed its operational state. #SUMMARY %s: is currently in state %d and SSN is #%s #ARGUMENTS 4, 0, 5 #SEVERITY Informational #TIMEINDEX 1 #STATE Operational</p>
swFCPortScn 1.3.6.1.4.1.1588.2.1.1.1 .0.3	swFCPortOpStatus swFCPortIndex swFCPortName swFCPortWwn swFCPortPrevType swFCPortBrcdType swSsn swFCPortFlag swVfld	<p>A swFCPortScn (3) is generated whenever an FC port changes its operational state or port type. The events that trigger this trap are as follows:</p> <ul style="list-style-type: none"> <li>• Port changes its state to online or offline.</li> <li>• Port type changes to E_port, F_port, or FL_port.</li> </ul> <p>The VarBind in the Trap Data Unit contains the corresponding instance of the FC port's operational status, index, swFCPortName, and swSsn. swFCPortName and swSsn are optional.</p> <p>#TYPE A Fibre Channel Port changed its operational state. #SUMMARY Port Index %d changed state to %d. Port Name: %s and SSN is #%s #ARGUMENTS 1, 0, 2, 3 #SEVERITY Informational #TIMEINDEX 1 #STATE Operational</p>

TABLE 44

Trap name and OID	Variables	Description
swEventTrap 1.3.6.1.4.1.1588.2.1.1.1 .0.4	swEventIndex swEventTimeInfo swEventLevel swEventRepeatCount swEventDescr swSsn swVfId	<p>This trap is generated when an event occurs with a level that is at or below <a href="#">swEventTrapLevel</a>.</p> <p>#TYPE A firmware event has been logged. #SUMMARY Event %d: %s (severity level %d) - %s SSN is #%%s #ARGUMENTS 0, 1, 2, 4, 5 #SEVERITY Informational #TIMEINDEX 1 #STATE Operational</p> <p>Each trap recipient has a configured severity level association. Whenever an error message is generated at or above that configured severity level the recipient is notified of the event. This trap is generated for all RASLog messages. To get more details on any particular event, refer to the <i>Fabric OS Message Reference</i>.</p>
swFabricWatchTrap 1.3.6.1.4.1.1588.2.1.1.1 .0.5	swFwClassAreaIndex swFwThresholdIndex swFwName swFwLabel swFwLastEventVal swFwLastEventTime swFwLastEvent swFwLastState swFwLastSeverityLevel swSsn swVfId	<p>Trap to be sent by Fabric Watch to notify of an event.</p> <p>#TYPE Fabric Watch has generated an event. #SUMMARY Threshold %s in Class/Area %d at index %d has generated event %d with %d on %s. This event is %d. This event label is %d, event severity level is %d and SSN is #%%s #ARGUMENTS 2, 0, 1, 6, 4, 5, 7, 3, 8, 9 #SEVERITY Warning #TIMEINDEX 1 #STATE Operational</p> <p>For information on setting thresholds in Fabric Watch, refer to the <i>Fabric Watch Administrator's Guide</i>.</p>

TABLE 44

Trap name and OID	Variables	Description
swTrackChangesTrap 1.3.6.1.4.1.1588.2.1.1.1 .0.6	swTrackChangesInfo swSsn swVfld	<p>Trap to be sent for tracking log in, log out, or configuration changes.</p> <p>#TYPE           Track changes has generated a trap. #SUMMARY        %s and SSN is #%s #ARGUMENTS 0, 1 #SEVERITY        Informational #TIMEINDEX       1 #STATE           Operational</p> <p>Some of the triggers that will generate this trap are:</p> <ul style="list-style-type: none"> <li>• Log out</li> <li>• Unsuccessful log in</li> <li>• Successful log in</li> <li>• Switch configuration changes</li> <li>• Track changes on and off</li> </ul> <p>This trap gets sent when track-changes is set to ENABLED and is configured to send SNMP traps on track events. Use the <b>trackchangeset</b> command to enable the track changes feature and SNMP trap mode.</p>
swIPv6ChangeTrap 1.3.6.1.4.1.1588.2.1.1.1 .0.7	swIPv6Address swIPv6Status	<p>This trap is generated when an IPv6 address status change event occurs. It is generated only when IPv6 stateless state changes to the deprecation state and not for address change notification.</p>
swPmgrEventTrap 1.3.6.1.4.1.1588.2.1.1.1 .0.8	swPmgrEventType swPmgrEventTime swPmgrEventDescr swSsn swVfld	<p>This trap is generated when any partition manager change happens. This trap is generated when:</p> <ul style="list-style-type: none"> <li>• Logical switch is created or deleted.</li> <li>• Port is moved between logical switches.</li> <li>• Switch FID changes.</li> <li>• When any logical switch is changed to base switch.</li> <li>• VF is enabled or disabled.</li> </ul>
swFabricReconfigTrap 1.3.6.1.4.1.1588.2.1.1.1 .0.9	swDomainID	<p>The trap to be sent for tracking fabric reconfiguration. This trap is generated under the following circumstances:</p> <ul style="list-style-type: none"> <li>• Two switches with the same domain ID have connected to one another.</li> <li>• Two fabrics have joined.</li> <li>• An E_Port has gone offline.</li> <li>• A principal link has segmented from the fabric.</li> <li>• Zone conflicts.</li> <li>• Domain conflicts.</li> <li>• Segmentation of the principal link between two switches.</li> <li>• Incompatible link parameters. During E_Port initialization, ports exchange link parameters. Rarely, incompatible parameters result in segmentation.</li> </ul>

TABLE 44

Trap name and OID	Variables	Description
swFabricSegmentTrap 1.3.6.1.4.1.1588.2.1.1.1 .0.10	swFCPortIndex swFCPortName swSsn swFCPortFlag swVfld	The trap to be sent for tracking segmentation changes.
swExtTrap 1.3.6.1.4.1.1588.2.1.1.1 .0.11		The trap adds the SSN binding to the traps if it is enabled. This is an internal trap.
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. This trap is disabled by default.
swPortMoveTrap 1.3.6.1.4.1.1588.2.1.1.1 .0.13	swPortList swVfld	This trap is sent when the ports are moved from one switch to another. This trap is disabled by default.
swBrcdGenericTrap 1.3.6.1.4.1.1588.2.1.1.1 .0.14	swBrcdTrapBitMask	This trap is sent for one of the following events: <ul style="list-style-type: none"> <li>• fabric change</li> <li>• device change</li> <li>• FAPWWN change</li> <li>• FDMI events</li> </ul> This trap is enabled by default. <b>NOTE:</b> This trap is for internal use.
swDeviceStatusTrap 1.3.6.1.4.1.1588.2.1.1.1 .0.15	swFCPortSpecifier swDeviceStatus swEndDevicePortID swNsNodeName	This trap is sent whenever a device logs in or logs out.



## Switch system group

TABLE 45

Object and OID	Access	Description
swSystem 1.3.6.1.4.1.1588.2.1.1.1.1	Not accessible	The OID sub-tree for switch system group.
swCurrentDate 1.3.6.1.4.1.1588.2.1.1.1.1.1	Read only	<p>The current date and time. The return string displays using the following format: ddd MMM DD hh:mm:ss yyyy</p> <p>Where: ddd = day MMM = month DD = date hh = hour mm = minute ss = seconds yyyy = year For example:  Thu Aug 17 15:16:09 2000</p>
swBootDate 1.3.6.1.4.1.1588.2.1.1.1.1.2	Read only	<p>The date and time when the system last booted. The return string displays using the following format: ddd MMM DD hh:mm:ss yyyy</p> <p>Where: ddd = day MMM = month DD = date hh = hour mm = minute ss = seconds yyyy = year For example:  Thu Aug 17 15:16:09 2000</p>
swFWLastUpdated 1.3.6.1.4.1.1588.2.1.1.1.1.3	Read only	<p>The date and time when the firmware was last loaded to the switch. The return string displays using the following format: ddd MMM DD hh:mm:ss yyyy</p> <p>Where: ddd = day MMM = month DD = date hh = hour mm = minute ss = seconds yyyy = year For example:  Thu Aug 17 15:16:09 2000</p>

TABLE 45

Object and OID	Access	Description
swFlashLastUpdated 1.3.6.1.4.1.1588.2.1.1.1.1.4	Read only	<p>The date and time when the firmware was last downloaded or the configuration file was last changed.</p> <p>The return string displays using the following format: ddd MMM DD hh:mm:ss yyyy</p> <p>Where: ddd = day MMM = month DD = date hh = hour mm = minute ss = seconds yyyy = year</p> <p>For example: Thu Aug 17 15:16:09 2000</p>
swBootPromLastUpdated 1.3.6.1.4.1.1588.2.1.1.1.1.5	Read only	<p>The date and time when the BootPROM was last updated.</p> <p>The return string displays using the following format: ddd MMM DD hh:mm:ss yyyy</p> <p>Where: ddd = day MMM = month DD = date hh = hour mm = minute ss = seconds yyyy = year</p> <p>For example: Thu Aug 17 15:16:09 2000</p>
swFirmwareVersion 1.3.6.1.4.1.1588.2.1.1.1.1.6	Read only	<p>The current version of the firmware.</p> <p>The return value is displayed using the following format: vM.m.f</p> <p>Where: v = deployment indicator M = major version m = minor version f = software maintenance version</p> <p>For example, v6.1.0_main_bld36 describes firmware version 6.1.0 and the specific build number 36. Some versions may not have a build number and will appear as the version. For example, v6.1.0 indicates Fabric OS version 6.0.0.</p>

TABLE 45

Object and OID	Access	Description
swOperStatus 1.3.6.1.4.1.1588.2.1.1.1.1.7	Read only	<p>The current operational status of the switch.</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>• online (1) - The switch is accessible by an external Fibre Channel port.</li> <li>• offline (2) - The switch is not accessible.</li> <li>• testing (3) - The switch is in a built-in test mode and is not accessible by an external Fibre Channel port.</li> <li>• faulty (4) - The switch is not operational.</li> </ul>
swAdmStatus 1.3.6.1.4.1.1588.2.1.1.1.1.8	Read-write	<p>The desired administrative status of the switch. A management station might place the switch in a desired state by setting this object accordingly.</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>• online (1) - Set the switch to be accessible by an external FC port.</li> <li>• offline (2) - Set the switch to be inaccessible.</li> <li>• testing (3) - Set the switch to run the built-in test.</li> <li>• faulty (4) - Set the switch to a “soft” faulty condition.</li> <li>• reboot (5) - Set the chassis to reboot in 1 second.</li> <li>• fastboot (6) - Set the chassis to fastboot in 1 second. Fastboot causes the chassis to boot but omit the POST.</li> </ul> <p>When the switch is in faulty state, only two states can be set: faulty and reboot/fastboot</p> <p>For the Brocade 3250, 3850, 3900, 8000, 24000, 48000 and DCX director the testing (3) and faulty (4) values are not applicable.</p> <p>The possible values for Brocade 300, 5100 and 5300 are either online (1) or offline (2).</p>
swTelnetShellAdmStatus 1.3.6.1.4.1.1588.2.1.1.1.1.9	Read-write	<p>The desired administrative status of the Telnet shell.</p> <p>Setting this value to 1 (terminated), deletes the current Telnet shell task. When this variable instance is read, it reports the value last set through SNMP.</p> <p>This OID is supported in Fabric OS v2.x through v3.x.</p> <p>This OID is not supported in Fabric OS v4.0 through v4.2.</p> <p>This OID is supported in Fabric OS v4.3 and later versions.</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>• unknown (0) - The status of the current Telnet shell task is unknown.</li> <li>• terminated (1) - The current Telnet shell task is deleted.</li> </ul> <p>By setting it to 1 (terminated), the current Telnet shell task is deleted. When this variable instance is read, it reports the value last set through SNMP.</p>
swSsn 1.3.6.1.4.1.1588.2.1.1.1.1.10	Read only	<p>The soft serial number of the switch.</p> <p>This variable will return the “ssn” value that is stored in the config database. If the “ssn” key value pair is not in the config database it will return WWN of the switch.</p>
Flash administration		
<p>The next six objects are related to firmware or configuration file management. Due to security restrictions, firmwaredownload and configuration file upload and download are not supported through SNMP.</p>		
swFlashDLOperStatus 1.3.6.1.4.1.1588.2.1.1.1.1.11	Read only	<p>The operational status of the flash. This OID cannot be used for either Firmwaredownload or Configdownload (cannot be set and is read only). The value displayed is always “swCurrent (1)”.</p>

TABLE 45

Object and OID	Access	Description
swFlashDLAdmStatus 1.3.6.1.4.1.1588.2.1.1.1.1.12	Read-write	<p>The desired state of the flash.</p> <p>The host is specified in swFlashDLHost.O. In addition, the user name is specified in swFlashDLUser.O and the file name specified in swFlashDLFile.O.</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>swCurrent (1) - The flash contains the current firmware image or configuration file.</li> <li>swCfUpload (3) - The switch configuration file is to be uploaded to the host specified.</li> <li>swCfDownload (4) - The switch configuration file is to be downloaded from the host specified.</li> <li>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.</li> </ul> <p>For more information about the <b>firmwareDownload</b>, <b>configDownload</b> and <b>configUpload</b> commands, refer to the <i>Fabric OS Command Reference</i>.</p>
swFlashDLHost 1.3.6.1.4.1.1588.2.1.1.1.1.13	Read-write	<p>The name or IP address (in dot notation) of the host to download or upload a relevant file to the flash.</p> <p>This OID cannot be used for either <b>firmwareDownload</b> or <b>configDownload</b> (cannot be set and is read only) for Fabric OS v4.4 and later. The value displayed is always NULL (zero-length). This is not supported in Fabric OS v6.0.0 and later versions.</p>
swFlashDLUser 1.3.6.1.4.1.1588.2.1.1.1.1.14	Read-write	<p>The user name is used on the host for downloading or uploading a relevant file, to or from the flash.</p> <p>This OID cannot be used for either <b>firmwareDownload</b> or <b>configDownload</b> (cannot be set and is read only) for Fabric OS v4.4 and later. The value displayed is always NULL (zero-length). This is not supported in v6.0.0 and later versions.</p>
swFlashDLFile 1.3.6.1.4.1.1588.2.1.1.1.1.15	Read-write	<p>The name of the file to be downloaded or uploaded.</p> <p>This OID cannot be used for either <b>firmwareDownload</b> or <b>configDownload</b> (cannot be set and is read only) for Fabric OS v4.4 and later. The value displayed is always NULL (zero-length). This is not supported in v6.0.0 and later versions.</p>
swFlashDLPassword 1.3.6.1.4.1.1588.2.1.1.1.1.16	Read-write	<p>The password to be used for FTP transfer of files in the download or upload operation.</p> <p>This OID cannot be used for either <b>firmwareDownload</b> or <b>configDownload</b> (cannot be set and is read only) for Fabric OS v4.4 and later. The value displayed is always NULL (zero-length). This is not supported in v6.0.0 and later versions.</p>
swBeaconOperStatus 1.3.6.1.4.1.1588.2.1.1.1.1.18	Read only	<p>The current operational status of the switch beacon.</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>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.</li> <li>off (2) - Each LED is in its regular status, indicating color and state.</li> </ul>

TABLE 45

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 are: <ul style="list-style-type: none"> <li>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.</li> <li>off (2) - Set each LED to its regular status, indicating color and state.</li> </ul>
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 are: <ul style="list-style-type: none"> <li>sw-ok (1) - The switch is okay.</li> <li>sw-faulty (2) - The switch has experienced an unknown fault.</li> <li>sw-embedded-port-fault (3) - The switch has experienced an embedded port fault.</li> </ul>
swNumSensors 1.3.6.1.4.1.1588.2.1.1.1.1.21	Read only	The number of sensors inside the switch. The Brocade DCX value is between 1 and 57 (temperature =50, fan = 3, power supply = 4). The value might vary depending on the switch model. For Fabric OS v6.1.0, if no sensor is available, this variable is assigned the value -1.
swSensorTable 1.3.6.1.4.1.1588.2.1.1.1.1.22	Not accessible	Table of sensor entries. <a href="#">Table 46</a> lists the sensors on the Brocade switches. The sensors on the switches vary based on the blades. For the exact count of temperature sensors, refer to <a href="#">Table 47</a> .
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. The values are 1 through the value in swNumSensors
swSensorType 1.3.6.1.4.1.1588.2.1.1.1.1.22.1.2	Read only	The type of sensor.
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 are: <ul style="list-style-type: none"> <li>unknown (1)</li> <li>faulty (2)</li> <li>below-min (3) - The sensor value is below the minimal threshold.</li> <li>nominal (4)</li> <li>above-max (5) - The sensor value is above the maximum threshold.</li> <li>absent (6) - The sensor is missing.</li> </ul> For Temperature, valid values include 3 (below-min), 4 (nominal), and 5 (above-max). For Fan, valid values include 3 (below-min), 4 (nominal), and 6 (absent). For Power Supply, valid values include 2 (faulty), 4 (nominal), and 6 (absent).

TABLE 45

Object and OID	Access	Description
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 value -2147483648 represents the maximum value of integer value; it also means that the sensor does not have the capability to measure the actual value. In v2.0, the temperature sensor value is in Celsius, the fan value is in RPM (revolutions per minute), and the power supply sensor reading is unknown. The unknown value -2147483648 indicates the maximum value of integer value.
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: SLOT #0: TEMP #3 FAN #1 Power Supply #1 Return values for the Brocade 12000, 24000, and 48000 directors depend upon the configuration of your system.
swTrackChangesInfo 1.3.6.1.4.1.1588.2.1.1.1.1.23	Read only	Track changes string; for trap only. If there are no events to track, the default return value is "No event so far." If there are events to track, the following are valid return values: <ul style="list-style-type: none"> <li>• Successful log in</li> <li>• Unsuccessful log in</li> <li>• Logout</li> <li>• Configuration file change from task [name of task]</li> <li>• Track-changes on</li> <li>• Track-changes off</li> </ul>
swID 1.3.6.1.4.1.1588.2.1.1.1.1.24	Read only	With VF-enabled fabric, the number of switches will be 0 to 128.
swEtherIPAddress 1.3.6.1.4.1.1588.2.1.1.1.1.25	Read only	Supported in Fabric OS v6.2.0 and later releases. The IP address of the Ethernet interface of this switch.
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 switch.
swFCIPAddress 1.3.6.1.4.1.1588.2.1.1.1.1.27	Read only	The IP address of the FC interface of this switch.
swFCIPMask 1.3.6.1.4.1.1588.2.1.1.1.1.28	Read only	The IP mask of the FC interface of this switch.
swIPv6Address 1.3.6.1.4.1.1588.2.1.1.1.1.29	Not accessible	The IPv6 address. This object is not accessible.
swIPv6Status 1.3.6.1.4.1.1588.2.1.1.1.1.30	Not accessible	The current status of the IPv6 address. This object is not accessible.
swModel 1.3.6.1.4.1.1588.2.1.1.1.1.31	Read only	Indicates whether the switch is 7500 or 7500E.
swTestString 1.3.6.1.4.1.1588.2.1.1.1.1.32	Not accessible	Presence of this string represents test trap.
swPortList 1.3.6.1.4.1.1588.2.1.1.1.1.33	Not accessible	This string represents the list of ports and its WWN when the ports are moved from one switch to another.

TABLE 45

Object and OID	Access	Description
swBrodTrapBitMask 1.3.6.1.4.1.1588.2.1.1.1.1.34	Not accessible	This represents the type of notification by a single bit. 0x01 - Fabric change event 0x02 - Device change event 0x04 - FAPWWN change event 0x08 - FDMI events
swFCPortPrevType 1.3.6.1.4.1.1588.2.1.1.1.1.35	Not accessible	This represents the port type of a port before it goes online or offline and it is valid only in swFcPortSCN trap. Valid values are: <ul style="list-style-type: none"> <li>• unknown (1)</li> <li>• other (2)</li> <li>• fl-port (3) - public loop</li> <li>• f-port (4) - fabric port</li> <li>• e-port (5) - fabric expansion port</li> <li>• g-port (6) - generic fabric port</li> <li>• ex-port (7)</li> </ul>
swDeviceStatus 1.3.6.1.4.1.1588.2.1.1.1.1.36	Not accessible	This represents the status of the attached device. The status changes whenever the port or the node goes to online or offline state.

TABLE 46 Sensors on the various Brocade switches

Platform	Temp	Fans	Power supply	swNumSensors / connUnitNumSensors
Brocade 200E	2 sensors	3 fans	1 PS	6
Brocade 300	3 sensors	3 fans	1 PS	7
Brocade 3014	3 sensors	NA	NA	3
Brocade 3016	4 sensors	NA	NA	4
Brocade 3250	4 sensors	3 fans	1 PS	8
Brocade 3850	4 sensors	4 fans	2 PS	10
Brocade 3900	5 sensors	6 fans	2 PS	13
Brocade 4012	2 sensors	NA	NA	2
Brocade 4016	3 sensor	NA	NA	3
Brocade 4018	1 sensor	NA	NA	1
Brocade 4020	2 sensors	NA	NA	2
Brocade 4024	2 sensors	NA	NA	2
Brocade 4100	5 sensors	3 fans	2 PS	10
Brocade 4424	3 sensors	NA	NA	3
Brocade 4900	3 sensors	3 fans	2 PS	18
Brocade 5000	4 sensors	2 fans	2 PS	8
Brocade 5100	4 sensors	2 fans	2 PS	8
Brocade 5300	3 sensors	3 fans	2 PS	8
Brocade 5410	3 sensors	NA	NA	3

**TABLE 46** Sensors on the various Brocade switches (Continued)

Platform	Temp	Fans	Power supply	swNumSensors / connUnitNumSensors
Brocade 5424	3 sensors	NA	NA	3
Brocade 5450	2 sensors	NA	NA	2
Brocade 5460	2 sensors	NA	NA	2
Brocade 5470	2 sensors	NA	NA	2
Brocade 5480	2 sensors	NA	NA	2
Brocade 5481	2 sensors	NA	NA	2
Brocade 7500	3 sensors	3 fans	2 PS	18
Brocade 7600	3 sensors	3 fans	2 PS	18
Brocade 7800 Extension Switch	3 sensor	2 fans	2 PS	7
Brocade 12000	10 sensors	3 fans	4 PS	17
Brocade 24000	10 sensors	3 fans	4 PS	17
Brocade 48000	10 sensors	3 fans	4 PS	17
Brocade DCX	16+ sensors	3 fans	4 PS	23+
Brocade DCX-4S	16+ sensors	3 fans	4 PS	23+
Brocade 8000	4 sensors	3 FRUs	2 PS	9
Brocade 6505	4 sensors	2 fans	2 PS	8
Brocade 6510	4 sensors	2 fans	2 PS	8
Brocade 6520	4 sensors	2 fans	2 PS	8
Brocade DCX 8510-8 Backbone	58+ sensors	3 fans	4 PS	65+
Brocade DCX 8510-4 Backbone	35+ sensors	2 fans	2 PS	39+
Brocade VA-40FC	4 sensors	2 fans	2 PS	8
Brocade 8500	3 sensors	2 fans	2 PS	7

**TABLE 47** Blade table

Model	Temp sensors
FC10-6	1 sensor
FR4-18i	5 sensors
FA4-18 18	5 sensors
FC4-16IP	5 sensors
FS8-18	5 sensors
FX8-24	3 sensors
FCOE10-24	5 sensors
FC8-16	5 sensors
FC8-32	7 sensors



TABLE 47 Blade table (Continued)

Model	Temp sensors
FC8-48	7 sensors
FC8-64	8 sensors
FC8-32E	7 sensors
FC8-48E	7 sensors
CP8	4 sensors
Core8	4 sensors
CR4S-8	4 sensors

## Switch Fabric group

TABLE 48

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.
swDomainID 1.3.6.1.4.1.1588.2.1.1.1 .2.1	Read-write	The current Fibre Channel domain ID of the switch. To set a new value, the switch (swAdmStatus) must be in offline or testing state.
swPrincipalSwitch 1.3.6.1.4.1.1588.2.1.1.1 .2.2	Read only	Indicates whether the switch is the principal switch. Possible values are: <ul style="list-style-type: none"> <li>• yes (1)</li> <li>• no (2)</li> </ul>
swNumNbs 1.3.6.1.4.1.1588.2.1.1.1 .2.8	Read only	The number of inter-switch links (ISLs) in the (immediate) neighborhood.
swNbTable 1.3.6.1.4.1.1588.2.1.1.1 .2.9	Not accessible	This table contains the ISLs in the immediate neighborhood of the switch.
swNbEntry 1.3.6.1.4.1.1588.2.1.1.1 .2.9.1	Not accessible	An entry containing each neighbor ISL parameters.
swNbIndex 1.3.6.1.4.1.1588.2.1.1.1 .2.9.1.1	Read only	The index for neighborhood entry.
swNbMyPort 1.3.6.1.4.1.1588.2.1.1.1 .2.9.1.2	Read only	This is the port that has an ISL to another switch. This value is the same as the physical port number of the local switch +1. The valid values for the Brocade 12000, 24000, and 48000 directors are 1 through the <i>maximum number of ports</i> +1.
swNbRemDomain 1.3.6.1.4.1.1588.2.1.1.1 .2.9.1.3	Read only	This is the Fibre Channel domain on the other end of the ISL. This is the domain ID of the remote switch. Valid values are 1 through 239 as defined by FCS-SW.

TABLE 48

Object and OID	Access	Description
swNbRemPort 1.3.6.1.4.1.1588.2.1.1.1 .2.9.1.4	Read only	This is the port index on the other end of the ISL. The physical port number of the remote switch, plus 1. The valid values for the Brocade 12000, 24000, and 48000 directors are 1 through the <i>maximum number of ports +1</i> .
swNbBaudRate 1.3.6.1.4.1.1588.2.1.1.1 .2.9.1.5	Read only	The baud rate of the ISL. It is always unknown (0). Possible values are: <ul style="list-style-type: none"> <li>• other (1) - None of the following.</li> <li>• oneEighth (2) - 155 Mbaud.</li> <li>• quarter (4) - 266 Mbaud.</li> <li>• half (8) - 532 Mbaud.</li> <li>• full (16) - 1 Gbaud.</li> <li>• double (32) - 2 Gbaud.</li> <li>• quadruple (64) - 4 Gbaud.</li> <li>• octuple (128) - 8 Gbaud.</li> <li>• decuple (256) - 10 Gbaud.</li> <li>• sexdecuple (512) - 16 Gbaud</li> </ul> The valid values for the Brocade 12000, 24000, and 48000 directors switch are 16 (full) and 32 (double). The valid value for the Brocade 4100 is 64 (quadruple). The valid values for the Brocade DCX are double (32), quadruple (64), and octuple (128).
swNbIsIState 1.3.6.1.4.1.1588.2.1.1.1 .2.9.1.6	Read only	The current state of the ISL. The possible values are as follows. <ul style="list-style-type: none"> <li>• 0 - ISL is down.</li> <li>• 1 - ISL is initiating and not yet operational.</li> <li>• 2, 3, 4, - Used for notification of internal states.</li> <li>• 5 - ISL is active.</li> </ul>
swNbIsICost 1.3.6.1.4.1.1588.2.1.1.1 .2.9.1.7	Read-write	The current link cost of the ISL. In other words, the cost of a link to control the routing algorithm.
swNbRemPortName 1.3.6.1.4.1.1588.2.1.1.1 .2.9.1.8	Read only	The WWN of the remote port.
swFabricMemTable 1.3.6.1.4.1.1588.2.1.1.1 .2.10	Not accessible	This table contains information on the member switches of a fabric. Supported in Fabric OS v2.6.1 and not v3.2.0. This is not available in v6.2.0 and later releases.
swIDIDMode 1.3.6.1.4.1.1588.2.1.1.1 .2.11	Read only	This identifies the status of Insistent Domain ID (IDID) mode. Status indicating if IDID mode is enabled or not.
swPmgrEventType 1.3.6.1.4.1.1588.2.1.1.1 .2.12	Not accessible	This indicates partition manager event type. This OID identifies the following events: <ul style="list-style-type: none"> <li>• create (0)</li> <li>• delete (1)</li> <li>• moveport (2)</li> <li>• fidchange (3)</li> <li>• basechange (4)</li> <li>• vfstatechange (5)</li> </ul>
swPmgrEventTime 1.3.6.1.4.1.1588.2.1.1.1 .2.13	Not accessible	This object identifies the date and time when any events mentioned in swPmgrEventType occur, in textual format.

TABLE 48

Object and OID	Access	Description
swPmgrEventDescr 1.3.6.1.4.1.1588.2.1.1.1 .2.14	Not accessible	This object identifies the textual description of the events mentioned in swPmgrEventType.
swVfId 1.3.6.1.4.1.1588.2.1.1.1 .2.15	Read only	The virtual Fabric ID of the switch.
swVfName 1.3.6.1.4.1.1588.2.1.1.1 .2.16	Read only	This represents the virtual switch name configured in the switch.

## Switch agent configuration group

TABLE 49

Object and OID	Access	Description
swAgtCfg 1.3.6.1.4.1.1588.2.1.1.1 .4	Not accessible	The OID sub-tree for switch agent configuration group.
swAgtCmtyTable 1.3.6.1.4.1.1588.2.1.1.1 .4.11	Not accessible	<p>A table that contains, one entry for each community, the access control and parameters of the community.</p> <p>The table displays all of the community strings (read and write) if it is accessed by the “write” community string. Only “read” community strings are displayed if it is accessed by the “read” community string. In Secure Fabric OS, the community strings can only be modified on the primary switch.</p> <p><b>NOTE:</b> This table is deprecated in Fabric OS v7.0. Use the tables snmpTargetAddrTable, snmpTargetParamsTable, snmpCommunityTable to get the required data.</p>
swAgtCmtyEntry 1.3.6.1.4.1.1588.2.1.1.1 .4.11.1	Not accessible	An entry containing the community parameters.
swAgtCmtyIdx 1.3.6.1.4.1.1588.2.1.1.1 .4.11.1.1	Read only	<p>The SNMPv1 community entry.</p> <p>The return value for this entry is 1 through 6.</p>
swAgtCmtyStr 1.3.6.1.4.1.1588.2.1.1.1 .4.11.1.2	Read-write	<p>This is a community string supported by the agent. If a new value is set successfully, it takes effect immediately.</p> <p>Default values for communities are as follows:</p> <ul style="list-style-type: none"> <li>• 1 (Secret Code)</li> <li>• 2 (OrigEquipMfr)</li> <li>• 3 (private)</li> <li>• 4 (public)</li> <li>• 5 (common)</li> <li>• 6 (FibreChannel)</li> </ul> <p>Community strings 1-3 are read-write and strings 4-6 are read only. You can change the community setting using the <b>snmpconfig</b> command.</p>

TABLE 49

Object and OID	Access	Description
swAgtTrapRcp 1.3.6.1.4.1.1588.2.1.1.1 .4.11.1.3	Read-write	This is the trap recipient associated with the community. If a new value is set successfully, it takes effect immediately. If not otherwise set, the default IP address for this trap recipient is 0.0.0.0 and the SNMP trap is not sent for the associated community string. With a setting of non-0.0.0.0 IP address, SNMP traps are sent to the host with the associated community string. Any or all of the trap recipients can be configured to send a trap for the associated community string. The maximum number of trap recipients that can be configured is six. If no trap recipient is configured, no traps are sent. The trap recipient IP address should be part of the Access Control List for Fabric OS v2.6.1, v3.1, and v4.x (refer to the <i>Fabric OS Command Reference</i> and the <b>snmpConfig</b> command for more information).
swAgtTrapSeverityLevel 1.3.6.1.4.1.1588.2.1.1.1 .4.11.1.4	Read-write	This is the trap severity level associated with “swAgtTrapRcp”. The trap severity level, is in conjunction with the event’s severity level. When an event occurs, and if its severity level is at or below the set value, the SNMP trap is sent to configure trap recipients. The severity level is limited to particular events. If a new value is set successfully, it takes effect immediately. This object obsoletes “swEventTrapLevel”.

## Fibre Channel port group

This group contains information about the physical state, operational status, performance, and error statistics of each Fibre Channel port on the switch. A Fibre Channel port is one which supports the Fibre Channel protocol, such as F\_Port, E\_Port, U\_Port, or FL\_Port.

TABLE 50

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 Fibre Channel port group.
swFCPortCapacity 1.3.6.1.4.1.1588.2.1.1.1.6.1	Read only	The maximum number of Fibre Channel ports on this switch. It includes G_Port, F_Port, FL_Port and any other types of Fibre Channel port.
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	The switch port index. The value of swFCPortIndex is 1 higher than the actual port index. For example, a swFCPortIndex of 1 corresponds to the actual port index of 0.

TABLE 50

Object and OID	Access	Description
swFCPortType 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.2	Read only	The type of ASIC for the switch port. Possible values are: <ul style="list-style-type: none"> <li>• stitch (1)</li> <li>• flannel (2)</li> <li>• loom (3) (Brocade 2000 series)</li> <li>• bloom (4) (Valid value for Brocade 3250, 3850, 3900, 12000, 24000)</li> <li>• rdbloom (5)</li> <li>• wormhole (6)</li> <li>• other (7) (Valid value for Brocade 200E, 4012, 4100, 4900, 7500, 7600, 48000, 300, 5100 and 5300)</li> <li>• unknown (8)</li> </ul>
swFCPortPhyState 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.3	Read only	The physical state of the port. Possible values are: <ul style="list-style-type: none"> <li>• noCard (1) - No card is present in this switch slot.</li> <li>• noTransceiver (2) - No Transceiver module in this port (Transceiver is the generic name for GBIC, SFP, and so on).</li> <li>• laserFault (3) - The module is signaling a laser fault (defective GBIC).</li> <li>• noLight (4) - The module is not receiving light.</li> <li>• noSync (5) - The module is receiving light but is out of sync.</li> <li>• inSync (6) - The module is receiving light and is in sync.</li> <li>• portFault (7) - The port is marked faulty (defective GBIC, cable, or device).</li> <li>• diagFault (8) - The port failed diagnostics (defective G_Port or FL_Port card or motherboard).</li> <li>• lockRef (9) - The port is locking to the reference signal.</li> <li>• validating (10) - The module is being validated.</li> <li>• invalidModule (11) - The module is invalid.</li> <li>• noSigDet (14) - No Signal is detected in the port.</li> <li>• unknown (255) - The module is unknown.</li> </ul>
swFCPortOpStatus 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.4	Read only	The operational status of the port. Possible values are: <ul style="list-style-type: none"> <li>• unknown (0) - The port module is physically absent.</li> <li>• online (1) - User frames can be passed.</li> <li>• offline (2) - No user frames can be passed.</li> <li>• testing (3) - No user frames can be passed.</li> <li>• faulty (4) - The port module is physically faulty.</li> </ul>
swFCPortAdmStatus 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.5	Read-write	The desired state of the port. A management station might place the port in a desired state by setting this object accordingly. Based on the port status, this OID returns one of the following: <ul style="list-style-type: none"> <li>• Online - When queried port is online.</li> <li>• Offline - When queried port is offline.</li> <li>• Faulty - When port is in faulty state.</li> </ul> The following values can be used to set this object: <ul style="list-style-type: none"> <li>• Online - To change port's state to Online.</li> <li>• Offline - To change port's state to Offline.</li> </ul>

TABLE 50

Object and OID	Access	Description
swFCPortLinkState 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.6	Read-write	Indicates the link state of the port. When the port's link state changes, its operational status (swFCPortOpStatus) is affected. Possible values are: <ul style="list-style-type: none"> <li>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).</li> <li>disabled (2) - The port is not allowed to participate in the FC-PH protocol with its attached ports.</li> <li>loopback (3) - The port might transmit frames through an internal path to verify the health of the transmitter and receiver path.</li> </ul>
swFCPortTxType 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.7	Read only	Indicates the media transmitter type of the port. Possible values are: <ul style="list-style-type: none"> <li>unknown (1) - Cannot determine the port driver.</li> <li>lw (2) - Long wave laser.</li> <li>sw (3) - Short wave laser.</li> <li>ld (4) - Long wave LED.</li> <li>cu (5) - Copper (electrical).</li> </ul>
swFCPortTxWords 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.11	Read only	Counts the number of Fibre Channel words that the port has transmitted. You can convert words to bytes by multiplying this value by 4.
swFCPortRxWords 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.12	Read only	Counts the number of Fibre Channel words that the port has received. You can convert words to bytes by multiplying this value by 4.
swFCPortTxFrames 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.13	Read only	Counts the number of Fibre Channel frames that the port has transmitted.
swFCPortRxFrames 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.14	Read only	Counts the number of Fibre Channel frames that the port has received.
swFCPortRxC2Frames 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.15	Read only	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	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	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	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	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	Counts the number of times that the transmit credit has reached 0.

TABLE 50

Object and OID	Access	Description
swFCPortRxEncInFrs 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.21	Read only	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	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	Counts the number of truncated frames that the port has received.
swFCPortRxTooLongs 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.24	Read only	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	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	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	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	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	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	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	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	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	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	The WWN of the Fibre Channel port. The contents of an instance are in IEEE extended format, as specified in FC-PH.

TABLE 50

Object and OID	Access	Description
swFCPortSpeed 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.35	Read-write	The desired baud rate for the port. The baud rate can be 1 Gbps, 2 Gbps, autonegotiate, or 4 Gbps or 8 Gbps. 4 Gbps is only applicable to the Brocade 4100, 4900, 7500, 7600, and 48000. 8 Gbps is only applicable to the Brocade DCX director. <b>NOTE:</b> This object is deprecated.
swFCPortName 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.36	Read only	Supported in Fabric OS v4.1.x and later. A string that indicates the name of the addressed port. <b>NOTE:</b> The names should be persistent across switch reboots. Port names do not have to be unique within a switch or within a fabric.
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. This string can be entered as argument on CLI commands such as <b>portShow</b> or wherever a physical port number is expected. The format of the string is: <slot/>port, 'slot' being present only for bladed systems. For directors, such as Brocade 48000: swFCPortSpecifier.64 = 4/15  For non-bladed systems, such as Brocade 4100: swFCPortSpecifier.31 = 30  For LISL, the value is -1/<port #>.
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"> <li>• physical (0)</li> <li>• virtual (1)</li> </ul>
swFCPortBrcdType 1.3.6.1.4.1.1588.2.1.1.1.6.2 .1.39	Read only	This string indicates the Brocade port type. Valid values: <ul style="list-style-type: none"> <li>• unknown(1)</li> <li>• other(2)</li> <li>• fl-port(3)</li> <li>• f-port(4)</li> <li>• e-port(5)</li> <li>• g-port(6)</li> <li>• ex-port(7)</li> </ul>

## Name Server database group

TABLE 51

Object and OID	Access	Description
swNs 1.3.6.1.4.1.1588.2.1.1.1.7	Not accessible	The OID sub-tree for Name Server database group.
swNsLocalNumEntry 1.3.6.1.4.1.1588.2.1.1.1.7.1	Read only	The number of local Name Server entries.
swNsLocalTable 1.3.6.1.4.1.1588.2.1.1.1.7.2	Not accessible	The table of local Name Server entries.



TABLE 51

Object and OID	Access	Description
swNsLocalEntry 1.3.6.1.4.1.1588.2.1.1.1.7.2.1	Not accessible	An entry from the local Name Server database.
swNsEntryIndex 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.1	Read only	The index of the Name Server database entry.
swNsPortID 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.2	Read only	The Fibre Channel port address ID of the entry.
swNsPortType 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.3	Read only	The type of port for this entry. Possible values, as defined in FC-GS-2, are: <ul style="list-style-type: none"> <li>• nPort (1)</li> <li>• nIPort (2)</li> </ul>
swNsPortName 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.4	Read only	The Fibre Channel WWN of the port entry.
swNsPortSymb 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.5	Read only	The contents of a symbolic name of the port entry. In FC-GS-2, a symbolic name consists of a byte array of 1 through 256 bytes, and the first byte of the array specifies the length of its contents. This object variable corresponds to the contents of the symbolic name, with the first byte removed.
swNsNodeName 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.6	Read only	The Fibre Channel WWN of the associated node, as defined in FC-GS-2.
swNsNodeSymb 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.7	Read only	The contents of a Symbolic Name of the node associated with the entry. In FC-GS-2, a Symbolic Name consists of a byte array of 1 through 256 bytes, and the first byte of the array specifies the length of its contents. This object variable corresponds to the contents of the Symbolic Name, with the first byte removed.
swNsIPA 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.8	Read only	The Initial Process Associators of the node for the entry as defined in FC-GS-2. This value is read only and cannot be changed.
swNsIpAddress 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.9	Read only	The IP address of the node for the entry as defined in FC-GS-2. The format of the address is in IPv6.
swNsCos 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.10	Read only	The class of services supported by the port. This value is a hard-coded bitmap and indicates the supported services as follows: <ul style="list-style-type: none"> <li>• Class F (1)</li> <li>• Class 1 (2)</li> <li>• Class F-1 (3)</li> <li>• Class 2 (4)</li> <li>• Class F-2 (5)</li> <li>• Class 1-2 (6)</li> <li>• Class F-1-2 (7)</li> <li>• Class 3 (8)</li> <li>• Class F-3 (9)</li> <li>• Class 1-3 (10)</li> <li>• Class F-1-3 (11)</li> <li>• Class 2-3 (12)</li> <li>• Class F-2-3 (13)</li> <li>• Class 1-2-3 (14)</li> <li>• Class F-1-2-3 (15)</li> </ul>

TABLE 51

Object and OID	Access	Description
swNsFc4 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.11	Read only	The FC-4s supported by the port, as defined in FC-GS-2.
swNslpNxPort 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.1 2	Read only	The object identifies IpAddress of the Nx_Port for the entry.
swNsWwn 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.1 3	Read only	The object identifies the World Wide Name (WWN) of the Fx_Port for the entry.
swNsHardAddr 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.14	Read only	The object identifies the 24-bit hard address of the node for the entry.

## Event group

swEventTable identifies the error log messages by the switch. It can only have a maximum of 1024 entries.

TABLE 52

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 switch event group.
swEventTrapLevel 1.3.6.1.4.1.1588.2.1.1.1 .8.1	Read-write	Deprecated. “swAgtTrapSeverityLevel”, in the absence of swEventTrapLevel, specifies the trap severity level of each defined trap recipient host. This object specifies the swEventTrap level in conjunction with an event’s severity level. When an event occurs, and if its severity level is at or below the value specified by the object instance, the agent sends the associated swEventTrap to configured recipients. This object is obsoleted by “swFwLastSeverityLevel” and “swAgtTrapSeverityLevel”.
swEventNumEntries 1.3.6.1.4.1.1588.2.1.1.1 .8.4	Read only	The number of entries in the event table. For Fabric OS v6.0 and later, the value ranges from 0 to 1024.
swEventTable 1.3.6.1.4.1.1588.2.1.1.1 .8.5	Not accessible	The table of event entries. The events will be received from the CHASSIS and the created logical switches. Only external RASlog messages are supported. These external messages are documented in the <i>Fabric OS Message Reference</i> .
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	Every RASLOG message is identified with a unique number which is swEventIndex.

TABLE 52

Object and OID	Access	Description
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. The return string is displayed using the following format: YYYY/MM/DD-hh:mm:ss Where: YYYY = Year MM = Month DD = Date hh = Hour mm = Minute ss = Seconds For example: 2005/12/05-07:33:41
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 are: <ul style="list-style-type: none"> <li>critical (1)</li> <li>error (2)</li> <li>warning (3)</li> <li>informational (4)</li> <li>debug (5)</li> </ul>
swEventRepeatCount 1.3.6.1.4.1.1588.2.1.1.1 .8.5.1.4	Read only	If the most recent event is the same as the previous, this number increments by 1, and is the count of consecutive 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. For Fabric OS v6.2.0 and later releases, the format of error messages has changed. This field now uses the message title and number (for example, WEBD-1006) and the message text. Previously this field used the task ID, and all the message number and message text. For more information on error messages, refer to the <i>Fabric OS Message Reference</i> .
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.

## Fabric Watch group

The Fabric Watch group contains one license scalar and two tables.

- The scalar, “[swFwFabricWatchLicense](#)”, is used to tell if the switch has proper license for Fabric Watch.
- One table, “[swFwClassAreaTable](#)”, contains classArea information such as threshold unit string, time base, low thresholds, and so forth. “[swFwClassAreaEntry](#)” contains control information for a particular class/area's thresholds.
- The other table, “[swFwThresholdTable](#)”, contains individual threshold information such as name, label, last event, and so forth. The thresholds are contained in “[swFwThresholdEntry](#)”.

TABLE 53

Object and OID	Access	Description
swFwSystem 1.3.6.1.4.1.1588.2.1.1.1.10	Not accessible	The OID sub-tree for switch Fabric Watch group.
swFwFabricWatchLicense 1.3.6.1.4.1.1588.2.1.1.1.10.1	Read only	This OID indicates whether the switch has proper Fabric Watch license or not. If the license key is installed on the switch for Fabric Watch, the return value is swFwLicensed; otherwise, the value is swFwNotLicensed.
swFwClassAreaTable 1.3.6.1.4.1.1588.2.1.1.1.10.2	Not accessible	The table of classes and areas.
swFwClassAreaEntry 1.3.6.1.4.1.1588.2.1.1.1.10.2.1	Not accessible	An entry of the classes and areas.
swFwClassAreaIndex 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.1	Read only	This index represents the Fabric Watch classArea combination. For the class areas configured in the switch, use the <b>thconfig -show &lt;class_name&gt;</b> command.
swFwWriteThVals 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.2	Read-write	This applies or cancels the configuration value changes. For a read operation, the return value is always swFwCancelWrite. The following custom configuration variables can be modified: <ul style="list-style-type: none"> <li>• swFwCustUnit</li> <li>• swFwCustTimebase</li> <li>• swFwCustLow</li> <li>• swFwCustHigh</li> <li>• swFwCustBufSize</li> </ul> Changes to these custom configuration variables can be saved by setting this variable to swFwApplyWrite; they can be removed by setting this variable to swFwCancelWrite.
swFwDefaultUnit 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.3	Read only	A default unit string name, used to identify the unit of measure for a Fabric Watch classArea combination. C = environment (class), temperature (area). RPM = environment (class), fan (area).
swFwDefaultTimebase 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.4	Read only	A default polling period for the Fabric Watch classArea combination. swFwTbMin = port (class), link loss (area). swFwTbNone = environment (class), temperature (area).
swFwDefaultLow 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.5	Read only	A default low threshold value.
swFwDefaultHigh 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.6	Read only	A default high threshold value.
swFwDefaultBufSize 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.7	Read only	A default buffer size value.
swFwCustUnit 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.8	Read only	A customizable unit string name, used to identify the unit of measure for a Fabric Watch classArea combination. C = environment (class), temperature (area). RPM = environment (class), fan (area).

TABLE 53

Object and OID	Access	Description
swFwCustTimebase 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.9	Read-write	A customizable polling period for the Fabric Watch classArea combination. swFwTbMin = port (class), link loss (area). swFwTbNone = environment (class), temperature (area).
swFwCustLow 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.10	Read-write	A customizable low-threshold value for a Fabric Watch classArea combination.
swFwCustHigh 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.11	Read-write	A customizable high-threshold value for a Fabric Watch classArea combination.
swFwCustBufSize 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.12	Read-write	A customizable buffer size value for a Fabric Watch classArea combination.
swFwThLevel 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.13	Read-write	This object is used to point to the current level for classArea values. It is either default or custom. For a read operation, the return value is either 2 (swFwDefault) or 3 (swFwCustom). 1 (swFwReserved) is obsolete. If the write operation sets the variable to 2 (swFwDefault), the following default configuration variables are used for the Fabric Watch classArea combination: <ul style="list-style-type: none"> <li>• swFwDefaultUnit</li> <li>• swFwDefaultTimebase</li> <li>• swFwDefaultLow</li> <li>• swFwDefaultHigh</li> <li>• swFwDefaultBufSize</li> </ul> If the write operation sets the variable to 3 (swFwCustom), the following custom configuration variables are used for the Fabric Watch classArea combination: <ul style="list-style-type: none"> <li>• swFwCustUnit</li> <li>• swFwCustTimebase</li> <li>• swFwCustLow</li> <li>• swFwCustHigh</li> <li>• swFwCustBufSize</li> </ul>
swFwWriteActVals 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.14	Read-write	This applies or cancels the alarm value changes. For a read operation, the return value is always swFwCancelWrite. The following are the custom alarm variables that can be modified: <ul style="list-style-type: none"> <li>• swFwCustChangedActs</li> <li>• swFwCustExceededActs</li> <li>• swFwCustBelowActs</li> <li>• swFwCustAboveActs</li> <li>• swFwCustInBetweenActs</li> </ul> Changes to these custom alarm variables can be saved by setting this variable to swFwApplyWrite. Changes to these custom alarm variables can be removed by setting this variable to swFwCancelWrite.
swFwDefaultChangedActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.15	Read only	Default action matrix for changed event.

**TABLE 53**

Object and OID	Access	Description
swFwDefaultExceededActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.1 6	Read only	Default action matrix for an exceeded event. The exceeded value might be either above the high threshold or below the low threshold.
swFwDefaultBelowActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.1 7	Read only	Default action matrix for below event.
swFwDefaultAboveActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.1 8	Read only	Default action matrix for above event.
swFwDefaultInBetweenActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.1 9	Read only	Default action matrix for in-between event.
swFwCustChangedActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.2 0	Read-write	Custom action matrix for changed event.
swFwCustExceededActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.2 1	Read-write	Custom action matrix for an exceeded event.
swFwCustBelowActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.2 2	Read-write	Custom action matrix for below event.
swFwCustAboveActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.2 3	Read-write	Custom action matrix for above event.
swFwCustInBetweenActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.2 4	Read-write	Custom action matrix for in-between event.
swFwValidActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.2 5	Read only	Matrix of valid acts for a classArea.

TABLE 53

Object and OID	Access	Description
swFwActLevel 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.2 6	Read-write	<p>Pointer to the current level for classArea values. It is either default or custom.</p> <p>For a read operation, the return value is either 2 (swFwDefault) or 3 (swFwCustom). 1 (swFwReserved) is obsolete.</p> <p>If the write operation sets the variable to 2 (swFwDefault), the following default action matrix variables are used for the Fabric Watch classArea combination:</p> <ul style="list-style-type: none"> <li>• swFwDefaultChangedActs</li> <li>• swFwDefaultExceededActs</li> <li>• swFwDefaultBelowActs</li> <li>• swFwDefaultAboveActs</li> <li>• swFwDefaultInBetweenActs</li> </ul> <p>If the write operation sets the variable to 3 (swFwCustom), the following custom action matrix variables are used for the Fabric Watch classArea combination:</p> <ul style="list-style-type: none"> <li>• swFwCustChangedActs</li> <li>• swFwCustExceededActs</li> <li>• swFwCustBelowActs</li> <li>• swFwCustAboveActs</li> <li>• swFwCustInBetweenActs</li> </ul>
swFwThresholdTable 1.3.6.1.4.1.1588.2.1.1.1.10.3	Not accessible	The table of individual thresholds.
swFwThresholdEntry 1.3.6.1.4.1.1588.2.1.1.1.10.3.1	Not accessible	An entry of an individual threshold.

TABLE 53

Object and OID	Access	Description
swFwThresholdIndex 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.1	Read only	<p>Represents the element index of a threshold.</p> <p>For environment class, the indexes are from 2 through (number of environment sensors+1).</p> <p>For example, the indexes for environment class temperature area are:</p> <ul style="list-style-type: none"> <li>• envTemp001: index of 2</li> <li>• envTemp002: index of 3</li> <li>• envTemp003: index of 4</li> <li>• envTemp004: index of 5</li> <li>• envTemp005: index of 6</li> </ul> <p>For port-related classes such as E_Port, the indexes are from 1 through (number of ports). For example, the indexes for E_Port classlink loss area:</p> <ul style="list-style-type: none"> <li>• eportLink000: index of 1</li> <li>• eportLink001: index of 2</li> <li>• eportLink002: index of 3</li> <li>• eportLink003: index of 4</li> <li>• eportLink004: index of 5</li> <li>• eportLink005: index of 6</li> <li>• eportLink006: index of 7</li> <li>• eportLink007: index of 8</li> <li>• eportLink008: index of 9</li> <li>• eportLink009: index of 10</li> <li>• eportLink010: index of 11</li> <li>• eportLink011: index of 12</li> <li>• eportLink012: index of 13</li> <li>• eportLink013: index of 14</li> <li>• eportLink014: index of 15</li> <li>• eportLink015: index of 16</li> </ul>
swFwStatus 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.2	Read-write	Indicates whether a threshold is enabled or disabled.
swFwName 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.3	Read only	<p>Name of the threshold.</p> <p>For examples of swFwName objects and object types, refer to <a href="#">Table 54</a>.</p>
swFwLabel 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.4	Read only	<p>Label of the threshold.</p> <p>Refer to “swFwName” on page 164.</p>
swFwCurVal 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.5	Read only	Current counter of the threshold.
swFwLastEvent 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.6	Read only	<p>Last event type of the threshold.</p> <p>Valid values:</p> <ul style="list-style-type: none"> <li>• started (1)</li> <li>• changed (2)</li> <li>• exceeded (3)</li> <li>• below (4)</li> <li>• above (5)</li> <li>• inBetween (6)</li> <li>• lowBufferCrstd (7)</li> </ul> <p><b>NOTE:</b> This object is deprecated.</p>



TABLE 53

Object and OID	Access	Description
swFwLastEventVal 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.7	Read only	Last event value of the threshold. <b>NOTE:</b> This object is deprecated.
swFwLastEventTime 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.8	Read only	Last event time of the threshold. This value is in the same format as in swCurrentDate. <b>NOTE:</b> This object is deprecated.
swFwLastState 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.9	Read only	Last state type of the threshold. Valid values: <ul style="list-style-type: none"> <li>swFW faulty</li> <li>swInformative</li> <li>swnormal or Inbetween</li> </ul>
swFwBehaviorType 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.1 0	Read-write	A behavior of which the thresholds generate event. Valid values: <ul style="list-style-type: none"> <li>Triggered</li> <li>Continuous</li> </ul> <b>NOTE:</b> This object is deprecated.
swFwBehaviorInt 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.1 1	Read-write	An integer of which the thresholds generate continuous event. This is non-persistent. <b>NOTE:</b> This object is deprecated.
swFwLastSeverityLevel 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.1 2	Read only	This object is a last event severity level of the threshold. This object obsoletes “swEventTrapLevel”. Valid values are as follows: <ul style="list-style-type: none"> <li>None</li> <li>Critical</li> <li>Error</li> <li>Warnings</li> <li>Informational</li> <li>Debug</li> </ul> <b>NOTE:</b> This object is deprecated.

TABLE 54 swFwName objects and object types

swFwName objects (swFwName)	Object types (Threshold names)
envFan001	Env Fan 1 (Not supported)
envPS002	Env Power Supply 2 (Not supported)
envTemp001	Env Temperature 1
sfpTemp001	GBIC Temperature 1
sfpRXPO01	GBIC RX power 1
sfpTXPO01	GBIC TX power 1
sfpCrnt001	GBIC Current 1
sfpVolt001	SFP Voltage 1
sfpGS000	SFP GBIC change 0
eportCRCs007	E Port Invalid CRCs 7
eportLink007	E Port Link Failures 7

**TABLE 54** swFwName objects and object types (Continued)

swFwName objects (swFwName)	Object types (Threshold names)
eportProtoErr007	E Port Protocol Errors 7
eportRXPerf007	E Port RX Performance 7
eportSignal007	E Port Loss of Signal 7
eportState007	E Port State Changes 7
eportSync007	E Port Loss of Sync 7
eportTXPerf007	E Port TX Performance 7
eportWords007	E Port Invalid Words 7
eportLinkreset007	E Port Link Reset 7
eportUtil007	E Port Util 7 (Not supported)
eportTrunkUtil007	E Port Trunk Util 7
eportc3DiscardTo007	E Port C3 Discard 7
eportPkti007	E Port Packet Loss 7 (Not supported)
fabricDI000	Fabric Domain ID
fabricED000	Fabric E-port down
fabricFL000	Fabric Fabric login
fabricFQ000	Fabric Fabric<->QL (Not supported)
fabricFR000	Fabric Reconfigure
fabricSC000	Fabric Segmentation
fabricZC000	Fabric Zoning change
fcuportCRCs013	FCU Port Invalid CRCs 13
fcuportLink013	FCU Port Link Failures 13
fcuportProtoErr0	FCU Port Protocol Errors 13
fcuportRXPerf013	FCU Port RX Performance 13
fcuportSignal013	FCU Port Loss of Signal 13
fcuportState013	FCU Port State Changes 13
fcuportSync013	FCU Port Loss of Sync 13
fcuportTXPerf013	FCU Port TX Performance 13
fcuportWords013	FCU Port Invalid Words 13
portCRCs000	Port Invalid CRCs 0
portLink000	Port Link Failures 0
portProtoErr000	Port Protocol Errors 0
portRXPerf000	Port RX Performance 0
portSignal000	Port Loss of Signal 0
portState000	Port State Changes 0
portSync000	Port Loss of Sync 0
portTXPerf000	Port TX Performance 0

**TABLE 54** swFwName objects and object types (Continued)

swFwName objects (swFwName)	Object types (Threshold names)
portWords000	Port Invalid Words 0
portLinkReset000	Port Link Reset 0
portc3DiscardTo000	Port C3 Discard 0
fopportCRCs013	FOP Port Invalid CRCs 13
fopportLink013	FOP Port Link Failures 13
fopportProtoErr0	FOP Port Protocol Errors 13
fopportRXPerf013	FOP Port RX Performance 13
fopportSignal013	FOP Port Loss of Signal 13
fopportState013	FOP Port State Changes 13
fopportSync013	FOP Port Loss of Sync 13
fopportTXPerf013	FOP Port TX Performance 13
fopportWords013	FOP Port Invalid Words 13
fopportTrunkUtil013	FOP Port Trunk Util 13
secTelnet000	Security Telnet Violations 0
eeperfRX	End-to-end RX Performance
eeperfTX	End-to-end TX Performance
filters001	Filter performance 001
secHTTPO00	Security HTTP Violations 0
secAPI000	Security API Violations 0 (Not supported)
secRSNMP000	Security RSNMP Violations 0 (Not supported)
secWSNMP000	Security WSNMP Violations 0 (Not supported)
secSES000	Security SES Violations 0 (Not supported)
secMS000	Security MS Violations 0 (Not supported)
secSerial000	Security Serial Violations 0 (Not supported)
secPanel000	Security Front Panel Violations 0 (Not supported)
secSCC000	Security SCC Violations 0
secDCC000	Security DCC Violations 0
secLogin000	Security Login Violations 0
secInvTS000	Security Invalid Timestamps 0 (Not supported)
secInvSign000	Security Invalid Signatures 0 (Not supported)
secInvCert000	Security Invalid Certificates 0
secSlapFail000	Security SLAP Failures 0
secSlapBP000	Security SLAP Bad Packets 0 (Not supported)
secTSSync000	Security TS Out of Sync 0
secNoFCS000	Security No-FCS 0
secIncDB000	Incompatible Security DB 0

**TABLE 54** swFwName objects and object types (Continued)

swFwName objects (swFwName)	Object types (Threshold names)
seclLCmd000	Security Illegal Command 0
resFlash000	Resource Flash 0

EportUtil and EportPktl are the MIB defines used for VE ports for Legacy FCIP (FR4-18i router blade/Brocade 7500) while VEPortUtil and VEPortPktlLoss are used for VE ports for Brocade 7800 Extension Switch/FX8-24 DCX Extension Blade.

**NOTE**

The FCU port is supported on the following platforms only:

Brocade 3016  
 Brocade 3014  
 Brocade 4012  
 Brocade 4020  
 Brocade 4016  
 Brocade 4024  
 Brocade 4018  
 Brocade 4424  
 Brocade 5440  
 Brocade 5450  
 Brocade 5460  
 Brocade 5410  
 Brocade 5480  
 Brocade 5470

## End device group

**TABLE 55**

Object and OID	Access	Description
swEndDevice 1.3.6.1.4.1.1588.2.1.1.1.21	Not accessible	The OID sub-tree for end device group.
swEndDeviceRIsTable 1.3.6.1.4.1.1588.2.1.1.1.21.1	Not accessible	The table of RLS for individual end devices.
swEndDeviceRIsEntry 1.3.6.1.4.1.1588.2.1.1.1.21.1.1	Not accessible	An entry of an individual end devices' RLS. Since Brocade switches start with port # 0, the SNMP port # should be physical port # plus 1. In turn, that means that SNMP port # 3 translates to port # 2.
swEndDevicePort 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.1	Not accessible	This object represents the port of the local switch to which the end device is connected. This is an obsolete entry and does not show any value.
swEndDeviceAlpa 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.2	Not accessible	This object represents the AL_PA of the end device. SNMP AL_PA number should be the logical AL_PA number plus 1. For example, SNMP AL_PA number 0xf0 translates to 0xef. This is an obsolete entry and does not show any value.
swEndDevicePortID 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.3	Read only	The Fibre Channel port address ID of the entry.

TABLE 55

Object and OID	Access	Description
swEndDeviceLinkFailure 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.4	Read only	Link failure count for the end device.
swEndDeviceSyncLoss 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.5	Read only	Sync loss count for the end device.
swEndDeviceSigLoss 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.6	Read only	Signal loss count for the end device.
swEndDeviceProtoErr 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.7	Read only	Protocol error count for the end device.
swEndDeviceInvalidWord 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.8	Read only	Invalid word count for the end device.
swEndDeviceInvalidCRC 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.9	Read only	Invalid CRC count for the end device.

## Switch group

Switch group is not supported.

TABLE 56

Object and OID	Access	Description
swGroup 1.3.6.1.4.1.1588.2.1.1.1.22	Not accessible	The OID sub-tree for switch group.
swGroupTable 1.3.6.1.4.1.1588.2.1.1.1.22.1	Not accessible	The table of groups. This is not available on all versions of Fabric OS.
swGroupEntry 1.3.6.1.4.1.1588.2.1.1.1.22.1.1	Not accessible	An entry of table of groups.
swGroupIndex 1.3.6.1.4.1.1588.2.1.1.1.22.1.1.1	Read only	This object is the group index, starting from 1.
swGroupName 1.3.6.1.4.1.1588.2.1.1.1.22.1.1.2	Read only	This object identifies the name of the group. <b>NOTE:</b> This object is obsolete.
swGroupType 1.3.6.1.4.1.1588.2.1.1.1.22.1.1.3	Read only	This object identifies the type of the group. <b>NOTE:</b> This object is obsolete.
swGroupMemTable 1.3.6.1.4.1.1588.2.1.1.1.22.2	Not accessible	The table of members of all groups. This might not be available on all versions of the Fabric OS.
swGroupMemEntry 1.3.6.1.4.1.1588.2.1.1.1.22.2.1	Not accessible	An entry for a member of a group.
swGroupID 1.3.6.1.4.1.1588.2.1.1.1.22.2.1.1	Read only	This object identifies the group ID of the member switch.

TABLE 56

Object and OID	Access	Description
swGroupMemWwn 1.3.6.1.4.1.1588.2.1.1.1.22.2.1.2	Read only	This object identifies the WWN of the member switch.
swGroupMemPos 1.3.6.1.4.1.1588.2.1.1.1.22.2.1.	Read only	This object identifies the position of the member switch in the group, based on the order that the switches were added in the group. <b>NOTE:</b> This object is obsolete.

## Bloom performance monitor group

TABLE 57

Object and OID	Access	Description
swBlmPerfMnt 1.3.6.1.4.1.1588.2.1.1.1.23	Not accessible	The OID sub-tree for bloom performance monitor group.
swBlmPerfALPAMntTable 1.3.6.1.4.1.1588.2.1.1.1.23.1	Not accessible	AL_PA monitoring counter table. For the Brocade 4100, 12 filter monitors per port are supported.
swBlmPerfALPAMntEntry 1.3.6.1.4.1.1588.2.1.1.1.23.1.1	Not accessible	AL_PA monitoring counter for given AL_PA.
swBlmPerfAlpaPort 1.3.6.1.4.1.1588.2.1.1.1.23.1.1.1	Read only	This object identifies the port index of the switch.
swBlmPerfAlpaIdx 1.3.6.1.4.1.1588.2.1.1.1.23.1.1.2	Read only	This object identifies the AL_PA index. There can be 126 AL_PA values.
swBlmPerfAlpa 1.3.6.1.4.1.1588.2.1.1.1.23.1.1.3	Read only	This object identifies the AL_PA values. These values range between x'01' and x'EF' (1 to 239). AL_PA value x'00' is reserved for FL_Port. If Alpha device is invalid, then it will have -1 value.
swBlmPerfAlpaCRCCnt 1.3.6.1.4.1.1588.2.1.1.1.23.1.1.4	Read only	Get CRC count for given AL_PA and port. This monitoring provides information on the number of CRC errors that occurred on the frames destined to each possible AL_PA attached to a specific port. For the Brocade 4100, this value will always be 0. CRC counters are not supported on this platform.
swBlmPerfEEMntTable 1.3.6.1.4.1.1588.2.1.1.1.23.2	Not accessible	End-to-end monitoring counter table.
swBlmPerfEEMntEntry 1.3.6.1.4.1.1588.2.1.1.1.23.2.1	Not accessible	End-to-end monitoring counter for given port.
swBlmPerfEEPort 1.3.6.1.4.1.1588.2.1.1.1.23.2.1.1	Read only	This object identifies the port number of the switch.

TABLE 57

Object and OID	Access	Description
swBlmPerFEERefKey 1.3.6.1.4.1.1588.2.1.1.1.23.2.1.2	Read only	This object identifies the reference number of the counter. This reference is a number assigned when a filter is created. In the SNMP Index, start with one instead of 0, add one to the actual reference key.
swBlmPerFEECRC 1.3.6.1.4.1.1588.2.1.1.1.23.2.1.3	Read only	End-to-end CRC error for the frames that matched the SID-DID pair.
swBlmPerFEFCWRx 1.3.6.1.4.1.1588.2.1.1.1.23.2.1.4	Read only	Get end-to-end count of Fibre Channel words (FCW) received by the port that matched the SID-DID pair.
swBlmPerFEFCWTx 1.3.6.1.4.1.1588.2.1.1.1.23.2.1.5	Read only	Get end-to-end count of Fibre Channel words (FCW) transmitted by the port that matched the SID-DID pair.
swBlmPerFEESid 1.3.6.1.4.1.1588.2.1.1.1.23.2.1.6	Read only	Gets DID information by reference number.
swBlmPerFEEDid 1.3.6.1.4.1.1588.2.1.1.1.23.2.1.7	Read only	Gets SID information by reference number. SID (Source Identifier) is a 3-byte field in the frame header used to indicate the address identifier of the N_Port from which the frame was sent.
swBlmPerFitMntTable 1.3.6.1.4.1.1588.2.1.1.1.23.3	Not accessible	Filter-based monitoring counter. To configure the predefined monitors on port, use the <b>fmmonitor -addmonitor &lt;frame_type&gt; -port &lt;slot/port_list&gt;</b> command. To configure the user-defined monitors on port, use one of the following commands: <ul style="list-style-type: none"> <li><b>fmmonitor -create &lt;frame_type&gt; -pat &lt;bitpattern&gt; [-port &lt;slot/port_list&gt;]</b></li> <li><b>fmmonitor -addmonitor &lt;frame_type&gt; -port &lt;slot/port_list&gt;</b></li> </ul>
swBlmPerFitMntEntry 1.3.6.1.4.1.1588.2.1.1.1.23.3.1	Not accessible	Filter-based monitoring counter for given port.
swBlmPerFitPort 1.3.6.1.4.1.1588.2.1.1.1.23.3.1.1	Read only	This object identifies the port number of the switch.
swBlmPerFitRefkey 1.3.6.1.4.1.1588.2.1.1.1.23.3.1.2	Read only	This object identifies the reference number of the filter. This reference number is assigned when a filter is created. In the SNMP Index, start with one instead of 0, add one to actual reference key.
swBlmPerFitCnt 1.3.6.1.4.1.1588.2.1.1.1.23.3.1.3	Read only	Get statistics of filter-based monitor. Filter-based monitoring provides information about a filter hit count, such as: <ul style="list-style-type: none"> <li>Read command</li> <li>SCSI or IP traffic</li> <li>SCSI Read/Write</li> </ul>
swBlmPerFitAlias 1.3.6.1.4.1.1588.2.1.1.1.23.3.1.4	Read only	Alias name for the filter.

## Trunking group

TABLE 58

Object and OID	Access	Description
swTrunk 1.3.6.1.4.1.1588.2.1.1.1.24	Not accessible	The OID sub-tree for swTrunk group.
swSwitchTrunkable 1.3.6.1.4.1.1588.2.1.1.1.24.1	Not accessible	This object indicates whether the switch supports the trunking feature or not: <ul style="list-style-type: none"> <li>no (0)</li> <li>yes (8)</li> </ul>
swTrunkTable 1.3.6.1.4.1.1588.2.1.1.1.24.2	Not accessible	This object displays trunking information for the switch. For the Brocade 4100, cc ports per trunk are supported.
swTrunkEntry 1.3.6.1.4.1.1588.2.1.1.1.24.2.1	Not accessible	Entry for the trunking table.
swTrunkPortIndex 1.3.6.1.4.1.1588.2.1.1.1.24.2.1.1	Read only	This object identifies the switch port index. The value of a port index is extracted from the second octet of the port WWN stored in swFCPortWwn (refer to “swFCPortWwn” in the Fibre Channel port group).
swTrunkGroupNumber 1.3.6.1.4.1.1588.2.1.1.1.24.2.1.2	Read only	This object is a logical entity that specifies the group number to which the port belongs. If this value is 0, the port is not trunked.
swTrunkMaster 1.3.6.1.4.1.1588.2.1.1.1.24.2.1.3	Read only	Port number that is the trunk master of the group. The trunk master implicitly defines the group. All ports with the same master are considered to be part of the same group.
swPortTrunked 1.3.6.1.4.1.1588.2.1.1.1.24.2.1.4	Read only	The active trunk status of the member port. Valid values: <ul style="list-style-type: none"> <li>enabled (1)</li> <li>disabled (0)</li> </ul>
swTrunkGrpTable 1.3.6.1.4.1.1588.2.1.1.1.24.3	Not accessible	The table displays trunking performance information for the switch.
swTrunkGrpEntry 1.3.6.1.4.1.1588.2.1.1.1.24.3.1	Not accessible	Entry for the trunking group table.
swTrunkGrpNumber 1.3.6.1.4.1.1588.2.1.1.1.24.3.1.1	Read only	This object is a logical entity that specifies the group number to which port belongs.
swTrunkGrpMaster 1.3.6.1.4.1.1588.2.1.1.1.24.3.1.2	Read only	This object gives the master port ID for the trunk group.



TABLE 58

Object and OID	Access	Description
swTrunkGrpTx 1.3.6.1.4.1.1588.2.1.1.1.24.3.1.3	Read only	Gives the aggregate value of the transmitted words from this trunk group. <b>NOTE:</b> The syntax for this MIB variable is an OCTET STRING. The output is shown in hexadecimal value. The value of swTrunkGrpTx is the 4-byte word transmitted in the TrunkGrp port. This value can be obtained through the CLI in the output of the <b>portStatsShow</b> command (stat_wtx value) for the corresponding trunk ports.
swTrunkGrpRx 1.3.6.1.4.1.1588.2.1.1.1.24.3.1.4	Read only	Gives the aggregate value of the received words by this trunk group. <b>NOTE:</b> The syntax for this MIB variable is an OCTET STRING. The output is shown in hexadecimal value. The value of swTrunkGrpRx is the 4-byte word received in the TrunkGrp port. This value can be obtained through the CLI in the output of the <b>portStatsShow</b> command (stat_wrx value) for the corresponding trunk ports.

## Toptalker group

TABLE 59

Object and OID	Access	Description
swTopTalker 1.3.6.1.4.1.1588.2.1.1.1.25	Not accessible	The OID sub-tree for TopTalker group.
swTopTalkerMntMode 1.3.6.1.4.1.1588.2.1.1.1.25.1	Read only	This object gives the mode in which toptalker is installed. Possible modes: <ul style="list-style-type: none"> <li>• Fabricmode (1)</li> <li>• portmode (2)</li> </ul>
swTopTalkerMntNumEntries 1.3.6.1.4.1.1588.2.1.1.1.25.2	Read only	This object provides the number of toptalking flows that are existing in the switch.
swTopTalkerMntTable 1.3.6.1.4.1.1588.2.1.1.1.25.3	Not accessible	Table to display toptalking flows.
swTopTalkerMntEntry 1.3.6.1.4.1.1588.2.1.1.1.25.3.1	Not accessible	Entry for the toptalking flows.
swTopTalkerMntIndex 1.3.6.1.4.1.1588.2.1.1.1.25.3.1.1	Read only	This object identifies the list/object entry. The possible values are one to maximum number of entries.
swTopTalkerMntPort 1.3.6.1.4.1.1588.2.1.1.1.25.3.1.2	Read only	This object identifies the switch port number on which the F_Port mode toptalker is added. This attribute is applicable to F_Port mode only.
swTopTalkerMntSpid 1.3.6.1.4.1.1588.2.1.1.1.25.3.1.3	Read only	This object identifies the SID of the host. <b>NOTE:</b> SNMP response for this object will be in decimal format. You must convert the response to hexadecimal format to get the exact PID.

TABLE 59

Object and OID	Access	Description
swTopTalkerMntDpid 1.3.6.1.4.1.1588.2.1.1.1.25.3.1.4	Read only	This object identifies the DID of the SID-DID pair.
swTopTalkerMntflow 1.3.6.1.4.1.1588.2.1.1.1.25.3.1.5	Read only	This object identifies the traffic flow in MB/sec.
swTopTalkerMntSwwn 1.3.6.1.4.1.1588.2.1.1.1.25.3.1.6	Read only	This object identifies the SID of the host in WWN format.
swTopTalkerMntDwnn 1.3.6.1.4.1.1588.2.1.1.1.25.3.1.7	Read only	This object identifies the DID of the SID-DID pair in WWN format.

## CPU or memory usage group

The memory usage of a system indicates the system's RAM.

TABLE 60

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 CPU or memory usage group.
swCpuUsage 1.3.6.1.4.1.1588.2.1.1.1.26.1	Read only	The system's CPU usage.
swCpuNoOfRetries 1.3.6.1.4.1.1588.2.1.1.1.26.2	Read only	The number of times the system should take 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 after which the next CPU usage value will be recorded.
swCpuAction 1.3.6.1.4.1.1588.2.1.1.1.26.5	Read only	The action to be taken if the CPU usage exceeds 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 should take a memory usage sample before sending the Fabric Watch trap that indicates the current memory usage.

TABLE 60

Object and OID	Access	Description
swMemUsageLimit 1.3.6.1.4.1.1588.2.1.1.1. 26.8	Read only	The memory usage limit. This OID specifies the in-between threshold value.
swMemPollingInterval 1.3.6.1.4.1.1588.2.1.1.1. 26.9	Read only	The time after which the next memory usage sample will be taken.
swMemAction 1.3.6.1.4.1.1588.2.1.1.1. 26.10	Read only	The action to be taken if the memory usage exceed the specified threshold limit.
swMemUsageLimit1 1.3.6.1.4.1.1588.2.1.1.1. 26.11	Read only	This OID specifies the low threshold value.
swMemUsageLimit3 1.3.6.1.4.1.1588.2.1.1.1. 26.12	Read only	This OID specifies the high threshold value.

## Switch connectivity unit port statistics extension table

This table is an extension of connectivity unit port statistics table. This table can be queried only if the FA-MIB is enabled.

TABLE 61

Object and OID	Access	Description
swConnUnitPortStatExtensionTable 1.3.6.1.4.1.1588.2.1.1.1. 27	Not accessible	This table represents the connectivity unit port statistics.
swConnUnitPortStatEntry 1.3.6.1.4.1.1588.2.1.1.1. 27.1	Not accessible	This represents the connectivity unit port statistics.
swConnUnitCRCWithBadEOF 1.3.6.1.4.1.1588.2.1.1.1. 27.1.1	Read only	The number of frames with CRC error having Bad EOF.
swConnUnitZeroTenancy 1.3.6.1.4.1.1588.2.1.1.1. 27.1.2	Read only	This counter is incremented when the FL_port acquires the loop, but does not transmit a frame.
swConnUnitFLNumOfTenancy 1.3.6.1.4.1.1588.2.1.1.1. 27.1.3	Read only	This counter is incremented when the FL_port acquires the loop.
swConnUnitNLNumOfTenancy 1.3.6.1.4.1.1588.2.1.1.1. 27.1.4	Read only	This counter is incremented when the NL_port acquires the loop.

## 6 Switch connectivity unit port statistics extension table

**TABLE 61**

Object and OID	Access	Description
swConnUnitStopTenancySt arVation 1.3.6.1.4.1.1588.2.1.1.1. 27.1.5	Read only	This counter is incremented when the FL_port cannot transmit a frame because of lack of credit.
swConnUnitOpend 1.3.6.1.4.1.1588.2.1.1.1. 27.1.6	Read only	The number of times FC port entered OPENED state.
swConnUnitTransferConne ction 1.3.6.1.4.1.1588.2.1.1.1. 27.1.7	Read only	The number of times FC port entered TRANSFER state.
swConnUnitOpen 1.3.6.1.4.1.1588.2.1.1.1. 27.1.8	Read only	The number of times FC port entered OPEN state.
swConnUnitInvalidARB 1.3.6.1.4.1.1588.2.1.1.1. 27.1.9	Read only	The number of times FC port received invalid ARB.
swConnUnitFTB1Miss 1.3.6.1.4.1.1588.2.1.1.1. 27.1.10	Read only	This counter is incremented when the port receives a frame with a DID that cannot be routed by FCR. Applicable to 8G platforms only.
swConnUnitFTB2Miss 1.3.6.1.4.1.1588.2.1.1.1. 27.1.11	Read only	This counter is incremented when the port receives a frame with an SID/DID combination that cannot be routed by the VF module. Applicable to 8G platforms only.
swConnUnitFTB6Miss 1.3.6.1.4.1.1588.2.1.1.1. 27.1.12	Read only	This counter is incremented when port receives a frame with an SID that cannot be routed by FCR. Applicable to 8G platforms only.
swConnUnitZoneMiss 1.3.6.1.4.1.1588.2.1.1.1. 27.1.13	Read only	This counter is incremented when the port receives a frame with an SID and DID that are not zoned together.
swConnUnitLunZoneMiss 1.3.6.1.4.1.1588.2.1.1.1. 27.1.14	Read only	This counter is incremented when the port receives a frame with an SID, DID, and LUN that are not zoned together. This is not currently used.
swConnUnitBadEOF 1.3.6.1.4.1.1588.2.1.1.1. 27.1.15	Read only	The number of frames with bad EOF.
swConnUnitLCRX 1.3.6.1.4.1.1588.2.1.1.1. 27.1.16	Read only	The number of link control frames received.
swConnUnitRDYPriority 1.3.6.1.4.1.1588.2.1.1.1. 27.1.17	Read only	The number of times that sending R_RDY or VC_RDY primitive signals was a higher priority than sending frames, due to diminishing credit reserves in the transmitter at the other end of the fibre.
swConnUnitLli 1.3.6.1.4.1.1588.2.1.1.1. 27.1.18	Read only	The number of low level interrupts generated by the physical and link layer.
swConnUnitInterrupts 1.3.6.1.4.1.1588.2.1.1.1. 27.1.19	Read only	The object represents all the interrupts received on a port. The interrupt includes LLI, unknown, and so on.

TABLE 61

Object and OID	Access	Description
swConnUnitUnknownInterr upts 1.3.6.1.4.1.1588.2.1.1.1. 27.1.20	Read only	The object represents the unknown interrupts received on a port.
swConnUnitTimedOut 1.3.6.1.4.1.1588.2.1.1.1. 27.1.21	Read only	The object represents the number of frames that have been timed out due to any reason.
swConnUnitProcRequired 1.3.6.1.4.1.1588.2.1.1.1. 27.1.22	Read only	The object represents the number of frames trapped by CPU.
swConnUnitTxBufferUnava ilable 1.3.6.1.4.1.1588.2.1.1.1. 27.1.23	Read only	The object shows the count for the number of times the port failed to transmit frames.
swConnUnitStateChange 1.3.6.1.4.1.1588.2.1.1.1. 27.1.24	Read only	The object shows the count for the number of times the port has gone to offline, online, and faulty state.
swConnUnitC3DiscardDue ToRXTimeout 1.3.6.1.4.1.1588.2.1.1.1. 27.1.25	Read only	The number of Class 3 receive frames discarded due to timeout.
swConnUnitC3DiscardDue ToDestUnreachable 1.3.6.1.4.1.1588.2.1.1.1. 27.1.26	Read only	The number of Class 3 frames discarded due to destination unreachable.
swConnUnitC3DiscardDue ToTXTimeout 1.3.6.1.4.1.1588.2.1.1.1. 27.1.27	Read only	The number of Class 3 transmit frames discarded due to timeout.
swConnUnitC3DiscardOth er 1.3.6.1.4.1.1588.2.1.1.1. 27.1.28	Read only	The number of Class 3 frames discarded due to unknown reasons.
swConnUnitPCSErrorCoun ter 1.3.6.1.4.1.1588.2.1.1.1. 27.1.29	Read only	The number of Physical Coding Sublayer (PCS) block errors.

## 6 Switch connectivity unit port statistics extension table

# High-Availability MIB Objects

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## HA-MIB overview

The HA-MIB provides information about the High Availability features of Fabric OS v6.3.0. This MIB is supported only in Fabric OS v4.1.0 and later (and is not supported in Fabric OS v3.x or Fabric OS v2.6.x).

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 groupings:

- High-Availability group
- HA-MIB traps

[Figure 60](#) and [Figure 61](#) depict the organization and structure of the HA-MIB file system.

```

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

```

**FIGURE 60** 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
    - 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 61** haMIB and haMIBTraps hierarchy

Table 62 lists the objects or definitions that are imported into the HA-MIB and the modules from which they are imported.

**TABLE 62** 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	SW-MIB
entPhysicalIndex	ENTITY-MIB
entPhysicalName	



**TABLE 62** Objects imported into the HA-MIB (Continued)

Object	Imported from this module
DisplayString	SNMPv2-TC
TimeStamp	

## High-Availability group

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

**TABLE 63**

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. Possible values are: <ul style="list-style-type: none"> <li>redundant (0) Dual CP with standby CP ready to take over.</li> <li>nonredundant (1) Single or Dual CP system where the standby CP is not available to take over operation of the switch.</li> </ul>

## FRU table

**TABLE 64**

Object and OID	Access	Description
fruTable 1.3.6.1.4.1.1588.2.1.2.1.5	Not accessible	This table inventories the field-replaceable unit (FRU) slots available. This table contains an entry for each entry in the entPhysicalTable that has entPhysicalClass set to "Container (5)" and has a child entry having entPhysicalIsFRU set to "true (1)". In Fabric OS v6.1.0 and later, the chassis is marked as a FRU. Unlike other FRUs, the chassis FRU does not have a corresponding container entry. <a href="#">Table 65</a> includes information on all FRUs except the chassis.
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. <ul style="list-style-type: none"> <li>other (1)</li> <li>unknown (2)</li> <li>chassis (3)</li> <li>cp (4)</li> <li>other-CP (5)</li> <li>switchblade (6)</li> <li>wnn (7)</li> <li>powerSupply (8)</li> <li>fan (9)</li> <li>CoreBlade (10)</li> <li>ApplicationBlade (11)</li> </ul>

**TABLE 64**

Object and OID	Access	Description
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. Valid values: <ul style="list-style-type: none"> <li>• other (1)</li> <li>• unknown (2)</li> <li>• on (3)</li> <li>• off (4)</li> <li>• faulty (5)</li> </ul>
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 the following blades: <ul style="list-style-type: none"> <li>• FC16-32 port blade</li> <li>• FC16-48 port blade</li> <li>• CR16-8 core blade</li> <li>• CR16-4 core blade</li> </ul> This object returns zero for other FRUs.

**TABLE 65 Valid FRU counts for the various Brocade switches**

Platform	Blades	Fans	Power supply	WWN card
Brocade 3850	NA	4 fans (not a FRU)	2 PS (not a FRU)	NA
Brocade 3900	NA	6 fans in 3 FRUs	2 PS	NA
Brocade 4012	NA	NA	NA	NA
Brocade 4100	NA	3 fans in 3 FRUs	2 PS	NA
Brocade 4900	NA	3 fans in 3 FRUs	2 PS	NA
Brocade 5000	NA	3 fans in 3 FRUs	2 PS	NA
Brocade 7500	NA	3 fans in 3 FRUs	2 PS	NA
Brocade 7600	NA	3 fans in 3 FRUs	2 PS	NA
Brocade 12000	8 port blades 2 CP blades	3 fans	4 PS	1 WWN
Brocade 24000	8 port blades 2 CP blades	3 fans	4 PS	1 WWN
Brocade 48000	8 port blades 2 CP blades	3 fans	4 PS	1 WWN

**TABLE 65** Valid FRU counts for the various Brocade switches (Continued)

Platform	Blades	Fans	Power supply	WWN card
Brocade DCX	8 port blades 2 CP blades	3 fans	4 PS	2 WWNs
Brocade DCX-4S	4 port blades 2 CP blades	2 fans	4 PS	2 WWNs
Brocade 300	NA	3 fans	1 PS	NA
Brocade 5100	NA	2 fans	2 PS	NA
Brocade 5300	NA	3 fans	2 PS	NA
Brocade 8000	NA	3 FRUs	2 PS	NA
Brocade 7800 Extension Switch	NA	2 fans	2 PS	NA
Brocade 6505	1	2 fans	2 PS	1 WWN
Brocade 6510	1	2 fans	2 PS	1 WWN
Brocade 6520	1	2 fans	2 PS	1 WWN
Brocade DCX 8510-8 Backbone	8 port blades 2 CP blades	3 fans	4 PS	2 WWNs
Brocade DCX 8510-4 Backbone	4 port blades 2 CP blades	2 fans	4 PS	2 WWNs
Brocade VA-40FC	NA	2 FRUs	2 PS	NA

## FRU history table

**TABLE 66**

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.

TABLE 66

Object and OID	Access	Description
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. Valid values: <ul style="list-style-type: none"> <li>• other (1)</li> <li>• unknown (2)</li> <li>• chassis (3)</li> <li>• cp (4)</li> <li>• other-CP (5)</li> <li>• switchblade (6)</li> <li>• wwn (7)</li> <li>• powerSupply (8)</li> <li>• fan (9)</li> <li>• CoreBlade (10)</li> <li>• ApplicationBlade (11)</li> </ul>
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. Valid values: <ul style="list-style-type: none"> <li>• added (1)</li> <li>• removed (2)</li> <li>• invalid (3)</li> </ul>
fruHistoryTime 1.3.6.1.4.1.1588.2.1.2.1.6.1.5	Read only	The time at which this event happened.
fruHistoryFactoryPartNum 1.3.6.1.4.1.1588.2.1.2.1.6.1.6	Read only	The Brocade part number of the FRU object.
fruHistoryFactorySerialNum 1.3.6.1.4.1.1588.2.1.2.1.6.1.7	Read only	The Brocade serial number of the FRU object.

## CP table

TABLE 67

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 CPs in the system.
cpEntry 1.3.6.1.4.1.1588.2.1.2.1.7.1	Not accessible	An entry represents a single CP 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 CP. Valid values: <ul style="list-style-type: none"> <li>• other (1)</li> <li>• unknown (2)</li> <li>• active (3)</li> <li>• standby (4)</li> <li>• failed (5)</li> </ul>
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 CP.

TABLE 67

Object and OID	Access	Description
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 CP.
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 CP.
cpLastEvent 1.3.6.1.4.1.1588.2.1.2.1.7.1.5	Read only	The last event related to this CP. Valid values: <ul style="list-style-type: none"> <li>• other (1)</li> <li>• unknown (2)</li> <li>• haSync (3)</li> <li>• haOutSync (4)</li> <li>• cpFaulty (5)</li> <li>• cpHealthy (6)</li> <li>• cpActive (7)</li> <li>• configChange (8)</li> <li>• failOverStart (9)</li> <li>• failOverDone (10)</li> <li>• firmwareCommit (11)</li> <li>• firmwareUpgrade (12)</li> </ul>

## HA-MIB traps

This section lists the HA-MIB traps.

TABLE 68

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 will be generated under the following events: <ul style="list-style-type: none"> <li>• When FRU is added, removed, or failed</li> <li>• When FRU is powered on or off</li> <li>• When the switch is rebooted</li> <li>• When there is a fault in the blade</li> </ul>
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 CP object changes. The cpLastEvent variable provides the information about the event that occurred. Some of the triggers that will generate this trap are: <ul style="list-style-type: none"> <li>• Reboot</li> <li>• firmwareDownload</li> <li>• fastboot</li> <li>• HA failover</li> </ul>
fruHistoryTrap 1.3.6.1.4.1.1588.2.1.2.2.0.3	fruHistoryClass fruHistoryObjectNum fruHistoryEvent fruHistoryTime fruHistoryFactoryPartNum fruHistoryFactorySerialNum	This trap is generated when a FRU is added, removed, or failed.

## 7 HA-MIB traps

# FICON MIB Objects

---

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## FICON MIB overview

The FICON MIB module (LINK-INCIDENT-MIB) defines support for FICON in Fabric OS v4.1.2 and later. This MIB addresses link incident and link failure data for FICON hosts and devices connected to a Brocade switch.

The descriptions of each of the MIB variables in this chapter come directly from the FICON MIB itself.

The object types in the FICON MIB are organized into the following groupings:

- Request Node Identification Data (RNID)
- Link Incident Record Registration (LIRR)
- Registered Link Incident Report (RLIR)
- Traps

## SNMP traps for FICON

SNMP traps for FICON are generated when:

- A FICON device is added to the switch
- A FICON device is removed from the switch
- A new “listener” is added (once the LIRR handshake is complete)
- A “listener” entry is deleted
- A link incident occurs

## FICON MIB system organization of MIB objects

[Figure 62](#) through [Figure 64](#) depict the organization and structure of the FICON MIB file system.

```

- iso
  - org
    - dod
      - internet
        - private
          - enterprises
            - bcsi
              - commDev
                - fibreChannel
                  - fcSwitch
                    - linkIncidentMIB
                      - ficonRNID
                      - ficonLIRR
                      - ficonRLIR
                      - linkIncidentMIBTraps

```

**FIGURE 62 Overall tree structure for FICON MIB (linkIncidentMIB)**

```

- linkIncidentMIB
  - ficonRNID
    - nodeRNIDTableNumEntries 1.3.6.1.4.1.1588.2.1.1.50.2.1
    - nodeRNIDTable 1.3.6.1.4.1.1588.2.1.1.50.2.2
      - nodeRNIDEntry 1.3.6.1.4.1.1588.2.1.1.50.2.2.1
        - nodeRNIDIndex 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.1
        - nodeRNIDIncidentPortWWN 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.2
        - nodeRNIDPID 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.3
        - nodeRNIDFlags 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.4
        - nodeRNIDType 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.5
        - nodeRNIDModel 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.6
        - nodeRNIDManufacturer 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.7
        - nodeRNIDManufacturerPlant 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.8
        - nodeRNIDSequenceNumber 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.9
        - nodeRNIDConnectedPortWWN 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.10
        - nodeRNIDPortType 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.11
        - nodeRNIDFormat 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.12
        - nodeRNIDTag 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.13
        - nodeRNIDParams 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.14
    - switchRNIDTableNumEntries 1.3.6.1.4.1.1588.2.1.1.50.2.3
    - switchRNIDTable 1.3.6.1.4.1.1588.2.1.1.50.2.4
      - switchRNIDEntry 1.3.6.1.4.1.1588.2.1.1.50.2.4.1
        - switchRNIDIndex 1.3.6.1.4.1.1588.2.1.1.50.2.4.1.1
        - switchRNIDSwitchWWN 1.3.6.1.4.1.1588.2.1.1.50.2.4.1.2
        - switchRNIDFlags 1.3.6.1.4.1.1588.2.1.1.50.2.4.1.3
        - switchRNIDType 1.3.6.1.4.1.1588.2.1.1.50.2.4.1.4
        - switchRNIDModel 1.3.6.1.4.1.1588.2.1.1.50.2.4.1.5
        - switchRNIDManufacturer 1.3.6.1.4.1.1588.2.1.1.50.2.4.1.6
        - switchRNIDManufacturerPlant 1.3.6.1.4.1.1588.2.1.1.50.2.4.1.7
        - switchRNIDSequenceNumber 1.3.6.1.4.1.1588.2.1.1.50.2.4.1.8
        - switchRNIDTag 1.3.6.1.4.1.1588.2.1.1.50.2.4.1.9
        - switchRNIDParams 1.3.6.1.4.1.1588.2.1.1.50.2.4.1.10
    - nodeVfId 1.3.6.1.4.1.1588.2.1.1.50.2.5
  - ficonLIRR
    - LIRRTTableNumEntries 1.3.6.1.4.1.1588.2.1.1.50.3.1
    - LIRRTTable 1.3.6.1.4.1.1588.2.1.1.50.3.2
      - LIRREntry 1.3.6.1.4.1.1588.2.1.1.50.3.2.1
        - LIRRIndex 1.3.6.1.4.1.1588.2.1.1.50.3.2.1.1
        - LIRRListenerPortWWN 1.3.6.1.4.1.1588.2.1.1.50.3.2.1.2

```



```

- LIRRListenerPID 1.3.6.1.4.1.1588.2.1.1.50.3.2.1.3
- LIRRegType 1.3.6.1.4.1.1588.2.1.1.50.3.2.1.4
- LIRProtocol 1.3.6.1.4.1.1588.2.1.1.50.3.2.1.5
- LIRPortType 1.3.6.1.4.1.1588.2.1.1.50.3.2.1.6
- LIRFormat 1.3.6.1.4.1.1588.2.1.1.50.3.2.1.7
- ficonRLIR
  - rLIRTableNumEntries 1.3.6.1.4.1.1588.2.1.1.50.4.1
  - rLIRTable 1.3.6.1.4.1.1588.2.1.1.50.4.2
    - rLIREntry 1.3.6.1.4.1.1588.2.1.1.50.4.2.1
      - rLIRIndex 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.1
      - rLIRIncidentPortWwn 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.2
      - rLIRIncidentNodeWwn 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.3
      - rLIRIncidentPortType 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.5
      - rLIRIncidentPID 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.6
      - rLIRIncidentPortNumber 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.7
      - rLIRConnectedPortWwn 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.8
      - rLIRConnectedNodeWwn 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.9
      - rLIRFabricWwn 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.10
      - rLIRLinkFailureType 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.11
      - rLIRTimeStamp 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.12
      - rLIRFormat 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.13

```

FIGURE 63 linkIncidentMIB hierarchy

```

- linkIncidentMIBTraps
  - linkIncidentMIBTrapPrefix
    - linkRNIDDeviceRegistration 1.3.6.1.4.1.1588.2.1.1.50.21.0.1
    - linkRNIDDeviceDeRegistration 1.3.6.1.4.1.1588.2.1.1.50.21.0.2
    - linkLIRRListenerAdded 1.3.6.1.4.1.1588.2.1.1.50.21.0.3
    - linkLIRRListenerRemoved 1.3.6.1.4.1.1588.2.1.1.50.21.0.4
    - linkRLIRFailureIncident 1.3.6.1.4.1.1588.2.1.1.50.21.0.5

```

FIGURE 64 linkIncidentMIBTraps hierarchy

## Textual conventions

Table 69 lists the textual conventions for the FICON MIB.

TABLE 69 FICON MIB textual conventions

Name	Status	Description	Syntax
LIRProtocol	Current	Represents the LIR Protocol.	INTEGER { fcp (1), sb2 (2) }
FcPortID	Current	Represents Fibre Channel Address ID, a 24-bit value unique within the address space of a fabric.	OCTET STRING (SIZE (3))
RNIDModel	Current	Represents the value of Model Number.	OCTET STRING (SIZE (3))

**TABLE 69 FICON MIB textual conventions (Continued)**

Name	Status	Description	Syntax
RLIRLinkFailureType	Current	Represents the link failure type.	INTEGER { bitErrorRate(2), lossOfSignal(3), nOSRecognized(4), primitiveSequenceTimeout(5), invalidSeqForPortState(6), loopInitializationTimeout(7), lossOfSignalInLoopInit(8) }
RNIDManufacturer	Current	Represents the Manufacturer name or code.	OCTET STRING (SIZE (3))
RNIDTagType	Current	Represents the value of RNID Tag, in hexadecimal format. Note: Includes DISPLAY-HINT "x".	OCTET STRING (SIZE (2))
LinkWwn	Current	Represents the link WWN.	OCTET STRING (SIZE (8))
RegType	Current	Represents the RNID Registration Type.	INTEGER { conditional (1), unconditional (2) }
RNIDSequenceNumber	Current	Sequence number of the self describing node.	OCTET STRING (SIZE (12))
RNIDManufacturerPlant	Current	Represents the manufacturer plant name or code.	OCTET STRING (SIZE (2))
RNIDParams	Current	Represents the value of Param.	OCTET STRING (SIZE (3))
PortType	Current	Represents the Port Type.	INTEGER { n-port (1), nl-port (2), e-port (3) }
RNIDFlags	Current	Represents the value of RNID Flag in hexadecimal format. It indicates if the node is valid, not valid, or not current.	OCTET STRING (SIZE (1))
LinkFormat	Current	Represents the frame format.	INTEGER { ficon (1), common (2) }
RNIDType	Current	Represents the value of Type Number. Displays the type number of the self-describing node. It also describes the machine type.	OCTET STRING (SIZE (6))

## FICON RNID group

This group contains all Request Node Identification Data (RNID) group objects for FICON.

**TABLE 70**

Object and OID	Access	Description
nodeRNIDTableNumEntries 1.3.6.1.4.1.1588.2.1.1.50.2. 1	Read only	The number of entries in Request Node Identification Data (RNID) table. For additional information on FICON MIB tables, refer to the <b>ficonShow</b> command in the <i>Fabric OS Command Reference</i> .
nodeRNIDTable 1.3.6.1.4.1.1588.2.1.1.50.2. 2	Not accessible	A table that contains one entry for each FICON RNID node attached to a switch.
nodeRNIDEntry 1.3.6.1.4.1.1588.2.1.1.50.2. 2.1	Not accessible	A entry containing the RNID information for a FICON node.
nodeRNIDIndex 1.3.6.1.4.1.1588.2.1.1.50.2. 2.1.1	Read only	Index into the nodeRNIDTable.
nodeRNIDIncidentPortWWN 1.3.6.1.4.1.1588.2.1.1.50.2. 2.1.2	Read only	Port WWN for Incident port. An N_Port (FICON device or host) is an incident port.
nodeRNIDPID 1.3.6.1.4.1.1588.2.1.1.50.2. 2.1.3	Read only	PID for an Incident port.
nodeRNIDFlags 1.3.6.1.4.1.1588.2.1.1.50.2. 2.1.4	Read only	RNID flags for an Incident port. Bits 0 to 2 of the flag describe the validity of bits 3 to 7 of the flag. Bit 3 of the flag specifies whether the node is a device-type node or a central-processor-complex-type (CPC-type) node. Bits 4 to 7 of the flag are reserved.
nodeRNIDType 1.3.6.1.4.1.1588.2.1.1.50.2. 2.1.5	Read only	Number associated with a node.
nodeRNIDModel 1.3.6.1.4.1.1588.2.1.1.50.2. 2.1.6	Read only	Model number of the RNID node.
nodeRNIDManufacturer 1.3.6.1.4.1.1588.2.1.1.50.2. 2.1.7	Read only	Identifies the manufacturer of the node.
nodeRNIDManufacturerPlant 1.3.6.1.4.1.1588.2.1.1.50.2. 2.1.8	Read only	Identifies the manufacturer plant of the node.
nodeRNIDSequenceNumber 1.3.6.1.4.1.1588.2.1.1.50.2. 2.1.9	Read only	Identifies the sequence number of the node.
nodeRNIDConnectedPortWWN 1.3.6.1.4.1.1588.2.1.1.50.2. 2.1.10	Read only	WWN of the connected port.

TABLE 70

Object and OID	Access	Description
nodeRNIDPortType 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.11	Read only	Port type (N, NL, E, or virtual port) of the connected port.
nodeRNIDFormat 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.12	Read only	Node identification data format of the connected port.
nodeRNIDTag 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.13	Read only	Node identification tag of the connected port.
nodeRNIDParams 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.14	Read only	Node parameters of the connected port.
switchRNIDTableNumEntries 1.3.6.1.4.1.1588.2.1.1.50.2.3	Read only	The number of entries in an RNID table that corresponds to the switch.  For additional information on FICON MIB tables, refer to the <b>ficonShow</b> command in the <i>Fabric OS Command Reference</i> .
switchRNIDTable 1.3.6.1.4.1.1588.2.1.1.50.2.4	Not accessible	A table that contains RNID information for each switch FICON node.
switchRNIDEntry 1.3.6.1.4.1.1588.2.1.1.50.2.4.1	Not accessible	An entry containing the RNID information for the switch FICON node.
switchRNIDIndex 1.3.6.1.4.1.1588.2.1.1.50.2.4.1.1	Read only	Index into switchRNIDTable.
switchRNIDSwitchWWN 1.3.6.1.4.1.1588.2.1.1.50.2.4.1.2	Read only	WWN of the switch.
switchRNIDFlags 1.3.6.1.4.1.1588.2.1.1.50.2.4.1.3	Read only	RNID flags for the switch.
switchRNIDType 1.3.6.1.4.1.1588.2.1.1.50.2.4.1.4	Read only	Type Number associated with the switch.
switchRNIDModel 1.3.6.1.4.1.1588.2.1.1.50.2.4.1.5	Read only	Model number of the RNID switch.
switchRNIDManufacturer 1.3.6.1.4.1.1588.2.1.1.50.2.4.1.6	Read only	Identifies the manufacturer of the switch.
switchRNIDManufacturerPlant 1.3.6.1.4.1.1588.2.1.1.50.2.4.1.7	Read only	Identifies the manufacturer plant of the switch.

TABLE 70

Object and OID	Access	Description
switchRNIDSequenceNumber 1.3.6.1.4.1.1588.2.1.1.50.2.4.1.8	Read only	Identifies the sequence number of the switch.
switchRNIDTag 1.3.6.1.4.1.1588.2.1.1.50.2.4.1.9	Read only	Identification tag of the switch.
switchRNIDParams 1.3.6.1.4.1.1588.2.1.1.50.2.4.1.10	Read only	Identifies the parameters of the switch.
nodeVfId 1.3.6.1.4.1.1588.2.1.1.50.2.5	Read only	The Virtual Fabric ID of the switch. For VF-unaware switches, this value will be 0.

## FICON LIRR group

This group contains all Link Incident Record Registration (LIRR) group objects for FICON.

TABLE 71

Object and OID	Access	Description
LIRRTableNumEntries 1.3.6.1.4.1.1588.2.1.1.50.3.1	Read only	The number of entries in an LIRR table. For additional information on FICON MIB tables, refer to the <b>ficonShow</b> command in the <i>Fabric OS Command Reference</i> .
LIRRTable 1.3.6.1.4.1.1588.2.1.1.50.3.2	Not accessible	A table that contains LIRR information, one entry for each LIRR incident for an attached FICON device.
LIRREntry 1.3.6.1.4.1.1588.2.1.1.50.3.2.1	Not accessible	An entry containing LIRR information.
LIRRIndex 1.3.6.1.4.1.1588.2.1.1.50.3.2.1.1	Read only	Index into the LIRR table.
LIRRListenerPortWWN 1.3.6.1.4.1.1588.2.1.1.50.3.2.1.2	Read only	WWN of the Listener port.
LIRRListenerPID 1.3.6.1.4.1.1588.2.1.1.50.3.2.1.3	Read only	PID for the Listener port.
LIRRRegType 1.3.6.1.4.1.1588.2.1.1.50.3.2.1.4	Read only	Registration type: conditional or unconditional.
LIRRProtocol 1.3.6.1.4.1.1588.2.1.1.50.3.2.1.5	Read only	Protocol type supported.

TABLE 71

Object and OID	Access	Description
LIRPortType 1.3.6.1.4.1.1588.2.1.1.5 0.3.2.1.6	Read only	Attached port type.
LIRFormat 1.3.6.1.4.1.1588.2.1.1.5 0.3.2.1.7	Read only	Registration type: conditional or unconditional.

## FICON RLIR group

This group contains all Registered Link Incident Report (RLIR) group objects for FICON.

TABLE 72

Object and OID	Access	Description
rLIRTableNumEntries 1.3.6.1.4.1.1588.2.1.1.50.4.1	Read only	The number of entries in a switch RLIR table. For additional information on FICON MIB tables, refer to the <b>ficonShow</b> command in the <i>Fabric OS Command Reference</i> .
rLIRTable 1.3.6.1.4.1.1588.2.1.1.50.4.2	Not accessible	A table that contains RLIR information, one entry for each LIRR incident for an attached FICON device.
rLIREntry 1.3.6.1.4.1.1588.2.1.1.50.4.2.1	Not accessible	An entry containing RLIR information.
rLIRIndex 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.1	Read only	Index into the RLIR table.
rLIRIncidentPortWwn 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.2	Read only	Port WWN for RLIR Incident port.
rLIRIncidentNodeWwn 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.3	Read only	Incident node WWN.
rLIRIncidentPortType 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.5	Read only	RLIR Incident port type.
rLIRIncidentPID 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.6	Read only	RLIR Incident PID.
rLIRIncidentPortNumber 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.7	Read only	RLIR Incident port number. This is a vendor-specific port number.
rLIRConnectedPortWwn 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.8	Read only	RLIR Connected port WWN.
rLIRConnectedNodeWwn 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.9	Read only	RLIR Connected node WWN.
rLIRFabricWwn 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.10	Read only	RLIR Fabric WWN.
rLIRLinkFailureType 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.11	Read only	RLIR Link failure type.

TABLE 72

Object and OID	Access	Description
rLIRTimeStamp 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.12	Read only	RLIR time stamp.
rLIRFormat 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.13	Read only	RLIR Format.

## LinkIncident MIB traps group

TABLE 73

Trap name and OID	Variables	Description
linkIncidentMIBTrapPrefix 1.3.6.1.4.1.1588.2.1.1.50.21.0		The Link Incident traps.
linkRNIDDeviceRegistration 1.3.6.1.4.1.1588.2.1.1.50.21.0.1	nodeRNIDIndex nodeRNIDIncidentPortWWN nodeRNIDConnectedPortWWN nodeVfld	A device registered with the switch.
linkRNIDDeviceDeRegistration 1.3.6.1.4.1.1588.2.1.1.50.21.0.2	nodeRNIDIndex nodeRNIDIncidentPortWWN nodeRNIDConnectedPortWWN nodeVfld	A device deregistered with the switch.
linkIIRRListenerAdded 1.3.6.1.4.1.1588.2.1.1.50.21.0.3	IIRRListenerPortWWN IIRRListenerPID IIRRIndex nodeVfld	A listener for link failure incident is added.
linkIIRRListenerRemoved 1.3.6.1.4.1.1588.2.1.1.50.21.0.4	IIRRListenerPortWWN IIRRListenerPID IIRRIndex nodeVfld	A listener for link failure incident was removed.
linkRLIRFailureIncident 1.3.6.1.4.1.1588.2.1.1.50.21.0.5	nodeRNIDIndex IIRRIndex rLIRIncidentPortWwn rLIRConnectedPortWwn rLIRIndex rLIRLinkFailureType IIRRListenerPID nodeVfld	A link failure incident has occurred. The value of IIRRIndex will be -2147483647 and IIRRListenerPID will be 0 if there is no listener for incident.

## 8 LinkIncident MIB traps group



# FibreAlliance MIB Objects

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## FibreAlliance MIB overview

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

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

- Connectivity
- Trap Registration
- Revision Number
- Statistic Set
- Service Set

---

**NOTE**

The port swap feature will not have any effect on SNMP for FA MIB.

---

## FCMGMT-MIB system organization of MIB objects

[Figure 65](#) through [Figure 75](#) depict the high level organization of the FCMGMT-MIB.

```
- iso
  - org
    - dod
      - internet
        - experimental
          - fcmgmt
            - connSet
              - uNumber 1.3.6.1.3.94.1.1
              - systemURL 1.3.6.1.3.94.1.2
              + connUnitTable 1.3.6.1.3.94.1.6
              + connUnitRevsTable 1.3.6.1.3.94.1.7
              + connUnitSensorTable 1.3.6.1.3.94.1.8
              + connUnitPortTable 1.3.6.1.3.94.1.10
              + connUnitEventTable 1.3.6.1.3.94.1.11
              + connUnitLinkTable 1.3.6.1.3.94.1.12
            - trapReg
              - trapMaxClients 1.3.6.1.3.94.2.1
              - trapClientCount 1.3.6.1.3.94.2.2
              + trapRegTable 1.3.6.1.3.94.2.3
            - revisionNumber 1.3.6.1.3.94.3
            - statSet
              + connUnitPortStatTable 1.3.6.1.3.94.4.5
            - connUnitServiceSet
              + connUnitServiceScalars 1.3.6.1.3.94.5.1
              + connUnitServiceTables 1.3.6.1.3.94.5.2
```

FIGURE 65 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 66 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 67 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 68 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 69 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 70 ConnUnitEventTable hierarchy**

```

- 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 71 ConnUnitLinkTable hierarchy**

```

- trapRegTable 1.3.6.1.3.94.2.3
  - trapRegEntry 1.3.6.1.3.94.2.3.1
    - trapRegIpAddress 1.3.6.1.3.94.2.3.1.1
    - trapRegPort 1.3.6.1.3.94.2.3.1.2
    - trapRegFilter 1.3.6.1.3.94.2.3.1.3
    - trapRegRowState 1.3.6.1.3.94.2.3.1.4

```

**FIGURE 72 TrapRegTable 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 73 ConnUnitPortStatTable hierarchy

```

- connUnitServiceSet
  - connUnitServiceScalars
    - connUnitSnsMaxEntry 1.3.6.1.3.94.5.1.1

```

**FIGURE 74** ConnUnitServiceScalars 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 75** ConnUnitSnsTable hierarchy

## Definitions for FCMGMT-MIB

[Table 74](#) lists the definitions used for FCMGMT-MIB.

**TABLE 74** 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 74** Definitions for FCMGMT-MIB (Continued)

Type definition	Value	Description
FcEventSeverity	Integer	1 (unknown) 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) 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, 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.



TABLE 75

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). Might be a count of the boards in a chassis or the number of full boxes in a rack. The connectivity unit is mapped to a switch. uNumber is always set to one.
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. USER Replace with username PASSWORD Replace with password GLOBALID Replace with global ID SERIALNO Replace with serial number The expected value for system URL.O is: http://{a.b.c.d} where {a.b.c.d} is the IP address of the switch if a Web Tools license is available. "" (null) where " " is used when a Web Tools license is not available.
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.
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	This object indicates the WWN of the switch. The Brocade implementation maps the switch WWN to the first 8 octets of this object and sets the remaining 8 octets to 0.

TABLE 75

Object and OID	Access	Description
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"> <li>• WWN formats requiring fewer than 16 octets must be extended to 16 octets with trailing 0 octets.</li> <li>• If a WWN is used for connUnitId, the same WWN must be used for connUnitGlobalId.</li> </ul> <p>When a non-zero value is provided, the following characteristics are strongly recommended.</p> <ul style="list-style-type: none"> <li>• It should be persistent across agent and unit resets.</li> <li>• It should be globally unique.</li> <li>• It should be one of these FC-PH/PH3 formats: <ul style="list-style-type: none"> <li>• IEEE (NAA=1)</li> <li>• IEEE Extended (NAA=2)</li> <li>• IEEE Registered (NAA=5)</li> <li>• IEEE Registered extended (NAA=6)</li> </ul> </li> </ul> <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><a href="http://standards.ieee.org/regauth/oui/tutorials/fibreformat.html">http://standards.ieee.org/regauth/oui/tutorials/fibreformat.html</a></p> <p><a href="http://standards.ieee.org/regauth/oui/tutorials/fibrecomp_id.html">http://standards.ieee.org/regauth/oui/tutorials/fibrecomp_id.html</a></p> <p>If one or more WWNs are associated with the connUnit through other management methods, one of them should be used for connUnitGlobalId.</p> <p>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.</p> <p>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. But if the Ethernet is a replaceable PC card, the hub should have an independent ID.</p> <p>The Brocade implementation maps the switch WWN to the top 8 octets of this variable and sets the remaining lower 8 octets to 0.</p> <p>For example:</p> <p>If Brocade's switch WWN is 10:0:0:60:69:10:02:18, then use the SNMP GET command on</p> <p>connUnitGlobalId.10.0.0.60.69.10.02.18.0.0.0.0.0.0.0 returns:</p> <pre>10 00 00 60 69 10 02 18 00 00 00 00 00 00 00 00</pre>
connUnitType 1.3.6.1.3.94.1.6.1.3	Read only	<p>The type of this connectivity unit.</p> <p>Set to 4 for Fibre Channel switches or to 14 for Brocade Access Gateway.</p>

TABLE 75

Object and OID	Access	Description																																								
connUnitNumports 1.3.6.1.3.94.1.6.1.4	Read only	<p>Number of physical ports (between 0 and the maximum number of system supported ports) in the connectivity unit (external). The Brocade switches support 0 to maximum number of system supported ports.</p> <p><b>NOTE:</b> The ConnUnitNumports will not count the GE ports present on the FC4-16IP blade.</p> <p>The maximum number of supported ports are as follows.</p> <table> <tbody> <tr><td>Brocade 300</td><td>24 ports</td></tr> <tr><td>Brocade 4100</td><td>32 ports</td></tr> <tr><td>Brocade 4900</td><td>64 ports</td></tr> <tr><td>Brocade 5000</td><td>32 ports</td></tr> <tr><td>Brocade 5100</td><td>40 ports</td></tr> <tr><td>Brocade 5300</td><td>80 ports</td></tr> <tr><td>Brocade 7500 or 7500E</td><td>32 ports</td></tr> <tr><td>Brocade 7600</td><td>16 ports</td></tr> <tr><td>Brocade 7800 Extension Switch</td><td>24 ports</td></tr> <tr><td>Brocade 8000</td><td>32 ports</td></tr> <tr><td>Brocade Encryption Switch</td><td>32 ports</td></tr> <tr><td>Brocade DCX</td><td>640 ports</td></tr> <tr><td>Brocade DCX-4S</td><td>320 ports</td></tr> <tr><td>Brocade 48000</td><td>384 ports</td></tr> <tr><td>Brocade 6505</td><td>24 ports</td></tr> <tr><td>Brocade 6510</td><td>48 ports</td></tr> <tr><td>Brocade 6520</td><td>96 ports</td></tr> <tr><td>Brocade DCX 8510-4 Backbone</td><td>320 ports</td></tr> <tr><td>Brocade DCX 8510-8 Backbone</td><td>640 ports</td></tr> <tr><td>Brocade VA-40FC</td><td>40 ports</td></tr> </tbody> </table>	Brocade 300	24 ports	Brocade 4100	32 ports	Brocade 4900	64 ports	Brocade 5000	32 ports	Brocade 5100	40 ports	Brocade 5300	80 ports	Brocade 7500 or 7500E	32 ports	Brocade 7600	16 ports	Brocade 7800 Extension Switch	24 ports	Brocade 8000	32 ports	Brocade Encryption Switch	32 ports	Brocade DCX	640 ports	Brocade DCX-4S	320 ports	Brocade 48000	384 ports	Brocade 6505	24 ports	Brocade 6510	48 ports	Brocade 6520	96 ports	Brocade DCX 8510-4 Backbone	320 ports	Brocade DCX 8510-8 Backbone	640 ports	Brocade VA-40FC	40 ports
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Brocade DCX 8510-8 Backbone	640 ports																																									
Brocade VA-40FC	40 ports																																									
connUnitState 1.3.6.1.3.94.1.6.1.5	Read only	<p>Overall state of the connectivity unit.</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>unknown (1)</li> <li>online (2) - Set the state to online.</li> <li>offline (3) - Set the state to offline.</li> </ul> <p>Mapped as follows:</p> <pre>switchState (ONLINE) 2 (online) switchState (not ONLINE) 3 (offline, testing, faulty)</pre>																																								
connUnitStatus 1.3.6.1.3.94.1.6.1.6	Read only	<p>Overall status of the connectivity unit. This switch status is based on the most severe status of contributors like Power supplies, Temperatures, Fans, WWN servers, Standby CP, Blades, Flash, Marginal ports, Faulty ports, Missing SFPs, and so on. <b>switchStatusPolicyShow</b> command displays the policy parameters that determines the overall switch status.</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>unknown (1) - Unknown</li> <li>unused (2) - Unmonitored</li> <li>ok (3) - Healthy/ok</li> <li>warning (4) - Marginal/Warning</li> <li>failed (5) - Down/Failed</li> </ul>																																								
connUnitProduct 1.3.6.1.3.94.1.6.1.7	Read only	<p>The connectivity unit vendor's product model name.</p> <p>This is the same as for sysDescr (set for as many as 79 bytes).</p> <p>If the switch is in Access Gateway mode, the default value is Access Gateway.</p>																																								

**TABLE 75**

Object and OID	Access	Description
connUnitSn 1.3.6.1.3.94.1.6.1.8	Read only	The serial number for this connectivity unit. Set to the SSN (which by default is the WWN).
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	URL to launch a management application, if applicable; otherwise an empty string. In a standalone unit, this would be the same as the top-level URL. This has the same definition as systemURL for keywords.  (Same as systemURL.) The expected value for connUnitURL.0 is: "http://{a.b.c.d}" where {a.b.c.d} is the IP address of the switch if Web Tools license is available.  "" (null) where "" is the IP address of the switch if Web Tools license is not available.
connUnitDomainId 1.3.6.1.3.94.1.6.1.11	Read only	24-bit Fibre Channel address ID of this connectivity unit, right-justified with leading 0s if required. If this value is not applicable, return all bits to one. Set to the switch domain ID (as per FC-SW). For a Brocade Access Gateway device, the value is hard coded as "11 11 11". A Brocade Access Gateway does not have a domain ID.
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. Possible values are: <ul style="list-style-type: none"> <li>• unknown (1)</li> <li>• no (2)</li> <li>• yes (3)</li> </ul> This could be the only unit with a management card in it for a set of units. A standalone unit should return "yes" for this object. Set to 3 (yes).
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". If the switch is principal, this is set to 3 (yes); otherwise, for a fabric switch it is set to 2 (no). For a Brocade Access Gateway device, since the switch is behaving as a device management tool and not a Fibre Channel switch, the value is set to 1 (unknown). Possible values are: <ul style="list-style-type: none"> <li>• unknown (1)</li> <li>• no (2)</li> <li>• yes (3)</li> </ul>
connUnitNumSensors 1.3.6.1.3.94.1.6.1.14	Read only	Number of sensors (between 0 and maximum number of sensors) in the connUnitSensorTable. For specific sensor counts on the various switches, refer to <a href="#">Table 46</a> on page 147.
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 for any members of the set; this is the latest time stamp that connUnitStatus or connUnitPortStatus changed. <b>NOTE:</b> This object is not supported.

TABLE 75

Object and OID	Access	Description
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 for any members of the set. In other words, this is the latest time stamp of flash memory update. This represents a union of change information for connUnitConfigurationChangeTime <b>NOTE:</b> This object is not supported.
connUnitNumRevs 1.3.6.1.3.94.1.6.1.17	Read only	The number of revisions in connUnitRevsTable. Set to 2.
connUnitNumZones 1.3.6.1.3.94.1.6.1.18	Read only	Number of zones defined in connUnitZoneTable. <b>NOTE:</b> This object is not supported.
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. The intended use would be 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 would be set to the value of connUnitId for this "container" connUnit. connUnitModuleId should be 0s if this connUnit is not part of a module. Set to the WWN of the switch.
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 should be persistent between boots. Set to switchName/sysName.
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 should be persistent between boots. For a Fabric switch set to sysDescr and read only. For a Brocade Access Gateway device set to "Access Gateway."

**TABLE 75**

Object and OID	Access	Description
connUnitControl 1.3.6.1.3.94.1.6.1.22	Read-write	<p>Controls the addressed connUnit. Each implementation might choose not to allow any or all of these values on a SET.</p> <p>Cold start and warm start are as defined in MIB-II and are not meant to be a factory reset.</p> <p>This is similar to swAdmStatus:</p> <ul style="list-style-type: none"> <li>• resetConnunitColdStart = reboot</li> <li>• resetConnunitWarmStart = fastboot</li> <li>• offlineConnUnit = disable switch</li> <li>• onlineConnUnit = enable switch</li> <li>• default after reboot = unknown</li> </ul> <p>The declaration 1 (unknown) maps to the default value upon rebooting, and 2 (invalid) is not applicable.</p> <p>Declarations 3 and 4 perform the same operation—a cold boot of the switch.</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>• unknown (1)</li> <li>• invalid (2)</li> <li>• resetConnUnitColdStart (3): Reboot. Performs a switch reboot.</li> <li>• resetConnUnitWarmStart (4): Fastboot. The addressed unit performs a Warm Start reset.</li> <li>• offlineConnUnit (5): Disable switch. 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 meaningful Fibre Channel work.</li> <li>• onlineConnUnit (6): Enable switch. 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 meaningful Fibre Channel work.</li> </ul>
connUnitContact 1.3.6.1.3.94.1.6.1.23	Read-write	<p>Contact information for this connectivity unit.</p> <p>Displays the same value as sysContact. Changing the value in this variable causes the value in sysContact to also be changed.</p>
connUnitLocation 1.3.6.1.3.94.1.6.1.24	Read-write	<p>Location information for this connectivity unit.</p> <p>Displays the same value as sysLocation.</p>
connUnitEventFilter 1.3.6.1.3.94.1.6.1.25	Read only	<p>Defines the event severity logged by this connectivity unit. All events of severity less than or equal to connUnitEventFilter are logged in connUnitEventTable.</p> <p>Always returns value 9 (debug).</p>
connUnitNumEvents 1.3.6.1.3.94.1.6.1.26	Read only	<p>Number of events currently in connUnitEventTable.</p> <p>Fabric OS currently supports 1024 raslog events.</p>
connUnitMaxEvents 1.3.6.1.3.94.1.6.1.27	Read only	<p>Maximum number of events that can be defined in connUnitEventTable.</p> <p>This value ranges from 0 to 1024.</p>
connUnitEventCurrID 1.3.6.1.3.94.1.6.1.28	Read only	<p>The last-used event ID (connUnitEventId). Every RASLOG message has RASLOG number and this represents the RASLOG number.</p> <p>Maximum is 2147483647 (<math>2^{31}-1</math>).</p>

TABLE 75

Object and OID	Access	Description
connUnitRevsTable 1.3.6.1.3.94.1.7	Not accessible	Table of the revisions supported by connectivity units managed by this agent. Usage Notes This table lists the versions of hardware and software elements in the switch. One entry for the hardware platform version and another entry for the Fabric OS version. For example, for the Brocade 4100 the hardware platform number is 32.0. The Fabric OS version for this release is 5.1.
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 value for 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 connUnitRevsEntrys with the same value of connUnitRevsUnitId, in the range between 1 and connUnitNumRevs. Index 1 returns the hardware version. Index 2 returns the software version.
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 connUnitRevsUnitId. Index 1 returns the switchType from <b>switchShow</b> . Index 2 returns the Fabric OS version from telnet command <b>version</b> : for example, v2.6.
connUnitRevsDescription 1.3.6.1.3.94.1.7.1.4	Read only	Description of a component to which the revision corresponds. Index 1 returns the hardware version. Index 2 returns the software version.
connUnitSensorTable 1.3.6.1.3.94.1.8	Not accessible	Table of the sensors supported by each connectivity unit managed by this agent. For specific sensor counts on the various switches., refer to <a href="#">Table 46</a> on page 147.
connUnitSensorEntry 1.3.6.1.3.94.1.8.1	Not accessible	Each entry contains the information for a specific sensor.
connUnitSensorUnitId 1.3.6.1.3.94.1.8.1.1	Read only	The connUnitId value of the connectivity unit that contains this sensor table. Set to connUnitId.
connUnitSensorIndex 1.3.6.1.3.94.1.8.1.2	Read only	A unique value among all connUnitSensorEntrys with the same value of connUnitSensorUnitId, in the range between 1 and the return value from connUnitNumSensor.
connUnitSensorName 1.3.6.1.3.94.1.8.1.3	Read only	A textual identification of the sensor, intended primarily for operator use. Each contains the name of sensor in textual format: for example, Temp #1, Fan #2, and so on.
connUnitSensorStatus 1.3.6.1.3.94.1.8.1.4	Read only	The status indicated by the sensor. Possible values are: <ul style="list-style-type: none"> <li>• unknown (1)</li> <li>• other (2)</li> <li>• ok (3) The sensor indicates okay.</li> <li>• Warning (4) - The sensor indicates a warning.</li> <li>• failed (5) - The sensor indicates failure.</li> <li>• Nominal = 3 (ok).</li> </ul>

**TABLE 75**

Object and OID	Access	Description								
connUnitSensorInfo 1.3.6.1.3.94.1.8.1.5	Read only	Miscellaneous static information about the sensor, such as its serial number. Each contains textual information about the sensor. Returns the serial ID if this is for the power supply; otherwise, returns Null.								
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 some information about the sensor, for example:  sensor 1: type 3 is OK, value is 33  Each contains the sensor status (and reading if applicable) in textual format.								
connUnitSensorType 1.3.6.1.3.94.1.8.1.7	Read only	The type of component being monitored by this sensor. Possible values are: <ul style="list-style-type: none"> <li>• unknown (1)</li> <li>• other (2)</li> <li>• battery (3)</li> <li>• fan (4)</li> <li>• power-supply (5)</li> <li>• transmitter (6)</li> <li>• enclosure (7)</li> <li>• board (8)</li> <li>• receiver (9)</li> </ul> The following mapping is for each individual sensor, where applicable: <table style="margin-left: 20px;"> <tr> <td>swSensorType</td> <td>connUnitSensorType</td> </tr> <tr> <td>1 (temperature)</td> <td>8 (board)</td> </tr> <tr> <td>2 (fan)</td> <td>4 (fan)</td> </tr> <tr> <td>3 (power supply)</td> <td>5 (power supply)</td> </tr> </table>	swSensorType	connUnitSensorType	1 (temperature)	8 (board)	2 (fan)	4 (fan)	3 (power supply)	5 (power supply)
swSensorType	connUnitSensorType									
1 (temperature)	8 (board)									
2 (fan)	4 (fan)									
3 (power supply)	5 (power supply)									
connUnitSensorCharacteristic 1.3.6.1.3.94.1.8.1.8	Read only	The characteristics being monitored by this sensor. The following mapping is for each individual sensor, where applicable: <table style="margin-left: 20px;"> <tr> <td>swSensorType</td> <td>connUnitSensorCharacteristic</td> </tr> <tr> <td>1 (temperature)</td> <td>3 (temperature)</td> </tr> <tr> <td>2 (fan)</td> <td>7 (airflow)</td> </tr> <tr> <td>3 (power supply)</td> <td>9 (power)</td> </tr> </table> Possible values are: <ul style="list-style-type: none"> <li>• unknown (1)</li> <li>• other (2)</li> <li>• temperature (3)</li> <li>• pressure (4)</li> <li>• emf (5)</li> <li>• currentValue (6) Current is a keyword.</li> <li>• airflow (7)</li> <li>• frequency (8)</li> <li>• power (9)</li> <li>• door (10) - Not supported in Fabric OS v2.6.1.</li> </ul>	swSensorType	connUnitSensorCharacteristic	1 (temperature)	3 (temperature)	2 (fan)	7 (airflow)	3 (power supply)	9 (power)
swSensorType	connUnitSensorCharacteristic									
1 (temperature)	3 (temperature)									
2 (fan)	7 (airflow)									
3 (power supply)	9 (power)									
connUnitPortTable 1.3.6.1.3.94.1.10	Not accessible	Generic information on ports for a specific connUnit <b>NOTE:</b> Information about the GbE ports on a Brocade 7500 or FR4-18i blade is not supported.								



TABLE 75

Object and OID	Access	Description																																								
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 value of the connectivity unit that contains this port. Same value as connUnitId.																																								
connUnitPortIndex 1.3.6.1.3.94.1.10.1.2	Read only	<p>Number of physical ports between 0 and <i>maximum number of system supported ports</i> in the connectivity unit (internal/embedded, external). To determine the <i>maximum number of system supported ports</i>, use the SNMP GET command on swFcPortCapacity.</p> <p>The Brocade switches support 0 to <i>maximum number of system supported ports</i>. The maximum number of supported physical ports are as follows:</p> <p><b>NOTE:</b> The following list does not includes the virtual ports. You can create additional virtual ports in virtual fabrics.</p> <table border="0"> <tbody> <tr><td>Brocade 300</td><td>24 ports</td></tr> <tr><td>Brocade 4100</td><td>32 ports</td></tr> <tr><td>Brocade 4900</td><td>64 ports</td></tr> <tr><td>Brocade 5000</td><td>32 ports</td></tr> <tr><td>Brocade 5100</td><td>40 ports</td></tr> <tr><td>Brocade 5300</td><td>80 ports</td></tr> <tr><td>Brocade 7500 or 7500E</td><td>32 ports</td></tr> <tr><td>Brocade 7600</td><td>16 ports</td></tr> <tr><td>Brocade 7800 Extension Switch</td><td>24 ports</td></tr> <tr><td>Brocade 8000</td><td>32 ports</td></tr> <tr><td>Brocade Encryption Switch</td><td>32 ports</td></tr> <tr><td>Brocade DCX</td><td>640 ports</td></tr> <tr><td>Brocade DCX-4S</td><td>320 ports</td></tr> <tr><td>Brocade 48000</td><td>384 ports</td></tr> <tr><td>Brocade 6505</td><td>24 ports</td></tr> <tr><td>Brocade 6510</td><td>48 ports</td></tr> <tr><td>Brocade 6520</td><td>96 ports</td></tr> <tr><td>Brocade DCX 8510-4 Backbone</td><td>320 ports</td></tr> <tr><td>Brocade DCX 8510-8 Backbone</td><td>640 ports</td></tr> <tr><td>Brocade VA-40FC</td><td>40 ports</td></tr> </tbody> </table>	Brocade 300	24 ports	Brocade 4100	32 ports	Brocade 4900	64 ports	Brocade 5000	32 ports	Brocade 5100	40 ports	Brocade 5300	80 ports	Brocade 7500 or 7500E	32 ports	Brocade 7600	16 ports	Brocade 7800 Extension Switch	24 ports	Brocade 8000	32 ports	Brocade Encryption Switch	32 ports	Brocade DCX	640 ports	Brocade DCX-4S	320 ports	Brocade 48000	384 ports	Brocade 6505	24 ports	Brocade 6510	48 ports	Brocade 6520	96 ports	Brocade DCX 8510-4 Backbone	320 ports	Brocade DCX 8510-8 Backbone	640 ports	Brocade VA-40FC	40 ports
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TABLE 75

Object and OID	Access	Description
connUnitPortType 1.3.6.1.3.94.1.10.1.3	Read only	<p>The port type.</p> <p>For EX_Port, VEX_Port and VE_Port, the port type will be shown as other. For a Brocade Access Gateway device, the port type can be either F_Port (f-port) or N_Port (n-port) only.</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>• unknown (1)</li> <li>• other (2)</li> <li>• not-present (3)</li> <li>• hub-port (4)</li> <li>• n-port (5) End port for fabric.</li> <li>• l-port (6) End port for loop.</li> <li>• fl-port (7) Public loop.</li> <li>• f-port (8) Fabric port.</li> <li>• e-port (9) Fabric expansion port.</li> <li>• g-port (10) Generic fabric port.</li> <li>• domain-ctl (11) Domain controller.</li> <li>• hub-controller (12)</li> <li>• scsi (13) Parallel SCSI port.</li> <li>• escon (14)</li> <li>• lan (15)</li> <li>• wan (16)</li> <li>• ac (17) AC power line. (Not supported in Fabric OS v2.6.1.)</li> <li>• dc (18) DC power line. (Not supported in Fabric OS v2.6.1.)</li> <li>• ssa (19) Serial storage architecture. (Not supported in Fabric OS v2.6.1.)</li> </ul>
connUnitPortFCClassCap 1.3.6.1.3.94.1.10.1.4	Read only	<p>Bit mask that specifies the classes of service capability of this port. If this is not applicable, return all bits set to 0.</p> <p>The bits have the following definition:</p> <ul style="list-style-type: none"> <li>• unknown 0</li> <li>• class-f 1</li> <li>• class-one 2</li> <li>• class-two 4</li> <li>• class-three 8</li> <li>• class-four 16</li> <li>• class-five 32</li> <li>• class-six 64</li> </ul> <p>For an F_Port or FL_Port, this value is 0x000C. For a G_Port or E_Port, this value is 0x000D.</p> <p>For a Brocade Access Gateway, both the F_Port and N_Port this value is 0x0008. An Access Gateway supports class-three services only, therefore the value is 8 for both port types.</p> <p>connUnitPortFCClassCap attribute is dependent on the state of the port, that is, whether the port is online or offline. If the port is offline, the class service of U port will be shown as value of onnUnitPortFCClassCap. If it is online, then this mib attribute value will be equal to class service corresponding to the port type (F, E, L port.)</p>

TABLE 75

Object and OID	Access	Description
connUnitPortFCClassOp 1.3.6.1.3.94.1.10.1.5	Read only	<p>Bit mask that specifies the classes of service that are currently operational. If this is not applicable, return all bits set to 0. This object has the same definition as connUnitPortFCClassCap.</p> <p>For an F_Port or FL_Port, this value is 0x000C. For a G_Port or E_Port, this value is 0x000D.</p> <p>For a Brocade Access Gateway both the F_Port and N_Port this value is 0x0008. A Brocade Access Gateway supports class-three services only, therefore the value is 8 for both port types.</p> <p>connUnitPortFCClassOp is independent of the state of the port (online or offline). Its value is only dependent on the port type.</p>
connUnitPortState 1.3.6.1.3.94.1.10.1.6	Read only	<p>The state of the port hardware.</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>• unavailable (1) - Do not use.</li> <li>• online (2) - Available for meaningful work.</li> <li>• offline (3) - Not available for meaningful work.</li> <li>• bypassed (4) - No longer used.</li> <li>• diagnostics (5) - Map to your testing. (Not supported in Fabric OS v2.6.1.)</li> </ul> <p>For an E, F, or FL_Port, the value is online. For a U_Port, the value is offline (disabled, testing, faulted).</p>
connUnitPortStatus 1.3.6.1.3.94.1.10.1.7	Read only	<p>An overall protocol status for the port. For a U_Port, the status should be ols (9).</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>• unknown (1)</li> <li>• unused (2) - Device cannot report this status.</li> <li>• ready (3) - FCAL Loop or FCPH Link reset protocol initialization has completed.</li> <li>• warning (4) - Do not use.</li> <li>• failure (5) - Port is faulty.</li> <li>• notparticipating (6) - Loop not participating and does not have a loop address. Do not use.</li> <li>• initializing (7) - Protocol is proceeding. Do not use.</li> <li>• bypass (8) - Do not use.</li> <li>• ols (9) - FCP offline status. (Not supported in Fabric OS v2.6.1.)</li> </ul> <p><b>NOTE:</b> In Fabric OS v2.6.x, for an E_Port, F_Port, or FL_Port, the value is 3 (ok). For a U_Port, the value is 2 (unused) if not faulty with GBIC, 1(unknown) if not faulty but no GBIC, or 5 (failure) if faulty.</p> <p>In Fabric OS v3.x and later, for an E_Port, F_Port, FL_Port or other Port and online port state, the value is 3 (ok). For G_Port or other Port and offline port state, the value is 9 (ols). For unknown portype and offline port state, the value is 1 (unknown).</p>

**TABLE 75**

Object and OID	Access	Description
connUnitPortTransmitterType 1.3.6.1.3.94.1.10.1.8	Read only	<p>The technology of the port transceiver.</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>• unknown (1)</li> <li>• other (2)</li> <li>• unused (3)</li> <li>• shortwave (4)</li> <li>• longwave (5)</li> <li>• copper (6)</li> <li>• scsi (7)</li> <li>• longwaveNoOFC (8)</li> <li>• shortwaveNoOFC (9)</li> <li>• longwaveLED (10)</li> <li>• ssa (11) (Not supported in Fabric OS v2.6.1.)</li> </ul> <p>For an external FC port, this value should be 9 (shortwaveNoOFC), 8 (longwaveNoOFC), or 6 (copper).</p>
connUnitPortModuleType 1.3.6.1.3.94.1.10.1.9	Read only	<p>The module type of the port connector.</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>• unknown (1)</li> <li>• other (2)</li> <li>• gbic (3)</li> <li>• embedded (4) Fixed (oneXnine)</li> <li>• glm (5)</li> <li>• gbicSerialId (6)</li> <li>• gbicNoSerialId (7)</li> <li>• gbicNotInstalled (8)</li> <li>• smallFormFactor (9)</li> </ul> <p>For an external FC port with GBIC, this value is set to 6 (gbicSerialId) or 7 (gbicNoSerialId). For an external FC port without GBIC, this value is set to 8 (gbicNotInstalled).</p>
connUnitPortWwn 1.3.6.1.3.94.1.10.1.10	Read only	<p>The World Wide Name of the port, if applicable; otherwise, an empty string.</p> <p>This is in IEEE Extended format, and the extension contains the internal port number of each port.</p> <p><b>NOTE:</b> The internal port number is 1 less than the port index. For example, if the switch has WWN 10:00:00:60:69:10:02:18, then port numbers 0 and 6 have WWN 20:00:00:60:69:10:02:18 and 20:06:00:60:69:10:02:18, respectively. However, the embedded port has WWN 10:00:00:60:69:10:02:18, the same as the switch.</p>

TABLE 75

Object and OID	Access	Description
connUnitPortFCId 1.3.6.1.3.94.1.10.1.11	Read only	<p>This is the assigned Fibre Channel ID of the port. If the port does not have a Fibre Channel address, this object return all bits set to 1.</p> <p>For an F_Port, this is the Fibre Channel ID to which the connected N_Port is assigned. For an FL_Port, this is the Fibre Channel ID of the FL_Port. For a U or E_Port, this is similar to F_Port.</p> <p>The FC ID is formatted "DD AA PP" (for example, "02 00 02"). The Brocade Access Gateway port FC ID differs from a Fibre Channel switch. A Fibre Channel switch port FC ID has the same DD with a different AA value for each link. The Brocade Access Gateway "PP" is the port number for F_Ports and is always zero for N_Ports. Therefore the N_Port FC ID always appears as "DD AA 00" (for example, "02 00 00"). On a Brocade Access Gateway the FC ID of different ports can have the same "AA" value but different "DD" values and vice versa.</p>
connUnitPortSn 1.3.6.1.3.94.1.10.1.12	Read only	<p>The serial number of the unit (for example, for a GBIC). If this is not applicable, return an empty string.</p> <p>If the GBIC has a serial ID, the return value is the GBIC part number; otherwise, the return value is Null.</p>
connUnitPortRevision 1.3.6.1.3.94.1.10.1.13	Read only	<p>The port revision (for example, GBIC).</p> <p>If the GBIC has a serial ID, this returns the GBIC revision number; otherwise, it returns a Null value.</p>
connUnitPortVendor 1.3.6.1.3.94.1.10.1.14	Read only	<p>The port vendor (for example, for a GBIC).</p> <p>If the GBIC has a serial ID, this returns the GBIC vendor name; otherwise, it returns a Null value.</p>
connUnitPortSpeed 1.3.6.1.3.94.1.10.1.15	Read only	<p>The speed of the port, in kilobytes per second.</p> <p>For example, the valid values for Brocade 12000, 24000, and 48000 directors: 250,000 KBps, 500,000 KBps, 1,000,000 KBps, 1,250,000 KBps, 2,000,000 KBps depending on the configuration.</p>

TABLE 75

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>Valid commands are:</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"> <li>• The Link Reset protocol.</li> <li>• The Loop Initialization protocol.</li> <li>• Resynchronization occurring between the transceiver in the addressed port to the transceiver to which the port is connected.</li> </ul> <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"> <li>• Transitioning from online to offline.</li> <li>• A request (NON-PARTICIPATING) command to the loop port state machine.</li> <li>• Removal of the port from an arbitrated loop by a hub.</li> </ul> <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"> <li>• The Link Failure protocol.</li> <li>• A request (PARTICIPATING) command to the loop port state machine.</li> <li>• Addition of the port to an arbitrated loop by a hub.</li> </ul> <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"> <li>• Disabling a port's transceiver.</li> <li>• The Link Failure protocol.</li> <li>• Request (NON-PARTICIPATING) command to the loop port state machine removal of the port from an arbitrated loop by a hub.</li> </ul> <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"> <li>• Enabling a port's transceiver.</li> <li>• The Link Failure protocol, request (PARTICIPATING) command to the loop port state machine.</li> <li>• Addition of the port from an arbitrated loop by a hub.</li> </ul> <p>Each implementation might choose not to allow any or all of these values on a SET.</p> <p>If the management station uses in-band communication (FC-IP) with the switch, either of the two following actions might result in a loss of in-band communication with the switch.</p> <ul style="list-style-type: none"> <li>• Disabling the FC port that is connected to the management station</li> <li>• Disabling the embedded port</li> </ul>

TABLE 75

Object and OID	Access	Description																																								
connUnitPortControl 1.3.6.1.3.94.1.10.1.16 (continued)	Read-write	<ul style="list-style-type: none"> <li>Return values are:               <ul style="list-style-type: none"> <li>- resetConnUnitPort portDisable (F or E_Port, loop for U_Port)</li> <li>- bypassConnUnitPort portDisable (FL_Port)</li> <li>- unbypassConnUnitPort portEnable (FL_Port)</li> <li>- offlineConnUnitPort portDisable (E, F, FL_Port)</li> <li>- onlineConnUnitPort portEnable (U)</li> <li>- resetConnUnitPortCounters clear the port statistics counter. -- when rebooted, this defaults to 1 (unknown).</li> </ul> </li> </ul>																																								
connUnitPortName 1.3.6.1.3.94.1.10.1.17	Read-write	<p>A string describing the addressed port.</p> <p><b>NOTE:</b> This object is read only for Brocade switches.</p>																																								
connUnitPortPhysicalNumber 1.3.6.1.3.94.1.10.1.18	Read only	<p>This is the internal port number by which this port is known. In many implementations, this should 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.</p> <p>The internal port numbers for Brocade switch. The Brocade switches support 0 through maximum number of ports.</p> <p>The maximum number of supported ports are as follows.</p> <table border="0"> <tbody> <tr><td>Brocade 300</td><td>24 ports</td></tr> <tr><td>Brocade 4100</td><td>32 ports</td></tr> <tr><td>Brocade 4900</td><td>64 ports</td></tr> <tr><td>Brocade 5000</td><td>32 ports</td></tr> <tr><td>Brocade 5100</td><td>40 ports</td></tr> <tr><td>Brocade 5300</td><td>80 ports</td></tr> <tr><td>Brocade 7500 or 7500E</td><td>32 ports</td></tr> <tr><td>Brocade 7600</td><td>16 ports</td></tr> <tr><td>Brocade 7800 Extension Switch</td><td>24 ports</td></tr> <tr><td>Brocade 8000</td><td>32 ports</td></tr> <tr><td>Brocade Encryption Switch</td><td>32 ports</td></tr> <tr><td>Brocade DCX</td><td>640 ports</td></tr> <tr><td>Brocade DCX-4S</td><td>320 ports</td></tr> <tr><td>Brocade 48000</td><td>384 ports</td></tr> <tr><td>Brocade 6505</td><td>24 ports</td></tr> <tr><td>Brocade 6510</td><td>48 ports</td></tr> <tr><td>Brocade 6520</td><td>96 ports</td></tr> <tr><td>Brocade DCX 8510-4 Backbone</td><td>320 ports</td></tr> <tr><td>Brocade DCX 8510-8 Backbone</td><td>640 ports</td></tr> <tr><td>Brocade VA-40FC</td><td>40 ports</td></tr> </tbody> </table>	Brocade 300	24 ports	Brocade 4100	32 ports	Brocade 4900	64 ports	Brocade 5000	32 ports	Brocade 5100	40 ports	Brocade 5300	80 ports	Brocade 7500 or 7500E	32 ports	Brocade 7600	16 ports	Brocade 7800 Extension Switch	24 ports	Brocade 8000	32 ports	Brocade Encryption Switch	32 ports	Brocade DCX	640 ports	Brocade DCX-4S	320 ports	Brocade 48000	384 ports	Brocade 6505	24 ports	Brocade 6510	48 ports	Brocade 6520	96 ports	Brocade DCX 8510-4 Backbone	320 ports	Brocade DCX 8510-8 Backbone	640 ports	Brocade VA-40FC	40 ports
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connUnitPortStatObject 1.3.6.1.3.94.1.10.1.19	Read only	<p>This OID is deprecated.</p> <p>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.</p> <p>Mapped to connUnitPortStatFabricUnitId.</p>																																								

**TABLE 75**

Object and OID	Access	Description
connUnitPortProtocolCap 1.3.6.1.3.94.1.10.1.20	Read only	<p>This is the bit mask that specifies the driver-level protocol capability of this port.</p> <p>If this is not applicable, return all bits set to 0.</p> <p>Return value = 07F</p> <p>The bits have the following definition.</p> <ul style="list-style-type: none"> <li>• 0 = unknown</li> <li>• 1 = Loop</li> <li>• 2 = Fabric</li> <li>• 4 = SCSI</li> <li>• 8 = TCP/IP</li> <li>• 16 = VI</li> <li>• 32 = FICON</li> </ul>
connUnitPortProtocolOp 1.3.6.1.3.94.1.10.1.21	Read only	<p>This is the bit mask that specifies the driver level protocols that are currently operational.</p> <p>Return value = 07F</p> <p>If this is not applicable, return all bits set to zero. The bits have the following definition:</p> <ul style="list-style-type: none"> <li>• 0 = unknown</li> <li>• 1 = Loop</li> <li>• 2 = Fabric</li> <li>• 4 = SCSI</li> <li>• 8 = TCP/IP</li> <li>• 16 = VI</li> <li>• 32 = FICON</li> </ul>
connUnitPortNodeWwn 1.3.6.1.3.94.1.10.1.22	Read only	<p>The node World Wide Name of the port, if applicable; otherwise, an empty string.</p> <p>All ports on HBAs on a host will have the same node WWN. All ports on the same storage subsystem will have the same node WWN.</p> <p>This is in IEEE Extended format and the extension contains the internal port number of each port.</p> <p>The internal port number is 1 less than the port index. For example, if the switch has WWN 10:00:00:60:69:10:02:18, then port number 0 and 6 have WWN 20:00:00:60:69:10:02:18 and 20:06:00:60:69:10:02:18, respectively. However, the embedded port has WWN 10:00:00:60:69:10:02:18, the same as the switch.</p> <p>The N_Ports on a Brocade Access Gateway are the WWN of the switch (that is, it is the same as the connUnitId). The F_Ports are the WWN of the HBA host. If the F_Port is offline, the value of the WWN is zero (00:00:00:00:00:00:00:00).</p>
connUnitPortHWState 1.3.6.1.3.94.1.10.1.23	Read only	<p>The state of the port as detected by the hardware.</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>• unknown (1)</li> <li>• failed (2) Port failed diagnostics (port_ft_state).</li> <li>• bypassed (3) FCAL bypass, loop only (not used).</li> <li>• active (4) Connected to a device (light and sync are present).</li> <li>• loopback (5) Port in ext loopback (loopback state).</li> <li>• txfault (6) Transmitter fault (bad GBIC).</li> <li>• noMedia (7) Media not installed (GBIC removed).</li> <li>• linkDown (8) Waiting for activity—rx sync (light with no sync).</li> </ul>



TABLE 75

Object and OID	Access	Description
connUnitEventTable 1.3.6.1.3.94.1.11	Not accessible	The table of connectivity unit events. Errors, warnings, and information should be reported in this table. This table contains the 1024 most-recent event log entries. Only external RASlog messages are supported. Fabric OS v4.4.0 and later releases do not have Panic or Debug level messages. All external messages are documented in the <i>Fabric OS Message Reference</i> .
connUnitEventEntry 1.3.6.1.3.94.1.11.1	Not accessible	Each entry contains 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. Same as connUnitId.
connUnitEventIndex 1.3.6.1.3.94.1.11.1.2	Read only	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 should 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 should 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. An agent might read events 50-75. 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. 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. Mapped to swEventIndex.
connUnitEventId 1.3.6.1.3.94.1.11.1.3	Read only	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 would only have a value range up to connUnitMaxEvents.
connUnitREventTime 1.3.6.1.3.94.1.11.1.4	Read only	This is the real time when the event occurred. It has the following format. DDMMYYYY HHMMSS Where: DD = day number MM = month number YYYY = year HH = hours MM = minutes SS = seconds If not applicable, returns a null string.

**TABLE 75**

Object and OID	Access	Description														
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	<p>The event severity level. The mapping between error log severity level and this variable is:</p> <table border="0"> <tr> <td>Error log</td> <td>FA-MIB</td> </tr> <tr> <td>none (0)</td> <td>unknown (1)</td> </tr> <tr> <td>Critical (1)</td> <td>critical (4)</td> </tr> <tr> <td>Error (2)</td> <td>error (5)</td> </tr> <tr> <td>Warning (3)</td> <td>warning (6)</td> </tr> <tr> <td>Informational (4)</td> <td>info (8)</td> </tr> <tr> <td>Debug (5)</td> <td>debug (9)</td> </tr> </table> <p>For more information about severity, refer to “FcEventSeverity” in <a href="#">Table 74</a> on page 203.</p>	Error log	FA-MIB	none (0)	unknown (1)	Critical (1)	critical (4)	Error (2)	error (5)	Warning (3)	warning (6)	Informational (4)	info (8)	Debug (5)	debug (9)
Error log	FA-MIB															
none (0)	unknown (1)															
Critical (1)	critical (4)															
Error (2)	error (5)															
Warning (3)	warning (6)															
Informational (4)	info (8)															
Debug (5)	debug (9)															
connUnitEventType 1.3.6.1.3.94.1.11.1.7	Read only	<p>The type of this event. Possible values are:</p> <ul style="list-style-type: none"> <li>• unknown (1)</li> <li>• other (2)</li> <li>• status (3)</li> <li>• configuration (4)</li> <li>• topology (5)</li> </ul> <p>Always set to 2 (other).</p>														
connUnitEventObject 1.3.6.1.3.94.1.11.1.8	Read only	<p>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. Always set to null.</p>														
connUnitEventDescr 1.3.6.1.3.94.1.11.1.9	Read only	<p>The description of the event. Same as the string displayed in the system error log. The system error log can be viewed using the <b>errShow</b> or <b>errDump</b> commands.</p> <p>For Fabric OS v6.2.0 and later releases, the format of error messages has changed. This field now uses the message title and number (for example, WEBD-1006) and the message text. Previously, this field used the task ID and all the message number and message text. For more information on error messages, refer to <i>Fabric OS Message Reference</i>.</p>														

TABLE 75

Object and OID	Access	Description
connUnitLinkTable 1.3.6.1.3.94.1.12	Not accessible	<p>A list of links known to this agent from this connectivity unit to other connectivity units- X is switch data and Y is other end.</p> <p>The link table is intended to organize and communicate any information the agent has that might assist a management application to discover the connectivity units in the framework and the topology of their interconnect- the goal is to assist the management application by mapping the elements of the framework in addition to listing them.</p> <p>With this goal, the agent should include as much as it possesses about any links from its own connectivity units to others, including links among its own units.</p> <p>An agent should include partial information about links if it is not able to fully define them in accord with the following structure; however, the information must include either a nonzero connUnitNodeld—or a nonzero connUnitPortWwn—for each end of the link.</p> <p>If the agent is able to discover links that do not directly attach to members of its agency and its discovery algorithm gives some assurance that the links are recently valid, it might include these links. Link information entered by administrative action might be included even if not validated directly if the link has at least one endpoint in this agency, but it should not be included otherwise.</p> <p>A connectivity unit should fill the table in as best it can. One of the methods to fill this in would be to use the RNID ELS command (ANSI document 99-422v0). This command queries a port for the information needed for the link table.</p> <p>This table is accessed either directly, if the management software has an index value, or using getNext. The values of the indexes are not required to be contiguous. Each entry created in this table is assigned an index. This relationship is kept persistent until the entry is removed from the table or the system is reset. The total number of entries is defined by the size of the table.</p> <p>For an entry to be considered valid, both the X (local) and the Y (remote) values need to have one valid value.</p> <p>A Brocade Access Gateway has no ISLs (InterSwitch Links); therefore all F_Port and N_Port connections display in ag --show for online F_Ports.</p> <p>Dedicated ISL   DISL       An ISL physically connected between two virtual switches belonging to same VF ID. A DISL is dedicated to carry frames only related to VF ID of connected virtual switches.</p> <p>Extended ISL   XISL       A XISL belongs to the base fabric and by default carries frames of the base fabric and for other fabrics using the encapsulation and IFR header.</p> <p>Logical ISL    LISL       A virtual link between 2 virtual switches that is used for control frames. LISL might not map directly to a single physical ISL depending on topology.</p>
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 connUnitId of the connectivity unit that contains this link table. Set to WWN of the local switch.

**TABLE 75**

Object and OID	Access	Description
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. Indexes 1 through maximum number of ports is reserved for ISL. Indexes maximum number of ports + 1 and above are reserved for end devices and are calculated based on portID of the end devices.
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. WWN of the local switch.
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 nonnegative, then it is equal to connUnitPortPhysicalNumber. ISL- Physical port number of the E_Port. Device- Physical port # to which the device is connected.
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. This is the WWN of the port to which the device is connected.
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. ISL- WWN of the remote switch. Device- Node name of the device.
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 nonnegative then it is equal to connUnitPortPhysicalNumber. ISL- Physical port number of the remote port. Device: -1.
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. ISL- WWN of the remote port. Device- Port name.
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. ISL- IP address (IPv4). Device- 0 (Null).
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). ISL- Type 1. Device- 0 (Null).
connUnitLinkAgentPortY 1.3.6.1.3.94.1.12.1.11	Read only	The IP port number for the agent. This is provided in case the agent is at a non-standard SNMP port. ISL- IP port. Device- 0 (Null).

TABLE 75

Object and OID	Access	Description
connUnitLinkUnitTypeY 1.3.6.1.3.94.1.12.1.12	Read only	Type of the FC connectivity unit, as defined in connUnitType. <ul style="list-style-type: none"> <li>ISL- Switch device.</li> <li>End devices- End device types based on an FCP Inquiry.</li> </ul> Brocade does not support Hubs. Table 76 displays the types of the connectivity unit.
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. ISL- Port ID of the remote port. Device- Port ID of the remote port.
connUnitLinkCurrIndex 1.3.6.1.3.94.1.12.1.14	Read only	The last-used link index.

TABLE 76 connUnitLinkUnitTypeY end devices

Storage system	Storage sub-system	Unknown	Other
Direct Access	Medium Changer	Unknown	Anything else (printer device, processor device, scanner, and so on)
Sequential Access	Array		
Write-Once	SES		
CD-ROM			
Optical			

## Statistics group

The port types are aggregated into a port type class, such as all the fabric port types.

Each individual port has only one statistics table. For all objects in the statistics table, if the object is not supported by the conn unit, then the high order bit is set to 1, with all other bits set to 0 (for example, the last eight bytes of the returned value might be: 80 00 00 00 00 00 00 00).

The high order bit is reserved to indicate whether the object is supported. All objects start at a value of 0 at hardware initialization and continue incrementing until end of 63 bits and then wrap to 0.

This is the case for all Class 1 Frames; Brocade does not support them.

TABLE 77

Object and OID	Access	Description
connUnitPortStatTable 1.3.6.1.3.94.4.5	Not accessible	A list of 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 connUnitId of the connectivity unit that contains this port statistics table.

TABLE 77

Object and OID	Access	Description
connUnitPortStatIndex 1.3.6.1.3.94.4.5.1.2	Read only	This object represents the port index.
connUnitPortStatCountError 1.3.6.1.3.94.4.5.1.3	Read only	A count of the errors that have occurred on this port.
connUnitPortStatCountTxObjects 1.3.6.1.3.94.4.5.1.4	Read only	The number of frames that have been transmitted by this port. A Fibre Channel frame starts with SOF and ends with EOF. FC loop devices should not count frames passed through. This value represents the sum total for all other transmitted objects.
connUnitPortStatCountRxObjects 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 this port. A Fibre Channel frame starts with SOF and ends with EOF. FC loop devices should not count frames passed through. This value represents the sum total for all other received objects.
connUnitPortStatCountTxElements 1.3.6.1.3.94.4.5.1.6	Read only	The number of octets or bytes that have been transmitted by this port. There is an one-second periodic polling of the port. This value is saved and compared with the next polled value to compute net throughput.
connUnitPortStatCountRxElements 1.3.6.1.3.94.4.5.1.7	Read only	The number of octets or bytes that have been received by this port. There is an one-second periodic polling of the port. This value is saved and compared with the next polled value to compute net throughput.
connUnitPortStatCountBBCreditZero 1.3.6.1.3.94.4.5.1.8	Read only	The number of transitions in or out of BB credit zero state.
connUnitPortStatCountInputBuffersFull 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. Return Value - 800000000 This is a Fibre Channel statistic only. <b>NOTE:</b> This object is not supported.
connUnitPortStatCountFBSYFrames 1.3.6.1.3.94.4.5.1.10	Read only	The number of times that FBSY was returned to this 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 a Fibre Channel only statistic. This is the sum of all classes. If you cannot keep the by-class counters, then keep the sum counters. <b>NOTE:</b> This object is not supported.
connUnitPortStatCountPBSYFrames 1.3.6.1.3.94.4.5.1.11	Read only	The number of times that PBSY was returned to this 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). Return Value - 800000000 This is a Fibre Channel only statistic. This is the sum of all classes. If you cannot keep the by class counters, then keep the sum counters. <b>NOTE:</b> This object is not supported.
connUnitPortStatCountFRJTFrames 1.3.6.1.3.94.4.5.1.12	Read only	The number of times that FRJT was returned to this port as a result of a frame that was rejected by the fabric. This is the total for all classes and is a Fibre Channel only statistic. <b>NOTE:</b> This object is not supported.

TABLE 77

Object and OID	Access	Description
connUnitPortStatCountP RJTFrames 1.3.6.1.3.94.4.5.1.13	Read only	The number of times that FRJT was returned to this port as a result of a frame that was rejected at the destination N_Port. Return Value - 800000000 This is the total for all classes and is a Fibre Channel only statistic. <b>NOTE:</b> This object is not supported.
connUnitPortStatCountCl ass1RxFrames 1.3.6.1.3.94.4.5.1.14	Read only	The number of Class 1 Frames received at this port. This is a Fibre Channel only statistic. Brocade does not support Class 1 Frames. Return value - 800000000 <b>NOTE:</b> 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 this port. This is a Fibre Channel only statistic. Brocade does not support Class 1 Frames. Return value - 800000000 <b>NOTE:</b> 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 this 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 a Fibre Channel only statistic. Brocade does not support Class 1 Frames. Return value - 800000000 <b>NOTE:</b> 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 this 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 a Fibre Channel only statistic. Brocade does not support Class 1 Frames. Return value - 800000000 <b>NOTE:</b> 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 this port as a result of a Class 1 Frame that was rejected by the fabric. This is a Fibre Channel only statistic. Brocade does not support Class 1 Frames. Return value - 800000000 <b>NOTE:</b> 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 this port as a result of a Class 1 Frame that was rejected at the destination N_Port. This is a Fibre Channel only statistic. Brocade does not support Class 1 Frames. Return value- 800000000 <b>NOTE:</b> This object is not supported.
connUnitPortStatCountCl ass2RxFrames 1.3.6.1.3.94.4.5.1.20	Read only	The number of Class 2 Frames received at this port. This is a Fibre Channel only statistic.
connUnitPortStatCountCl ass2TxFrames 1.3.6.1.3.94.4.5.1.21	Read only	The number of Class 2 Frames transmitted out this port. This is a Fibre Channel only statistic. Return value - 800000000 <b>NOTE:</b> This object is not supported.

TABLE 77

Object and OID	Access	Description
connUnitPortStatCountCI ass2FBSYFrames 1.3.6.1.3.94.4.5.1.22	Read only	The number of times that FBSY was returned to this port because 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 a Fibre Channel only statistic. Return value - 800000000 <b>NOTE:</b> This object is not supported.
connUnitPortStatCountCI ass2PBSYFrames 1.3.6.1.3.94.4.5.1.23	Read only	The number of times that PBSY was returned to this 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 a Fibre Channel only statistic. Return value - 800000000 <b>NOTE:</b> This object is not supported.
connUnitPortStatCountCI ass2FRJTFrames 1.3.6.1.3.94.4.5.1.24	Read only	The number of times that FRJT was returned to this port as a result of a Class 2 Frame that was rejected by the fabric. This is a Fibre Channel only statistic. Return value - 800000000 <b>NOTE:</b> This object is not supported.
connUnitPortStatCountCI ass2PRJTFrames 1.3.6.1.3.94.4.5.1.25	Read only	The number of times that FRJT was returned to this port as a result of a Class 2 Frame that was rejected at the destination N_Port. This is a Fibre Channel only statistic. Return value - 800000000 <b>NOTE:</b> This object is not supported.
connUnitPortStatCountCI ass3RxFrames 1.3.6.1.3.94.4.5.1.26	Read only	The number of Class 3 Frames received at this port. This is a Fibre Channel only statistic.
connUnitPortStatCountCI ass3TxFrames 1.3.6.1.3.94.4.5.1.27	Read only	The number of Class 3 Frames transmitted out this port. This is a Fibre Channel only statistic. Return value - 800000000 <b>NOTE:</b> This object is not supported.
connUnitPortStatCountCI 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 this port. There is no FBSY or FRJT generated for Class 3 Frames. They are discarded if they cannot be delivered. This is a sum of all Class 3 discards. This is a Fibre Channel only statistic.
connUnitPortStatCountR xMulticastObjects 1.3.6.1.3.94.4.5.1.29	Read only	The number of multicast frames or packets received at this port.
connUnitPortStatCountTx MulticastObjects 1.3.6.1.3.94.4.5.1.30	Read only	The number of multicast frames or packets transmitted out this port.
connUnitPortStatCountR xBroadcastObjects 1.3.6.1.3.94.4.5.1.31	Read only	The number of broadcast frames or packets received at this port. Return value - 800000000 <b>NOTE:</b> This object is not supported.



TABLE 77

Object and OID	Access	Description
connUnitPortStatCountTx BroadcastObjects 1.3.6.1.3.94.4.5.1.32	Read only	The number of broadcast frames or packets transmitted out this port. On a Fibre Channel loop, count only OPN <sub>r</sub> frames generated. Return value - 800000000 <b>NOTE:</b> This object is not supported.
connUnitPortStatCountR xLinkResets 1.3.6.1.3.94.4.5.1.33	Read only	The number of link resets received. This is a Fibre Channel only statistic.
connUnitPortStatCountTx LinkResets 1.3.6.1.3.94.4.5.1.34	Read only	The number of link resets transmitted. This is a Fibre Channel only statistic.
connUnitPortStatCountN umberLinkResets 1.3.6.1.3.94.4.5.1.35	Read only	The number of link resets and LIPs detected at this port. The number times the reset link protocol is initiated. This is a count of the logical resets, a count of the number of primitives. This is a Fibre Channel only statistic. Return value - 800000000 <b>NOTE:</b> This object is not supported.
connUnitPortStatCountR xOfflineSequences 1.3.6.1.3.94.4.5.1.36	Read only	The number of offline primitive OLS received at this port. This is a Fibre Channel only statistic.
connUnitPortStatCountTx OfflineSequences 1.3.6.1.3.94.4.5.1.37	Read only	The number of offline primitive OLS transmitted from this port. This is a Fibre Channel only statistic.
connUnitPortStatCountN umberOfflineSequences 1.3.6.1.3.94.4.5.1.38	Read only	The number of offline primitive sequence received at this port. This is a Fibre Channel only statistic. Return Value - 800000000 <b>NOTE:</b> This object is not supported.
connUnitPortStatCountLi nkFailures 1.3.6.1.3.94.4.5.1.39	Read only	The number of link failures. This count is part of the Link Error Status Block (LESB). (FC-PH 29.8) This is a Fibre Channel only statistic.
connUnitPortStatCountIn validCRC 1.3.6.1.3.94.4.5.1.40	Read only	The number of frames received with invalid CRC. This count is part of the Link Error Status Block (LESB). (FC-PH 29.8) Loop ports should not count CRC errors passing through when monitoring. This is a Fibre Channel only statistic.
connUnitPortStatCountIn validTxWords 1.3.6.1.3.94.4.5.1.41	Read only	The number of invalid transmission words received at this port. This count is part of the Link Error Status Block (LESB). (FC-PH 29.8) This is a Fibre Channel only statistic. This is the sum of encoding in and encoding out error.
connUnitPortStatCountPr imitiveSequenceProtocol Errors 1.3.6.1.3.94.4.5.1.42	Read only	The number of primitive sequence protocol errors detected at this port. This count is part of the Link Error Status Block (LESB). (FC-PH 29.8) This is a Fibre Channel only statistic.
connUnitPortStatCountL ossofSignal 1.3.6.1.3.94.4.5.1.43	Read only	The number of instances of signal loss detected at port. This count is part of the Link Error Status Block (LESB). (FC-PH 29.8) This is a Fibre Channel only statistic.
connUnitPortStatCountL ossofSynchronization 1.3.6.1.3.94.4.5.1.44	Read only	The number of instances of synchronization loss detected at port. This count is part of the Link Error Status Block (LESB). (FC-PH 29.8) This is a Fibre Channel only statistic.

TABLE 77

Object and OID	Access	Description
connUnitPortStatCountInvalidOrderedSets 1.3.6.1.3.94.4.5.1.45	Read only	The number of invalid ordered sets received at port. This count is part of the Link Error Status Block (LESB). (FC-PH 29.8). This is a Fibre Channel only statistic.
connUnitPortStatCountFramesTooLong 1.3.6.1.3.94.4.5.1.46	Read only	The number of frames received at this port where the frame length was greater than what was agreed to in FLOGI/PLOGI. This could be caused by losing the end of frame delimiter. This is a Fibre Channel only statistic.
connUnitPortStatCountFramesTruncated 1.3.6.1.3.94.4.5.1.47	Read only	The number of frames that are less than the Fibre Channel minimum frame size of 36 bytes.
connUnitPortStatCountAddressErrors 1.3.6.1.3.94.4.5.1.48	Read only	The number of frames received with unknown addressing. For example, unknown SID or DID. The SID or DID is not known to the routing algorithm. This is a Fibre Channel only statistic.
connUnitPortStatCountDelimiterErrors 1.3.6.1.3.94.4.5.1.49	Read only	The count of frames that have either a bad start of frame or end of frame.
connUnitPortStatCountEncodingDisparityErrors 1.3.6.1.3.94.4.5.1.50	Read only	The number of encoding errors inside of frames.

## 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.

TABLE 78

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. Implementation of the Connectivity Unit Service Tables group is mandatory for all systems. A Brocade Access Gateway has no name server information; therefore this table is disabled.
connUnitSnsEntry 1.3.6.1.3.94.5.2.1.1	Not accessible	The simple name server (SNS) table for the port represented by 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.

TABLE 78

Object and OID	Access	Description
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). Chassis switches containing the FC4-16IP blade will have eight GbE ports and treated as iSCSI Virtual Initiator. These ports will be part of the name server (NS) database. connUnitTable will display each of these ports as a separate NS entry. Because no user ports are associated to GbE ports/virtual initiators, the connUnitSnsPortIndex for virtual initiators is shown as 999.
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.
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. Hard coded to FF.
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. If the attached device has only the symbolicPortName, the symbolicPortName is shown and the symbolicNodeName appears as "null".
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. If the attached device has only the symbolicNodename, the symbolicNodename is shown and the symbolicPortname appears as "null".

## SNMP trap registration group

TABLE 79

Object and OID	Access	Description
trapMaxClients 1.3.6.1.3.94.2.1	Read only	The maximum number of SNMP trap recipients supported by the connectivity unit. Set to 6.
trapClientCount 1.3.6.1.3.94.2.2	Read only	The current number of rows in the trap table.
trapRegTable 1.3.6.1.3.94.2.3	Not accessible	A table containing a row for each IP address or port number to which traps are sent.
trapRegEntry 1.3.6.1.3.94.2.3.1	Not accessible	IP/port pair for a specific client.
trapRegIpAddress 1.3.6.1.3.94.2.3.1.1	Read only	The IP address of a client registered for traps.
trapRegPort 1.3.6.1.3.94.2.3.1.2	Read only	The UDP port to send traps to for this host. Normally this would be the standard trap port (162). This object is an index and must be specified to create a row in this table. Set to 162.
trapRegFilter 1.3.6.1.3.94.2.3.1.3	Read-write	This value defines the trap severity filter for this trap host. The connUnit sends traps to this host that have a severity level less than or equal to this value. The default value of this object is Warning. The mapping between errorlog severity level and this variable is shown in <a href="#">Table 80</a> . For severity level, refer to “FcEventSeverity” in <a href="#">Table 74</a> on page 203. The values 1, 3, 7, and 10 are not valid for SET operations.
trapRegRowState 1.3.6.1.3.94.2.3.1.4	Read-write	Specifies the state of the row. This entry always returns rowActive and allows for read only. For the state of the row, refer to <a href="#">Table 81</a> .

TABLE 80 trapRegFilter for errorlog severity level

System Error Log ershow command	FA-MIB
none (0)	unknown (1)
Critical (1)	critical (4)
Error (2)	error (5)
Warning (3)	warning (6)
Info (4)	info (8)
Debug (5)	debug (9)

**TABLE 81** trapRegRowState for Read/Write

State	Description (Read)	Description (Write)
rowDestroy (1)	Can never happen.	Remove this row from the table.
rowInactive (2)	Indicates that this row does exist but that traps are not enabled to be sent to the target.	If the row does not exist and the agent allows writes to the trap table, then a new row is created. The values of the optional columns are set to default values. Traps are not enabled to be sent to the target. If the row already exists, then traps are disabled from being sent to the target.
rowActive (3)	Indicates that this row exists and that traps are enabled to be sent to the target.	If the row does not exist and the agent allows writes to the trap table, then a new row is created. The values of the optional columns are set to default values. Traps are enabled to be sent to the target. If the row already exists, then traps are enabled to be sent to the target.

## Revision number scalar

**TABLE 82**

Object and OID	Access	Description
revisionNumber 1.3.6.1.3.94.3	Read only	<p>This is the revision number for this MIB. The format of the revision value is as follows:</p> <ul style="list-style-type: none"> <li>0 = High order major revision number</li> <li>1 = Low order major revision number</li> <li>2 = High order minor revision number</li> <li>3 = Low order minor revision number</li> </ul> <p>The value is stored as an ASCII value. The following is the current value of this object.</p> <ul style="list-style-type: none"> <li>0 = 0</li> <li>1 = 3</li> <li>2 = 0</li> <li>3 = 0</li> </ul> <p>This defines a revision of 03.00. Set to 0300.</p>

## Unsupported tables

The Connectivity Unit Port Statistics Fabric Table (connUnitPortStatTable) is supported in FOS v2.6.1, v5.x, and v6.0 and later versions.

Brocade does not support the following:

- Connectivity Unit Port Statistics Hub Table
- Connectivity Unit Port Statistics SCSI Table
- Connectivity Unit Port Statistics LAN/WAN Table

## FibreAlliance MIB traps

TABLE 83

Trap name and OID	Variables	Description
connUnitStatusChange 1.3.6.1.3.94.0.1	connUnitStatus connUnitState	<p>The overall status of the connectivity unit has changed. Recommended severity level (for filtering) - alert. Generated when connUnitStatus changes. For a description of how the value is calculated, refer to “connUnitStatus” on page 207. Sample trap output for Fabric OS v6.1.0.</p> <pre>connUnitStatus.16.0.0.96.105.144.109.136.0.0.0.0.0.0.0.1 = warning(4) connUnitState.16.0.0.96.105.144.109.136.0.0.0.0.0.0.0.1 = offline(3)</pre> <p>For information on how the switch status is determined, refer to the <i>Fabric Watch Administrator's Guide</i>.</p>
connUnitDeletedTrap 1.3.6.1.3.94.0.3	connUnitId	<p>A connUnit has been deleted from this agent. Recommended severity level (for filtering) - warning. Not implemented.</p>
connUnitEventTrap 1.3.6.1.3.94.0.4	connUnitEventId connUnitEventType connUnitEventObject connUnitEventDescr	<p>An event has been generated by the connectivity unit. Recommended severity level (for filtering) - info. Sample trap output for Fabric OS v6.1.0.</p> <pre>connUnitEventId.16.0.0.96.105.144.109.136.0.0.0.0.0.0.0.354 = 354 connUnitEventType.16.0.0.96.105.144.109.136.0.0.0.0.0.0.0.354 = other(2) connUnitEventObject.16.0.0.96.105.144.109.136.0.0.0.0.0.0.0.354 = null connUnitEventDescr.16.0.0.96.105.144.109.136.0.0.0.0.0.0.0.354 = FW-1425</pre> <p>Switch status changed from MARGINAL to HEALTHY.</p> <p>For more information, refer to “swEventTrap”.</p>

TABLE 83

Trap name and OID	Variables	Description
connUnitSensorStatusChange 1.3.6.1.3.94.0.5	connUnitSensorStatus	<p>Overall status of the connectivity unit has changed. This trap is generated whenever the status of the sensors (like fan, power supply, temperature) present in the connectivity unit changes.</p> <p>Sample trap output for Fabric OS v6.1.0.</p> <pre>connUnitSensorStatus.16.0.0.96.105.144.109.136.0.0.0.0.0.0.0.0.0.7 = failed(5)</pre> <p>For information on configuring thresholds that generate these traps, refer to the <i>Fabric Watch Administrator's Guide</i>.</p>
connUnitPortStatusChange 1.3.6.1.3.94.0.6	connUnitPortStatus connUnitPortState	<p>Overall status of the connectivity unit changed. Recommended severity level (for filtering)- alert.</p> <p>This trap sends the instance of connUnitPortName as part of the trap; the instance string is NULL, if the port name is not defined for the specified port.</p> <p>Sample trap output for Fabric OS v6.1.0.</p> <pre>connUnitPortStatus.16.0.0.96.105.144.109.136.0.0.0.0.0.0.0.0.0.29 = ready(3) connUnitPortState.16.0.0.96.105.144.109.136.0.0.0.0.0.0.0.0.0.29 = online(2) connUnitPortName.16.0.0.96.105.144.109.136.0.0.0.0.0.0.0.0.0.29 = test</pre> <p>For more information, refer to "<a href="#">swFCPortScn</a>".</p>

## 9 FibreAlliance MIB traps



# FibreAlliance Extension MIB Objects

---

## In this chapter

- [FibreAlliance extension MIB overview](#) . . . . . 237
- [SFP statistics table](#) . . . . . 239
- [Port configuration table for Fabric Assigned PWWN feature](#) . . . . . 239
- [Port configuration table for encryption or compression feature](#) . . . . . 240

## FibreAlliance extension MIB overview

The MIB module is an extension for FA MIB. The descriptions of each of the MIB variables in this chapter come directly from the FA-EXT-MIB itself.

---

### NOTE

The port swap feature will not have any effect on SNMP for FA-EXT-MIB.

---

[Figure 76](#) and [Figure 77](#) depict the organization and structure of the FA-EXT-MIB file system.

```

- iso
  - org
    - dod
      - internet
        - private
          - enterprises
            - bcsi
              - commDev
                - fibreChannel
                  - fcSwitch
                    - sw
                      - faExt
                        - swSfpStatTable
                        - swFapwnFeature
                        - swPortConfigTable
                        - swConnUnitPortTable

```

**FIGURE 76** FA-EXT-MIB overall tree structure

```

- faExt (1.3.6.1.4.1.1588.2.1.1.1.28)
  - swSfpStatTable (1.3.6.1.4.1.1588.2.1.1.1.28.1)
    - swSfpStatEntry 1.3.6.1.4.1.1588.2.1.1.1.28.1.1
      - swSfpTemperature 1.3.6.1.4.1.1588.2.1.1.1.28.1.1.1
      - swSfpVoltage 1.3.6.1.4.1.1588.2.1.1.1.28.1.1.2
      - swSfpCurrent 1.3.6.1.4.1.1588.2.1.1.1.28.1.1.3
      - swSfpRxPower 1.3.6.1.4.1.1588.2.1.1.1.28.1.1.4
      - swSfpTxPower 1.3.6.1.4.1.1588.2.1.1.1.28.1.1.5
      - swSfpPoweronHrs 1.3.6.1.4.1.1588.2.1.1.1.28.1.1.6
      - swSfpUnitId 1.3.6.1.4.1.1588.2.1.1.1.28.1.1.7
    - swFapwwnFeature 1.3.6.1.4.1.1588.2.1.1.1.28.2
      - swPortFapwwnConfig Table 1.3.6.1.4.1.1588.2.1.1.1.28.2.1
        - swPortFapwwnConfigEntry 1.3.6.1.4.1.1588.2.1.1.1.28.2.1.1
          - swPortFapwwnConfigEnable 1.3.6.1.4.1.1588.2.1.1.1.28.2.1.1.1
          - swPortFapwwnConfigFapwwn 1.3.6.1.4.1.1588.2.1.1.1.28.2.1.1.2
          - swPortFapwwnConfigType 1.3.6.1.4.1.1588.2.1.1.1.28.2.1.1.3
        - swPortConfigTable 1.3.6.1.4.1.1588.2.1.1.1.28.3
          - swPortConfigEntry 1.3.6.1.4.1.1588.2.1.1.1.28.3.1
            - swPortEncrypt 1.3.6.1.4.1.1588.2.1.1.1.28.3.1.1
            - swPortCompression 1.3.6.1.4.1.1588.2.1.1.1.28.3.1.2
            - swPortCipherKeySize 1.3.6.1.4.1.1588.2.1.1.1.28.3.1.3
            - swPortCipherMode 1.3.6.1.4.1.1588.2.1.1.1.28.3.1.4
          - swConnUnitPortTable 1.3.6.1.4.1.1588.2.1.1.1.28.4
            - swConnUnitPortEntry 1.3.6.1.4.1.1588.2.1.1.1.28.4.1
              - swConnUnitPortCapableSpeeds 1.3.6.1.4.1.1588.2.1.1.1.28.4.1.1
              - swConnUnitPortSpeedMode 1.3.6.1.4.1.1588.2.1.1.1.28.4.1.2

```

FIGURE 77 FA-EXT-MIB hierarchy

## Textual conventions for FA-EXT-MIB

Table 84 lists the textual conventions used for FA-EXT-MIB.

TABLE 84 Textual conventions for FA-EXT-MIB

Type definition	Value	Description
FapwwnType	Integer	Represents the type of FAPWWN assigned to the port. 1 unknown 2 auto 3 userConfigured
CiperMode	Integer	Represents the cipher mode. 1 none 2 allFrames 3 fcpAndNonFCP 4 onlyFCP
EncryptCompressStatus	Integer	Represents the status of encryption or compression feature on a port. 1 enabled 2 disabled 3 unknown

## SFP statistics table

TABLE 85

Object and OID	Access	Description
swSfpStatTable 1.3.6.1.4.1.1588.2.1.1.1.28.1	Not accessible	This table represents the diagnostic statistics of Small Form-factor Pluggable (SFP) optical transceivers.
swSfpStatEntry 1.3.6.1.4.1.1588.2.1.1.1.28.1.1	Not accessible	An entry containing the diagnostic statistics of SFPs.
swSfpTemperature 1.3.6.1.4.1.1588.2.1.1.1.28.1.1.1	Read only	This object identifies the temperature of the SFP.
swSfpVoltage 1.3.6.1.4.1.1588.2.1.1.1.28.1.1.2	Read only	This object identifies the voltage of the SFP.
swSfpCurrent 1.3.6.1.4.1.1588.2.1.1.1.28.1.1.3	Read only	This object identifies the current of the SFP.
swSfpRxPower 1.3.6.1.4.1.1588.2.1.1.1.28.1.1.4	Read only	This object identifies the received optical power of the SFP.
swSfpTxPower 1.3.6.1.4.1.1588.2.1.1.1.28.1.1.5	Read only	This object identifies the transmitted optical power of the SFP.
swSfpPoweronHrs 1.3.6.1.4.1.1588.2.1.1.1.28.1.1.6	Read only	This object identifies the power on hours of the SFP. This is applicable only to 16 Gb SFPs.
swSfpUnitId 1.3.6.1.4.1.1588.2.1.1.1.28.1.1.7	Read only	This object identifies the unit ID of the SFP. This is applicable only to the Quad Small Form-factor Pluggable (QSFP).

## Port configuration table for Fabric Assigned PWWN feature

TABLE 86

Object and OID	Access	Description
swFapwwnFeature 1.3.6.1.4.1.1588.2.1.1.1.28.2	Not accessible	The OID sub-tree for Fabric Assigned PWWN (FAPWWN) feature.
swPortFapwwnConfigTable 1.3.6.1.4.1.1588.2.1.1.1.28.2.1	Not accessible	The table represents the FAPWWN configuration of ports.
swPortFapwwnConfigEntry 1.3.6.1.4.1.1588.2.1.1.1.28.2.1.1	Not accessible	An entry in this table that represents the FAPWWN configuration of ports.

## 10 Port configuration table for encryption or compression feature

**TABLE 86**

Object and OID	Access	Description
swPortFapwwnConfigEnable 1.3.6.1.4.1.1588.2.1.1.1.28.2.1.1.1	Read only	This object indicates whether or not the FAPWWN is enabled on the port: <ul style="list-style-type: none"> <li>• true (1)</li> <li>• false (2)</li> </ul>
swPortFapwwnConfigFapwwn 1.3.6.1.4.1.1588.2.1.1.1.28.2.1.1.2	Read only	The object represents the FAPWWN assigned to the port. It returns the WWN irrespective of the state of the FAPWWN.
swPortFapwwnConfigType 1.3.6.1.4.1.1588.2.1.1.1.28.2.1.1.3	Read only	The object represents the type of FAPWWN. Valid values: <ul style="list-style-type: none"> <li>• unknown (1)</li> <li>• auto (2)</li> <li>• userconfigured (3)</li> </ul>

## Port configuration table for encryption or compression feature

**TABLE 87**

Object and OID	Access	Description
swPortConfigTable 1.3.6.1.4.1.1588.2.1.1.1.28.3	Not accessible	This table represents the configuration of the encryption or compression feature on a port.
swPortConfigEntry 1.3.6.1.4.1.1588.2.1.1.1.28.3.1	Not accessible	An entry in the table that represents the configuration of the encryption or compression feature on a port.
swPortEncrypt 1.3.6.1.4.1.1588.2.1.1.1.28.3.1.1	Read only	The object represents the encryption status on a port. Valid values: <ul style="list-style-type: none"> <li>• enabled - The port is enabled for encryption.</li> <li>• disabled - The port is not enabled for encryption.</li> </ul>
swPortCompression 1.3.6.1.4.1.1588.2.1.1.1.28.3.1.2	Read only	The object represents the compression status on a port. Valid values: <ul style="list-style-type: none"> <li>• enabled - The port is enabled for compression.</li> <li>• disabled - The port is not enabled for compression.</li> </ul>
swPortCipherKeySize 1.3.6.1.4.1.1588.2.1.1.1.28.3.1.3	Read only	The object represents the cipher key size. Fabric OS supports 256 bytes per key.
swPortCipherMode 1.3.6.1.4.1.1588.2.1.1.1.28.3.1.4	Read only	The object represents the cipher mode. Valid values: <ul style="list-style-type: none"> <li>• none (1)</li> <li>• allFrames (2)</li> <li>• fcpAndNonFCP(3)</li> <li>• onlyFCP (4)</li> </ul>

## Switch connectivity unit port table

TABLE 88

Object and OID	Access	Description
swConnUnitPortTable 1.3.6.1.4.1.1588.2.1.1.1.28.4	Not accessible	This table represents the port entry of the connectivity unit.
swConnUnitPortEntry 1.3.6.1.4.1.1588.2.1.1.1.28.4.1	Not accessible	This represents the port entry of the connectivity unit.
swConnUnitPortCapableSpeeds 1.3.6.1.4.1.1588.2.1.1.1.28.4.2	Read only	This represents the capable port speed of the connectivity unit.
swConnUnitPortSpeedMode 1.3.6.1.4.1.1588.2.1.1.1.28.4.3	Read only	This represents the configured speed mode of the particular port.

## 10 Switch connectivity unit port table

# FCIP MIB Objects

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- [FCIP entity instance table](#) . . . . . 245
- [FCIP link table](#) . . . . . 246
- [FCIP TCP connection table](#) . . . . . 247
- [FCIP extended link table](#) . . . . . 247
- [FCIP connection statistics table](#) . . . . . 249

## FCIP MIB overview

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

The following FCIP MIB tables are supported.

- FCIP entity instance table
- FCIP link table
- FCIP TCP connection table
- FCIP extended link table
- FCIP connection statistics table

## FCIP MIB system organization of MIB objects

[Figure 78](#) through [Figure 83](#) depict the high level organization of the FCIP MIB relevant to the supported tables. For a description of the entire MIB, refer to RFC4044.

# 11 FCIP MIB overview

```
- iso
  - org
    - dod
      - internet
        - experimental
          - mgmt
            - mib-2
              - fcipMIB 1.3.6.1.2.1.224
                - fcipObjects
                  - fcipconfig
                    + fcipEntityInstanceTable .4
                    + fcipLinkTable .5
                    + fcipTcpConnTable .6
```

**FIGURE 78** High level organization

```
- fcipEntityInstanceEntry 1.3.6.1.2.1.224.1.1.4.1
  fcipEntityId 1.3.6.1.2.1.224.1.1.4.1.1
  fcipEntityAddressType 1.3.6.1.2.1.224.1.1.4.1.3
  fcipEntityAddress 1.3.6.1.2.1.224.1.1.4.1.4
  fcipEntityTcpConnPort 1.3.6.1.2.1.224.1.1.4.1.5
  fcipEntitySeqNumWrap 1.3.6.1.2.1.224.1.1.4.1.6
  fcipEntityPHBSupport 1.3.6.1.2.1.224.1.1.4.1.7
  fcipEntityStatus 1.3.6.1.2.1.224.1.1.4.1.8
```

**FIGURE 79** fcipEntityInstanceTable hierarchy

```
- fcipLinkEntry 1.3.6.1.2.1.224.1.1.5.1
  fcipLinkIndex 1.3.6.1.2.1.224.1.1.5.1.1
  fcipLinkIfIndex 1.3.6.1.2.1.224.1.1.5.1.2
  fcipLinkCost 1.3.6.1.2.1.224.1.1.5.1.3
  fcipLinkLocalFcipEntityMode 1.3.6.1.2.1.224.1.1.5.1.4
  fcipLinkLocalFcipEntityAddressType 1.3.6.1.2.1.224.1.1.5.1.5
  fcipLinkLocalFcipEntityAddress 1.3.6.1.2.1.224.1.1.5.1.6
  fcipLinkRemFcipEntityWWN 1.3.6.1.2.1.224.1.1.5.1.7
  fcipLinkRemFcipEntityId 1.3.6.1.2.1.224.1.1.5.1.8
  fcipLinkRemFcipEntityAddressType 1.3.6.1.2.1.224.1.1.5.1.9
  fcipLinkRemFcipEntityAddress 1.3.6.1.2.1.224.1.1.5.1.10
  fcipLinkStatus 1.3.6.1.2.1.224.1.1.5.1.11
  fcipLinkCreateTime 1.3.6.1.2.1.224.1.1.5.1.12
```

**FIGURE 80** fcipLinkTable hierarchy

```
- fcipTcpConnEntry 1.3.6.1.2.1.224.1.1.6.1
  fcipTcpConnLocalPort 1.3.6.1.2.1.224.1.1.6.1.1
  fcipTcpConnRemPort 1.3.6.1.2.1.224.1.1.6.1.2
  fcipTcpConnRWSIZE 1.3.6.1.2.1.224.1.1.6.1.3
  fcipTcpConnMSS 1.3.6.1.2.1.224.1.1.6.1.4
```

**FIGURE 81** fcipTcpConnTable hierarchy



```

- fcipExtendedLinkEntry 1.3.6.1.4.1.1588.4.1.1
  fcipExtendedLinkIfIndex 1.3.6.1.4.1.1588.4.1.1.1
  fcipExtendedLinkTcpRetransmits 1.3.6.1.4.1.1588.4.1.1.2
  fcipExtendedLinkTcpDropped Packets 1.3.6.1.4.1.1588.4.1.1.3
  fcipExtendedLinkCompressionRatio 1.3.6.1.4.1.1588.4.1.1.4
  fcipExtendedLinkTcpSmoothedRTT 1.3.6.1.4.1.1588.4.1.1.5
  fcipExtendedLinkRawBytes 1.3.6.1.4.1.1588.4.1.1.6
  fcipExtendedLinkCompressedBytes 1.3.6.1.4.1.1588.4.1.1.7
  fcipExtendedLinkConnectedCount 1.3.6.1.4.1.1588.4.1.1.8
  fcipExtendedLinkRtxRtxTO 1.3.6.1.4.1.1588.4.1.1.9
  fcipExtendedLinkRtxDupAck 1.3.6.1.4.1.1588.4.1.1.10
  fcipExtendedLinkDupAck 1.3.6.1.4.1.1588.4.1.1.11
  fcipExtendedLinkRtt 1.3.6.1.4.1.1588.4.1.1.12
  fcipExtendedLinkOoo 1.3.6.1.4.1.1588.4.1.1.13
  fcipExtendedLinkSlowStarts 1.3.6.1.4.1.1588.4.1.1.14

```

**FIGURE 82** fcipExtendedLinkTable hierarchy

```

- fcipConnStatsEntry 1.3.6.1.4.1.1588.4.2.1
  xfcipEntityId 1.3.6.1.4.1.1588.4.2.1.1
  xfcipLinkIfIndex 1.3.6.1.4.1.1588.4.2.1.2
  xfcipLinkIndex 1.3.6.1.4.1.1588.4.2.1.3
  xfcipExtendedLinkTcpRetransmits 1.3.6.1.4.1.1588.4.2.1.4
  xfcipExtendedLinkTcpDroppedPackets 1.3.6.1.4.1.1588.4.2.1.5
  xfcipExtendedLinkCompressionRatio 1.3.6.1.4.1.1588.4.2.1.6
  xfcipExtendedLinkTcpSmoothedRTT 1.3.6.1.4.1.1588.4.2.1.7
  xfcipExtendedLinkRawBytes 1.3.6.1.4.1.1588.4.2.1.8

```

**FIGURE 83** fcipConnStatsTable hierarchy

## FCIP entity instance table

**TABLE 89**

Object and OID	Access	Description
fcipEntityInstanceTable 1.3.6.1.2.1.224.1.1.4	Not accessible	The fcipEntityInstancetable has an entry for each configured IP interface.
fcipEntityInstanceEntry 1.3.6.1.2.1.224.1.1.4.1	Not accessible	An fcipEntityInstanceEntry is an entry in the fcipEntityInstanceTable that represents an IP interface configured on a 7500 or on a 7800 or on an FX8-24 or an FR4-18i blade. There is an entry for each configured IP interface.
fcipEntityId 1.3.6.1.2.1.224.1.1.4.1.1	Not accessible	The FCIP entity identifier.
fcipEntityName 1.3.6.1.2.1.224.1.1.4.1.2	Read create	An administratively assigned name for the FCIP entity. Example for Brocade 7500 or FR4-18i router blade: <ul style="list-style-type: none"> <li>• ipif 0 in FCIP GbE port 0/ge0</li> </ul> Example for Brocade 7800 Extension Switch or FX8-24 DCX Extension Blade: <ul style="list-style-type: none"> <li>• Circuit 0 in FCIP VE port 12</li> </ul>
fcipEntityType 1.3.6.1.2.1.224.1.1.4.1.3	Read create	The type of Internet address by which the entity is reachable. Only address types IPv4 and IPv6 are supported.

# 11 FCIP link table

**TABLE 89**

Object and OID	Access	Description
fcipEntityAddress 1.3.6.1.2.1.224.1.1.4.1.4	Read create	The Internet address for the entity, if configured. The format of this address is determined by the value of the fcipEntityAddressType object.
fcipEntityTcpConnPort 1.3.6.1.2.1.224.1.1.4.1.5	Read create	A TCP port other than the FCIP Well-Known port on which the FCIP entity listens for new TCP connection requests. It contains the value zero (0) if the FCIP Entity only listens on the Well-Known port. The default is 0. Not used.
fcipEntitySeqNumWrap 1.3.6.1.2.1.224.1.1.4.1.6	Read only	An indication of whether the FCIP Entity supports protection against sequence number wrap Not used.
fcipEntityPHBSupport 1.3.6.1.2.1.224.1.1.4.1.7	Read only	An indication of whether the FCIP Entity supports PHB IP quality of service (QoS). Not Used.
fcipEntityStatus 1.3.6.1.2.1.224.1.1.4.1.8	Read create	This object specifies the operational status of the row. This object will support "read-only" access and the status will be "active" for all entries.

## FCIP link table

**TABLE 90**

Object and OID	Access	Description
fcipLinkTable 1.3.6.1.2.1.224.1.1.5	Not accessible	This table contains information about FCIP links that exist on the device. There is an entry for each FCIP tunnel. The fcipLinkIndex is used to index the FCIP extended link table, along with the fcipEntryId from the FCIP entity instance table (fcipEntityInstanceTable).
fcipLinkEntry 1.3.6.1.2.1.224.1.1.5.1	Not accessible	A conceptual row of the FCIP link table containing information about a particular FCIP link. The values of the read-create objects in this table are persistent across system restarts.
fcipLinkIndex 1.3.6.1.2.1.224.1.1.5.1.1	Not accessible	An integer that uniquely identifies one FCIP link within an FCIP entity.
fcipLinkIfIndex 1.3.6.1.2.1.224.1.1.5.1.2	Read only	The ifIndex value of the virtual interface corresponding to the FCIP Link running over TCP/IP. This is the same as the ifIndex value in the ifTable for the ifType of fcipLink.
fcipLinkCost 1.3.6.1.2.1.224.1.1.5.1.3	Read create	The FSPF cost associated with this FCIP Link. The default is 0.
fcipLinkLocalFcipEntityMode 1.3.6.1.2.1.224.1.1.5.1.4	Read only	The mode of the local end of the FCIP link.
fcipLinkLocalFcipEntityAddressType 1.3.6.1.2.1.224.1.1.5.1.5	Read create	The type of Internet address contained in the corresponding instance of fcipLinkLocalFcipEntityAddress. Only address types IPv4 and IPv6 are supported.
fcipLinkLocalFcipEntityAddress 1.3.6.1.2.1.224.1.1.5.1.6	Read create	The Internet address for the local end of this FCIP Link. The format of this object is determined by the value of the fcipLinkLocalFcipEntityAddressType object.

TABLE 90

Object and OID	Access	Description
fcipLinkRemFcipEntityWWN 1.3.6.1.2.1.224.1.1.5.1.7	Read create	The World Wide Name of the remote FC Fabric Entity.
fcipLinkRemFcipEntityId 1.3.6.1.2.1.224.1.1.5.1.8	Read create	The identifier for the remote FCIP entity.
fcipLinkRemFcipEntityAddressType 1.3.6.1.2.1.224.1.1.5.1.9	Read create	The type of Internet address contained in the corresponding instance of fcipLinkRemFcipEntityAddress. Only address types IPv4 and IPv6 are supported.
fcipLinkRemFcipEntityAddress 1.3.6.1.2.1.224.1.1.5.1.10	Read create	The Internet address for the remote end of this FCIP Link. The format of this object is determined by the value of the fcipLinkRemFcipEntityAddressType object.
fcipLinkStatus 1.3.6.1.2.1.224.1.1.5.1.11	Read create	This object specifies the operational status of the row and will support only "read-only" access.
fcipLinkCreateTime 1.3.6.1.2.1.224.1.1.5.1.12	Read only	The value of sysUpTime when this entry was last created.

## FCIP TCP connection table

This table is supported only for Brocade 7500 and FR4-18i router blade.

TABLE 91

Object and OID	Access	Description
fcipTcpConnTable 1.3.6.1.2.1.224.1.1.6	Not accessible	This table contains information about existing TCP connections. Each FCIP link within an FCIP entity manages one or more TCP connections. The FCIP entity employs a Data Engine for each TCP connection for handling FC frame encapsulation, de-encapsulation, and transmission of FCIP frames on the connection.
fcipTcpConnEntry 1.3.6.1.2.1.224.1.1.6.1	Not accessible	A conceptual row of the FCIP TCP Connection table containing TCP information about a particular connection.
fcipTcpConnLocalPort 1.3.6.1.2.1.224.1.1.6.1.1	Not accessible	The local port number for this TCP connection.
fcipTcpConnRemPort 1.3.6.1.2.1.224.1.1.6.1.2	Not accessible	The remote port number for this TCP connection.
fcipTcpConnRWSIZE 1.3.6.1.2.1.224.1.1.6.1.3	Read only	The default maximum TCP Receiver Window size for this TCP connection.
fcipTcpConnMSS 1.3.6.1.2.1.224.1.1.6.1.4	Read only	The TCP Maximum Segment Size (MSS) for this TCP connection.

## FCIP extended link table

The FCIP extended link table contains statistical information about FCIP tunnel transport operation. The information stored in this table is returned in response to **portshow fciptunnel** commands.

# 11 FCIP extended link table

**TABLE 92**

Object and OID	Access	Description
fcipExtendedLinkTable 1.3.6.1.4.1.1588.4.1	Not accessible	This table contains statistical information about FCIP tunnel compression, retransmission, packet loss, and latency details. The information stored in this table is returned in response to <b>portshow fciptunnel</b> commands.
fcipExtendedLinkEntry 1.3.6.1.4.1.1588.4.1.1	Not accessible	A conceptual row of the FCIP extended link table containing additional statistics.
fcipExtendedLinkIfIndex 1.3.6.1.4.1.1588.4.1.1.1	Read only	The ifIndex value of the virtual interface corresponding to the FCIP link running over TCP/IP.
fcipExtendedLinkTcpRetransmits 1.3.6.1.4.1.1588.4.1.1.2	Read only	A counter containing the number of retransmitted segments for an FC data transfer over an FCIP tunnel.
fcipExtendedLinkTcpDroppedPackets 1.3.6.1.4.1.1588.4.1.1.3	Read only	A counter containing the number of packets lost for FC control traffic and data transfer over an FCIP tunnel. <b>NOTE:</b> This object is not supported.
fcipExtendedLinkCompressionRatio 1.3.6.1.4.1.1588.4.1.1.4	Read only	The ratio between compressed bytes and raw bytes over an FCIP tunnel.
fcipExtendedLinkTcpSmoothedRTT 1.3.6.1.4.1.1588.4.1.1.5	Read only	The round trip time (latency) in milliseconds for a transfer over an FCIP tunnel. <b>NOTE:</b> This object is not supported.
fcipExtendedLinkRawBytes 1.3.6.1.4.1.1588.4.1.1.6	Read only	The total number of raw bytes sent or received.
fcipExtendedLinkCompressedBytes 1.3.6.1.4.1.1588.4.1.1.7	Read only	The total number of compressed bytes received over an FCIP tunnel.
fcipExtendedLinkConnectedCount 1.3.6.1.4.1.1588.4.1.1.8	Read only	The total number of TCP session connection.
fcipExtendedLinkRtxRtxTO 1.3.6.1.4.1.1588.4.1.1.9	Read only	A counter containing retransmit packets due to timeout. <b>NOTE:</b> This object is not supported.
fcipExtendedLinkRtxDupAck 1.3.6.1.4.1.1588.4.1.1.10	Read only	A counter containing retransmit packets due to duplicate acknowledgement. <b>NOTE:</b> This object is not supported.
fcipExtendedLinkDupAck 1.3.6.1.4.1.1588.4.1.1.11	Read only	A counter containing duplicate acknowledgement packets. <b>NOTE:</b> This object is not supported.
fcipExtendedLinkRtt 1.3.6.1.4.1.1588.4.1.1.12	Read only	The round trip time in milliseconds.
fcipExtendedLinkOoo 1.3.6.1.4.1.1588.4.1.1.13	Read only	A counter containing TCP out-of-order.
fcipExtendedLinkSlowStarts 1.3.6.1.4.1.1588.4.1.1.14	Read only	A counter containing slow starts.

## FCIP connection statistics table

TABLE 93

Object and OID	Access	Description
fcipConnStatsTable 1.3.6.1.4.1.1588.4.2	Not accessible	The table contains statistical information about FCIP tunnel compression, retransmission, packet loss, and latency details. This table also gives details about FCIP circuit statistics for the Brocade 7800 Extension Switch or FX8-24 DCX Extension Blade. This table is not supported for the Brocade 7500 or FR4-18i router blade. Corresponding CLI command: <code>portshow fcipcircuit -t/-q -perf</code>
fcipConnStatsEntry 1.3.6.1.4.1.1588.4.2.1	Not accessible	A conceptual row of the FCIP Extended Link Table containing additional statistics.
xfcipEntityId 1.3.6.1.4.1.1588.4.2.1.1	Read only	The FCIP entity identifier.
xfcipLinkIfIndex 1.3.6.1.4.1.1588.4.2.1.2	Not accessible	The ifIndex value of the virtual interface corresponding to the FCIP Link running over TCP/IP.
xfcipLinkIndex 1.3.6.1.4.1.1588.4.2.1.3	Read only	An arbitrary integer that uniquely identifies one FCIP link within an FCIP entity.
xfcipExtendedLinkTcpRetransmits 1.3.6.1.4.1.1588.4.2.1.4	Read only	The number of segments retransmitted.
xfcipExtendedLinkTcpDroppedPackets 1.3.6.1.4.1.1588.4.2.1.5	Read only	The number of TCP packets dropped. <b>NOTE:</b> This object is not supported.
xfcipExtendedLinkCompressionRatio 1.3.6.1.4.1.1588.4.2.1.6	Read only	The compression ratio.
xfcipExtendedLinkTcpSmoothedRTT 1.3.6.1.4.1.1588.4.2.1.7	Read only	The round trip time (latency) in milliseconds.
xfcipExtendedLinkRawBytes 1.3.6.1.4.1.1588.4.2.1.8	Read only	The total number of raw bytes sent or received.
xfcipExtendedLinkCompressedBytes 1.3.6.1.4.1.1588.4.2.1.9	Read only	The total number of compressed bytes sent or received.

**11** FCIP connection statistics table

# iSCSI MIB Objects

---

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## iSCSI MIB overview

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

The following iSCSI MIB tables are supported:

- iSCSI Instance Attributes table
- iSCSI Node Attributes table
- iSCSI Session Attributes table
- iSCSI Session Statistics table
- iSCSI Connection Attributes table

---

**NOTE**

iSCSI traps are not supported.

---

## iSCSI MIB system organization of MIB objects

[Figure 84](#) through [Figure 89](#) depict the high level organization of the iSCSI MIB relevant to the supported tables. For a description of the entire MIB, refer to RFC4544.

```

- iso
  - org
    - dod
      - internet
        - experimental
          - mgmt
            - mib-2
              - iscsimibmodule
                - iscsiObjects
                  - iscsiInstance
                    + iscsiInstanceAttributesTable
                  - iscsiPortal
                  - iscsiTargetPortal
                  - iscsiInitiatorPortal
                  - iscsiNode
                    + iscsiNodeAttributesTable
                  - iscsiTarget
                  - iscsiTgtAuthorization
                  - iscsiInitiator
                  - iscsiIntrAuthorization
                  - iscsiSession
                    + iscsiSessionAttributesTable
                    + iscsiSessionStatsTable
                  - iscsiConnection
                    + iscsiConnectionAttributesTable

```

**FIGURE 84** High level organization

```

- iscsiInstanceAttributesEntry
  iscsiInstIndex 1.3.6.1.2.1.142.1.1.1.1.1
  iscsiInstDescr 1.3.6.1.2.1.142.1.1.1.1.2
  iscsiInstVersionMin 1.3.6.1.2.1.142.1.1.1.1.3
  iscsiInstVersionMax 1.3.6.1.2.1.142.1.1.1.1.4
  iscsiInstVendorID 1.3.6.1.2.1.142.1.1.1.1.5
  iscsiInstVendorVersion 1.3.6.1.2.1.142.1.1.1.1.6
  iscsiInstPortalNumber 1.3.6.1.2.1.142.1.1.1.1.7
  iscsiInstNodeNumber 1.3.6.1.2.1.142.1.1.1.1.8
  iscsiInstSessionNumber 1.3.6.1.2.1.142.1.1.1.1.9
  iscsiInstSsnFailures 1.3.6.1.2.1.142.1.1.1.1.10
  iscsiInstLastSsnFailureType 1.3.6.1.2.1.142.1.1.1.1.11
  iscsiInstLastSsnRmtNodeName 1.3.6.1.2.1.142.1.1.1.1.12
  iscsiInstDiscontinuityTime 1.3.6.1.2.1.142.1.1.1.1.13

```

**FIGURE 85** iscsiInstanceAttributesTable hierarchy



```

- iscsiNodesAttributesEntry
  iscsiNodeIndex 1.3.6.1.2.1.142.1.1.5.1.1.1
  iscsiNodeName 1.3.6.1.2.1.142.1.1.5.1.1.2
  iscsiNodeAlias 1.3.6.1.2.1.142.1.1.5.1.1.3
  iscsiNodeRoles 1.3.6.1.2.1.142.1.1.5.1.1.4
  iscsiNodeTransportType 1.3.6.1.2.1.142.1.1.5.1.1.5
  iscsiNodeInitialR2T 1.3.6.1.2.1.142.1.1.5.1.1.6
  iscsiNodeImmediateData 1.3.6.1.2.1.142.1.1.5.1.1.7
  iscsiNodeMaxOutstandingR2T 1.3.6.1.2.1.142.1.1.5.1.1.8
  iscsiNodeFirstBurstLength 1.3.6.1.2.1.142.1.1.5.1.1.9
  iscsiNodeMaxBurstLength 1.3.6.1.2.1.142.1.1.5.1.1.10
  iscsiNodeMaxConnections 1.3.6.1.2.1.142.1.1.5.1.1.11
  iscsiNodeDataSequenceInOrder 1.3.6.1.2.1.142.1.1.5.1.1.12
  iscsiNodeDataPDUInOrder 1.3.6.1.2.1.142.1.1.5.1.1.13
  iscsiNodeDefaultTime2Wait 1.3.6.1.2.1.142.1.1.5.1.1.14
  iscsiNodeDefaultTime2Retain 1.3.6.1.2.1.142.1.1.5.1.1.15
  iscsiNodeErrorRecoveryLevel 1.3.6.1.2.1.142.1.1.5.1.1.16
  iscsiNodeDiscontinuityTime 1.3.6.1.2.1.142.1.1.5.1.1.17
  iscsiNodeStorageType 1.3.6.1.2.1.142.1.1.5.1.1.18

```

**FIGURE 86** iscsiNodeAttributesTable hierarchy

```

- iscsiSessionsAttributesEntry
  iscsiSsnNodeIndex 1.3.6.1.2.1.142.1.1.10.1.1.1
  iscsiSsnIndex 1.3.6.1.2.1.142.1.1.10.1.1.2
  iscsiSsnDirection 1.3.6.1.2.1.142.1.1.10.1.1.3
  iscsiSsnInitiatorName 1.3.6.1.2.1.142.1.1.10.1.1.4
  iscsiSsnTargetName 1.3.6.1.2.1.142.1.1.10.1.1.5
  iscsiSsnTSIH 1.3.6.1.2.1.142.1.1.10.1.1.6
  iscsiSsnISID 1.3.6.1.2.1.142.1.1.10.1.1.7
  iscsiSsnInitiatorAlias 1.3.6.1.2.1.142.1.1.10.1.1.8
  iscsiSsnTargetAlias 1.3.6.1.2.1.142.1.1.10.1.1.9
  iscsiSsnInitialR2T 1.3.6.1.2.1.142.1.1.10.1.1.10
  iscsiSsnImmediateData 1.3.6.1.2.1.142.1.1.10.1.1.11
  iscsiSsnType 1.3.6.1.2.1.142.1.1.10.1.1.12
  iscsiSsnMaxOutstandingR2T 1.3.6.1.2.1.142.1.1.10.1.1.13
  iscsiSsnFirstBurstLength 1.3.6.1.2.1.142.1.1.10.1.1.14
  iscsiSsnMaxBurstLength 1.3.6.1.2.1.142.1.1.10.1.1.15
  iscsiSsnConnectionNumber 1.3.6.1.2.1.142.1.1.10.1.1.16
  iscsiSsnAuthIdentity 1.3.6.1.2.1.142.1.1.10.1.1.17
  iscsiSsnDataSequenceInOrder 1.3.6.1.2.1.142.1.1.10.1.1.18
  iscsiSsnDataPDUInOrder 1.3.6.1.2.1.142.1.1.10.1.1.19
  iscsiSsnErrorRecoveryLevel 1.3.6.1.2.1.142.1.1.10.1.1.20
  iscsiSsnErrorDiscontinuityTime 1.3.6.1.2.1.142.1.1.10.1.1.21

```

**FIGURE 87** iscsiSessionAttributesTable hierarchy

```

- iscsiSessionsStatsEntry
  iscsiSsnCmdPDUs 1.3.6.1.2.1.142.1.1.10.2.1.1
  iscsiSsnRspPDUs 1.3.6.1.2.1.142.1.1.10.2.1.2
  iscsiTxDataOctets 1.3.6.1.2.1.142.1.1.10.2.1.3
  iscsiRxDataOctets 1.3.6.1.2.1.142.1.1.10.2.1.4
  iscsiLCTxDataOctets 1.3.6.1.2.1.142.1.1.10.2.1.5
  iscsiLCRxDataOctets 1.3.6.1.2.1.142.1.1.10.2.1.6

```

**FIGURE 88** iscsi SessionStatsTable hierarchy

```

- iscsiConnectionAttributesEntry
  iscsiCxnIndex 1.3.6.1.2.1.142.1.1.11.1.1.1
  iscsiCxnCid 1.3.6.1.2.1.142.1.1.11.1.1.2
  iscsiCxnState 1.3.6.1.2.1.142.1.1.11.1.1.3
  iscsiCxnAddrType 1.3.6.1.2.1.142.1.1.11.1.1.4
  iscsiCxnLocalAddr 1.3.6.1.2.1.142.1.1.11.1.1.5
  iscsiCxnProtocol 1.3.6.1.2.1.142.1.1.11.1.1.6
  iscsiCxnLocalPort 1.3.6.1.2.1.142.1.1.11.1.1.7
  iscsiCxnRemoteAddr 1.3.6.1.2.1.142.1.1.11.1.1.8
  iscsiCxnRemotePort 1.3.6.1.2.1.142.1.1.11.1.1.9
  iscsiCxnMaxRecvDataSegLength 1.3.6.1.2.1.142.1.1.11.1.1.10
  iscsiCxnMaxXmitDataSegLength 1.3.6.1.2.1.142.1.1.11.1.1.11
  iscsiCxnHeaderIntegrity 1.3.6.1.2.1.142.1.1.11.1.1.12
  iscsiCxnDataIntegrity 1.3.6.1.2.1.142.1.1.11.1.1.13
  iscsiCxnRecvMarker 1.3.6.1.2.1.142.1.1.11.1.1.14
  iscsiCxnSendMarker 1.3.6.1.2.1.142.1.1.11.1.1.15
  iscsiCxnVersionActive 1.3.6.1.2.1.142.1.1.11.1.1.16
  
```

FIGURE 89 iscsiConnectionAttributesTable hierarchy

## iSCSI instance attributes table

The iscsiInstanceAttributesTable is the primary table of the iSCSI MIB module. Every table entry is owned by exactly one iSCSI instance.

TABLE 94

Object and OID	Access	Description
iscsiInstanceAttributesTable 1.3.6.1.2.1.142.1.1.1	Not accessible	A list of iSCSI instances present on the system.
iscsiInstanceAttributesEntry 1.3.6.1.2.1.142.1.1.1.1	Not accessible	An entry containing management information applicable to a particular iSCSI instance.
iscsiInstIndex 1.3.6.1.2.1.142.1.1.1.1.1	Not accessible	An arbitrary integer that uniquely identifies a particular iSCSI instance. This index value must not be modified or reused by an agent unless a reboot has occurred. Agents should attempt to keep this value persistent across reboots. This value is not accessible.
iscsiInstDescr 1.3.6.1.2.1.142.1.1.1.1.2	Read only	A UTF-8 string to describe the iSCSI instance. Only a single instance is supported so the value will be 0. When used with multiple iSCSI instances, it may be used in an implementation dependent manner to describe the purpose of the an instance.
iscsiInstVersionMin 1.3.6.1.2.1.142.1.1.1.1.3	Read only	The minimum version number of the iSCSI specification supported by this iSCSI instance. This value is hard coded to zero.
iscsiInstVersionMax 1.3.6.1.2.1.142.1.1.1.1.4	Read only	The maximum version number of the iSCSI specification supported by this iSCSI instance. This value is hard coded to zero.
iscsiInstVendorID 1.3.6.1.2.1.142.1.1.1.1.5	Read only	A UTF-8 string describing the manufacturer of the implementation of this instance.

**NOTE:** This object is not supported.

TABLE 94

Object and OID	Access	Description
iscsilnstVendorVersion 1.3.6.1.2.1.142.1.1.1.1.6	Read only	A UTF-8 string set by the manufacturer describing the version of the implementation of this instance. The format of this string is determined by the manufacturer. It is for information purposes, and is not related to the iSCSI specification version numbers. It is the same as that of the fabos version.
iscsilnstPortalNumber 1.3.6.1.2.1.142.1.1.1.1.7	Read only	The number of rows in the iscsiPortalAttributesTable that are currently associated with this iSCSI instance. It is hard coded to zero.
iscsilnstNodeNumber 1.3.6.1.2.1.142.1.1.1.1.8	Read only	The number of rows in the iscsiNodeAttributesTable that are currently associated with this iSCSI instance.
iscsilnstSessionNumber 1.3.6.1.2.1.142.1.1.1.1.9	Read only	The number of rows in the iscsiSessionAttributesTable that are currently associated with this iSCSI instance.
iscsilnstSsnFailures 1.3.6.1.2.1.142.1.1.1.1.10	Read only	The number of times a session belonging to this instance has failed. If this counter has suffered a discontinuity, the time of the last discontinuity is indicated in iscsiDiscontinuityTime. <b>NOTE:</b> This object is not supported.
iscsilnstLastSsnFailureType 1.3.6.1.2.1.142.1.1.1.1.11	Read only	Reason for failure taken from the iscsilnstSsnErrorStatsTable. A value of 0.0 is used if the reason is not found in the table. <b>NOTE:</b> This object is not supported.
iscsilnstLastSsnRmtNodeName 1.3.6.1.2.1.142.1.1.1.1.12	Read only	The iSCSI name of the remote node from the failed session. <b>NOTE:</b> This object is not supported.
iscsilnstDiscontinuityTime 1.3.6.1.2.1.142.1.1.1.1.13	Read only	The value of SysUpTime at the most recent occurrence of a discontinuity in one or more counters used by this instance. <b>NOTE:</b> This object is not supported.

## iSCSI node attributes table

This table is a list of iSCSI nodes per each iSCSI instance present on the local system.

TABLE 95

Object and OID	Access	Description
iscsiNodeAttributesTable 1.3.6.1.2.1.142.1.1.5.1		A list of iSCSI nodes belonging to each iSCSI instance present on the local system. An iSCSI node can act as an initiator, a target, or both.
iscsiNodeAttributesEntry 1.3.6.1.2.1.142.1.1.5.1.1		An entry containing management information applicable to a particular iSCSI node.
iscsiNodeIndex 1.3.6.1.2.1.142.1.1.5.1.1.1		An arbitrary integer that uniquely identifies a particular node within an iSCSI instance. This is not accessible. This index value must not be modified or reused by an agent unless a reboot has occurred. Agents should attempt to keep this value persistent across reboots.
iscsiNodeName 1.3.6.1.2.1.142.1.1.5.1.1.2		This node's iSCSI name. This name is independent of the location of the node, and can be resolved into a set of addresses through various discovery services.

TABLE 95

Object and OID	Access	Description
iscsiNodeAlias 1.3.6.1.2.1.142.1.1.5.1.1.3		A character string that is a human-readable name or description of the iSCSI node. If configured, this alias may be communicated to the initiator to target node at the remote end of the connection during a log in request or response. <b>NOTE:</b> This object is not supported.
iscsiNodeRoles 1.3.6.1.2.1.142.1.1.5.1.1.4		A node can operate in a target role, initiator role, or both. It is hard coded to the value target role.
iscsiNodeTransportType 1.3.6.1.2.1.142.1.1.5.1.1.5		A pointer to the corresponding row in the appropriate table for this SCSI transport. This pointer is used by management stations to locate the SCSI-level device represented by this iSCSI node. <b>NOTE:</b> This object is not supported.
iscsiNodeInitialR2T 1.3.6.1.2.1.142.1.1.5.1.1.6		An object that indicates the InitialR2T preference for this node. When implemented, true=YES, false=will try to negotiate NO, but will accept YES. <b>NOTE:</b> This object is not supported.
iscsiNodeImmediateData 1.3.6.1.2.1.142.1.1.5.1.1.7	Read-write	An object that indicates the ImmediateData preference for this node. When implemented, true=YES, but will accept NO, false=NO. <b>NOTE:</b> This object is not supported.
iscsiNodeMaxOutstandingR2T 1.3.6.1.2.1.142.1.1.5.1.1.8	Read-write	The maximum number of outstanding requests to transmit (R2Ts) allowed per iSCSI task. <b>NOTE:</b> This object is not supported.
iscsiNodeFirstBurstLength 1.3.6.1.2.1.142.1.1.5.1.1.9	Read-write	The maximum length in bytes supported for unsolicited data to or from this node. <b>NOTE:</b> This object is not supported.
iscsiNodeMaxBurstLength 1.3.6.1.2.1.142.1.1.5.1.1.10	Read-write	The maximum number of bytes that can be sent within a single sequence of data-in or data-out PDUs. <b>NOTE:</b> This object is not supported.
iscsiNodeMaxConnections 1.3.6.1.2.1.142.1.1.5.1.1.11	Read-write	The maximum number of connections allowed in each session to or from this node. Hard coded to two.
iscsiNodeDataSequenceInOrder 1.3.6.1.2.1.142.1.1.5.1.1.12	Read-write	The preference for the order of transfer for iSCSI data PDU sequences. False (NO) indicates that PDU sequences may be transferred in any order. True (YES) indicates that data PDU sequences must be transferred using continuously increasing offsets, except during error recovery. <b>NOTE:</b> This object is not supported.
iscsiNodeDataPDUInOrder 1.3.6.1.2.1.142.1.1.5.1.1.13	Read-write	The preference for the order of iSCSI data PDUs within iSCSI data PDU sequences. False (NO) indicates that data PDUs may be transferred in any order within a sequence. True (YES) indicates that data PDUs must be transferred using continuously increasing addresses within a sequence, with no gaps or overlay between PDUs. <b>NOTE:</b> This object is not supported.
iscsiNodeDefaultTime2Wait 1.3.6.1.2.1.142.1.1.5.1.1.14	Read-write	The minimum time, in seconds, to wait before attempting an explicit or implicit logout or active iSCSI task reassignment after an unexpected connection termination or a connection reset. <b>NOTE:</b> This object is not supported.

TABLE 95

Object and OID	Access	Description
iscsiNodeDefaultTime2Retain 1.3.6.1.2.1.142.1.1.5.1.1.15	Read-write	The minimum time, in seconds, to wait, after an initial wait (Time2Wait), for a possible active iSCSI task reassignment after an unexpected connection termination or a connection reset. <b>NOTE:</b> This object is not supported.
iscsiNodeErrorRecoveryLevel 1.3.6.1.2.1.142.1.1.5.1.1.16	Read-write	The Error Recovery Level preference of this node. <b>NOTE:</b> This object is not supported.
iscsiNodeDiscontinuityTime 1.3.6.1.2.1.142.1.1.5.1.1.17	Read only	The value of SysUpTime at the most recent occurrence of a discontinuity in one or more counters used by this node. <b>NOTE:</b> This object is not supported.
iscsiNodeStorageType 1.3.6.1.2.1.142.1.1.5.1.1.18	Read-write	The storage type for all read-write objects within this row. Rows in this table are always created by an external process, and may have a storage type of read only or permanent. <b>NOTE:</b> The value of this variable is read only.

## iSCSI session attributes table

The iscsiSessionAttributesTable contains a set of rows that list the sessions known to exist locally for each node in the iSCSI instance. This table contains session negotiable parameters, the target name, the initiator name, the tsid, and the isid.

TABLE 96

Object and OID	Access	Description
iscsiSessionAttributesTable 1.3.6.1.2.1.142.1.1.10.1	Not accessible	A list of sessions belonging to each iSCSI instance present on the system.
iscsiSessionAttributesEntry 1.3.6.1.2.1.142.1.1.10.1.1	Not accessible	An entry (row) containing management information applicable to a particular session.
iscsiSsnNodeIndex 1.3.6.1.2.1.142.1.1.10.1.1.1	Not accessible	An arbitrary integer that uniquely identifies a particular node within an iSCSI instance present on the local system. This value is not accessible. For normal, non-discovery sessions, this value will map to the iscsiNodeIndex. For discovery sessions that do not have a node associated, the value 0 (zero) is used.
iscsiSsnIndex 1.3.6.1.2.1.142.1.1.10.1.1.2	Not accessible	An arbitrary integer that uniquely identifies a particular node within an iSCSI instance present on the local system. This value is not accessible. This index value must not be modified or reused by an agent unless a reboot has occurred. Agents should attempt to keep this value persistent across reboots.
iscsiSsnDirection 1.3.6.1.2.1.142.1.1.10.1.1.3	Read only	Indicates the direction of the iSCSI session. <ul style="list-style-type: none"> <li>inboundSession - The session is established from an external initiator to a target within the iSCSI instance.</li> <li>outboundSession - The session is established from an initiator within this iSCSI instance to an external target.</li> </ul> For this release, the value of iSCSI_SsnDirection is always inboundSession.

TABLE 96

Object and OID	Access	Description
iscsiSsnInitiatorName 1.3.6.1.2.1.142.1.1.10.1.1.4	Read only	If iscsiSsnDirection is Inbound, this object is a UTF-8 string that contains the name of the remote initiator. If this session is a discovery session that does not specify a particular initiator, this object contains a zero-length string. If iscsiSsnDirection is Outbound, this object contains a zero-length string.
iscsiSsnTargetName 1.3.6.1.2.1.142.1.1.10.1.1.5	Read only	If iscsiSsnDirection is Outbound, this object is a UTF-8 string that contains the name of the remote target. If this session is a discovery session that does not specify a particular target, this object contains a zero-length string. If iscsiSsnDirection is Inbound, this object contains a zero-length string.
iscsiSsnTSIH 1.3.6.1.2.1.142.1.1.10.1.1.6	Read only	The target-defined handle for this session.
iscsiSsnISID 1.3.6.1.2.1.142.1.1.10.1.1.7	Read only	The initiator-defined portion of the iSCSI session ID.
iscsiSsnInitiatorAlias 1.3.6.1.2.1.142.1.1.10.1.1.8	Read only	A UTF-8 string that gives the alias communicated by the initiator end of the session during the log in phase. If no alias exists, the value is a zero-length string.
iscsiSsnTargetAlias 1.3.6.1.2.1.142.1.1.10.1.1.9	Read only	A UTF-8 string that gives the alias communicated by the target end of the session during the log in phase. If no alias exists, the value is a zero-length string.
iscsiSsnInitialR2T 1.3.6.1.2.1.142.1.1.10.1.1.10	Read only	If set to true, indicates that the initiator must wait for an R2T before sending to the target. If set to false, the initiator may send data immediately, within limits set by iscsiSsnFirstBurstLength and the expected data transfer length of the request.
iscsiSsnImmediateData 1.3.6.1.2.1.142.1.1.10.1.1.11	Read only	Indicates whether the initiator and target have agreed to support immediate data on this session.
iscsiSsnType 1.3.6.1.2.1.142.1.1.10.1.1.12	Read only	Indicates the type of iSCSI session: <ul style="list-style-type: none"> <li>• normalSession - Session is a normal iSCSI session.</li> <li>• discoverySession - Session is being used only for discovery.</li> </ul>
iscsiSsnMaxOutstandingR2T 1.3.6.1.2.1.142.1.1.10.1.1.13	Read only	The maximum number of outstanding requests-to-transmit (R2Ts) per iSCSI task within this session.
iscsiSsnFirstBurstLength 1.3.6.1.2.1.142.1.1.10.1.1.14	Read only	The maximum length supported for unsolicited data sent within this session.
iscsiSsnMaxBurstLength 1.3.6.1.2.1.142.1.1.10.1.1.15	Read only	The maximum number of bytes that can be sent within a single sequence of Data-In or Data-Out PDUs.
iscsiSsnConnectionNumber 1.3.6.1.2.1.142.1.1.10.1.1.16	Read only	The number of transport protocol connections that currently belong to this session.
iscsiSsnAuthIdentity 1.3.6.1.2.1.142.1.1.10.1.1.17	Read only	This object contains a pointer to a row in the IPS-AUTH MIB module that identifies the authentication method being used on this session, as communicated during the log in phase. The value is set to null since there is no IPS-AUTH MIB
iscsiSsnDataSequenceInOrder 1.3.6.1.2.1.142.1.1.10.1.1.18	Read only	False indicates that iSCSI data PDU sequences may be transferred in any order. True indicates that data PDU sequences must be transferred using continuously increasing offsets, except during error recovery. The default value for this is True.

TABLE 96

Object and OID	Access	Description
iscsiSsnDataPDUInOrder 1.3.6.1.2.1.142.1.1.10.1.1.19	Read only	False indicates that iSCSI data PDUs within sequences may be in any order. True Indicates that data PDUs within sequences must be at continuously increasing addresses, with no gaps or overlay between PDUs. Default is true.
iscsiSsnErrorRecoveryLevel 1.3.6.1.2.1.142.1.1.10.1.1.20	Read only	The level of error recovery negotiated between the initiator and the target. Higher numbers represent more detailed recovery schemes.
iscsiSsnErrorDiscontinuityTime 1.3.6.1.2.1.142.1.1.10.1.1.21	Read only	The value of SysUpTime on the most recent occasion at which any one or more of this session's counters suffered a discontinuity. When a session is established, and this object is created, it is initialized to the current value of SysUpTime. <b>NOTE:</b> This object is not supported.

## iSCSI session statistics table

The iscsiSessionStatsTable contains performance statistics based on iSCSI data bytes and PDUs.

TABLE 97

Object and OID	Access	Description
iscsiSessionStatsTable 1.3.6.1.2.1.142.1.1.10.2	Not accessible	A list of general iSCSI traffic counters for each of the sessions present on the system."
iscsi SessionS tats Entry 1.3.6.1.2.1.142.1.1.10.2.1	Not accessible	An entry containing general iSCSI traffic counters for a particular session.
iscsiSsnCmdPDUs 1.3.6.1.2.1.142.1.1.10.2.1.1	Read only	The count of command PDUs transferred on this session. If this counter has suffered a discontinuity, the time of the last discontinuity is indicated in iscsiSsnDiscontinuityTime.
iscsiSsnRspPDUs 1.3.6.1.2.1.142.1.1.10.2.1.2	Read only	The count of response PDUs transferred on this session. If this counter has suffered a discontinuity, the time of the last discontinuity is indicated in iscsiSsnDiscontinuityTime.
iscsiTxDataOctets 1.3.6.1.2.1.142.1.1.10.2.1.3	Read only	The count of data octets that were transmitted by the local iSCSI node on this session. If this counter has suffered a discontinuity, the time of the last discontinuity is indicated in iscsiSsnDiscontinuityTime.This is accessible only in SNMPv3 context.
iscsiRxDataOctets 1.3.6.1.2.1.142.1.1.10.2.1.4	Read only	The count of data octets that were received by the local iSCSI node on this session. If this counter has suffered a discontinuity, the time of the last discontinuity is indicated in iscsiSsnDiscontinuityTime. This is accessible only in SNMPv3 context.

TABLE 97

Object and OID	Access	Description
iscsiLCTxDataOctets 1.3.6.1.2.1.142.1.1.10.2.1.5	Read only	A Low Capacity shadow object of iscsiSsnTxDataOctets for those systems that do not support Counter64. If this counter has suffered a discontinuity, the time of the last discontinuity is indicated in iscsiSsnDiscontinuityTime. <b>NOTE:</b> This object is not supported.
iscsiLCRxDataOctets 1.3.6.1.2.1.142.1.1.10.2.1.6	Read only	A Low Capacity shadow object of iscsiSsnRxDataOctets for those systems that do not support Counter64. If this counter has suffered a discontinuity, the time of the last discontinuity is indicated in iscsiSsnDiscontinuityTime. <b>NOTE:</b> This object is not supported.

## iSCSI connection attributes table

The iscsiConnectionAttributesTable contains a list of active connections within each session.

TABLE 98

Object and OID	Access	Description
iscsiConnectionAttributesTable 1.3.6.1.2.1.142.1.1.11.1	Not accessible	A list of connections belonging to each iSCSI instance present on the system.
iscsiConnectionAttributesEntry 1.3.6.1.2.1.142.1.1.11.1.1	Not accessible	An entry containing management information applicable to a particular connection.
iscsiCxnIndex 1.3.6.1.2.1.142.1.1.11.1.1.1	Not accessible	An arbitrary integer that uniquely identifies a particular node within an iSCSI instance present on the local system. This value is not accessible. This index value must not be modified or reused by an agent unless a reboot has occurred. Agents should attempt to keep this value persistent across reboots.
iscsiCxnCid 1.3.6.1.2.1.142.1.1.11.1.1.2	Read only	The iSCSI connection ID for this connection.
iscsiCxnState 1.3.6.1.2.1.142.1.1.11.1.1.3	Read only	The current state of this connection, from an iSCSI negotiation point of view. Here are the states: <ul style="list-style-type: none"> <li>login - The transport protocol connection has been established, but a valid iSCSI login response with the final bit set has not been sent or received.</li> <li>full - A valid iSCSI login response with the final bit set has been sent or received.</li> <li>logout - A valid iSCSI logout command has been sent or received, but the transport protocol connection has not yet been closed.</li> </ul> iscsiCxnState is hard coded to value "full".
iscsiCxnAddrType 1.3.6.1.2.1.142.1.1.11.1.1.4	Read only	The type of Internet Network Addresses contained in the corresponding instances of iscsiCxnLocalAddr and iscsiCxnRemoteAddr. The value 'dns' is not allowed. iscsiCxnAddrType is hard coded to the value IPv4.
iscsiCxnLocalAddr 1.3.6.1.2.1.142.1.1.11.1.1.5	Read only	The local Internet Network Address, of the type specified by iscsiCxnAddrType, used by this connection.



TABLE 98

Object and OID	Access	Description
iscsiCxnProtocol 1.3.6.1.2.1.142.1.1.11.1.1.6	Read only	The transport protocol over which this connection is running. This is hard coded to tcp (6).
iscsiCxnLocalPort 1.3.6.1.2.1.142.1.1.11.1.1.7	Read only	The local transport protocol port used by this connection. This object cannot have the value zero, since it represents an established connection. This is hard coded to 3260.
iscsiCxnRemoteAddr 1.3.6.1.2.1.142.1.1.11.1.1.8	Read only	The remote Internet Network Address, of the type specified by iscsiCxnAddrType, used by this connection. <b>NOTE:</b> Only IPv4 addresses are supported.
iscsiCxnRemotePort 1.3.6.1.2.1.142.1.1.11.1.1.9	Read only	The remote transport protocol port used by this connection. This object cannot have the value zero, since it represents an established connection.
iscsiCxnMaxRecvDataSegLength 1.3.6.1.2.1.142.1.1.11.1.1.10	Read only	The maximum data payload size supported for command or data PDUs able to be received on this connection.
iscsiCxnMaxXmitDataSegLength 1.3.6.1.2.1.142.1.1.11.1.1.11	Read only	The maximum data payload size supported for command or data PDUs able to be sent on this connection. The value is min(iscsiCxnMaxRecvDataSegLength, iscsiSsnMaxBurstLength).
iscsiCxnHeaderIntegrity 1.3.6.1.2.1.142.1.1.11.1.1.12	Read only	This object identifies the iSCSI header digest scheme in use within this connection.
iscsiCxnDataIntegrity 1.3.6.1.2.1.142.1.1.11.1.1.13	Read only	This object identifies the iSCSI data digest scheme in use within this connection.
iscsiCxnRecvMarker 1.3.6.1.2.1.142.1.1.11.1.1.14	Read only	This object identifies whether or not this connection is receiving markers in its incoming data stream. This object is hard coded to false.
iscsiCxnSendMarker 1.3.6.1.2.1.142.1.1.11.1.1.15	Read only	This object identifies whether or not this connection is inserting markers in its outgoing data stream. This object is hard coded to false.
iscsiCxnVersionActive 1.3.6.1.2.1.142.1.1.11.1.1.16	Read only	Active version number of the SCSI specification negotiated on this connection. This object is hard coded to zero.

**12** iSCSI connection attributes table

# SNMPv2 MIB Objects

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## SNMPv2 MIB overview

The descriptions of each of the MIB variables in this chapter come directly from the SNMPv2 MIB itself. The notes that follow the descriptions refer to Brocade-specific information and are provided by Brocade.

### SNMPv2 MIB object hierarchy

Figure 90 through Figure 93 depict the organization and structure of SNMPv2 MIB.

```

- iso
  - org
    - dod
      - internet
        - snmpV2
          - snmpModules
            - snmpTargetMIB
              - snmpTargetAddrTable
              - snmpTargetParamsTable
            - snmpCommunityMIB
              - snmpCommunityTable

```

**FIGURE 90** SNMPv2 MIB overall hierarchy

```

- snmpTargetAddrTable 1.3.6.1.6.3.12.1.2
  - snmpTargetAddrEntry 1.3.6.1.6.3.12.1.2.1
    - snmpTargetAddrName 1.3.6.1.6.3.12.1.2.1.1
    - snmpTargetAddrTDomain 1.3.6.1.6.3.12.1.2.1.2
    - snmpTargetAddrTAddress 1.3.6.1.6.3.12.1.2.1.3
    - snmpTargetAddrTimeout 1.3.6.1.6.3.12.1.2.1.4
    - snmpTargetAddrRetryCount 1.3.6.1.6.3.12.1.2.1.5
    - snmpTargetAddrTagList 1.3.6.1.6.3.12.1.2.1.6
    - snmpTargetAddrParams 1.3.6.1.6.3.12.1.2.1.7
    - snmpTargetAddrStorageType 1.3.6.1.6.3.12.1.2.1.8
    - snmpTargetAddrRowStatus 1.3.6.1.6.3.12.1.2.1.9

```

**FIGURE 91** snmpTargetAddrTable hierarchy

```

- snmpTargetParamsTable 1.3.6.1.6.3.12.1.3
  - snmpTargetParamsEntry 1.3.6.1.6.3.12.1.3.1
    - snmpTargetParamsName 1.3.6.1.6.3.12.1.3.1.1
    - snmpTargetParamsMPModel 1.3.6.1.6.3.12.1.3.1.2
    - snmpTargetParamsSecurityModel 1.3.6.1.6.3.12.1.3.1.3
    - snmpTargetParamsSecurityName 1.3.6.1.6.3.12.1.3.1.4
    - snmpTargetParamsSecurityLevel 1.3.6.1.6.3.12.1.3.1.5
    - snmpTargetParamsStorageType 1.3.6.1.6.3.12.1.3.1.6
    - snmpTargetParamsRowStatus 1.3.6.1.6.3.12.1.3.1.7

```

**FIGURE 92** snmpTargetParamsTable hierarchy

```

- snmpCommunityTable 1.3.6.1.6.3.18.1.1
  - snmpCommunityEntry 1.3.6.1.6.3.18.1.1.1
    - snmpCommunityIndex 1.3.6.1.6.3.18.1.1.1.1
    - snmpCommunityName 1.3.6.1.6.3.18.1.1.1.2
    - snmpCommunitySecurityName 1.3.6.1.6.3.18.1.1.1.3
    - snmpCommunityContextEngineID 1.3.6.1.6.3.18.1.1.1.4
    - snmpCommunityContextName 1.3.6.1.6.3.18.1.1.1.5
    - snmpCommunityTransportTag 1.3.6.1.6.3.18.1.1.1.6
    - snmpCommunityStorageType 1.3.6.1.6.3.18.1.1.1.7
    - snmpCommunityStatus 1.3.6.1.6.3.18.1.1.1.8

```

**FIGURE 93** snmpCommunityTable hierarchy

## SNMP target address table

**TABLE 99**

Object and OID	Access	Description
snmpTargetAddrTable 1.3.6.1.6.3.12.1.2	Not accessible	A table of transport addresses to be used in the generation of SNMP messages.
snmpTargetAddrEntry 1.3.6.1.6.3.12.1.2.1	Not accessible	An entry for the table of transport addresses. The entries in the snmpTargetAddrTable are created and deleted using the snmpTargetAddrRowStatus object.
snmpTargetAddrName 1.3.6.1.6.3.12.1.2.1.1	Not accessible	The object indicates a unique identifier associated with this snmpTargetAddrEntry.
snmpTargetAddrTDomain 1.3.6.1.6.3.12.1.2.1.2	Read create	This object indicates the transport type of the address contained in the snmpTargetAddrAddress object.
snmpTargetAddrTAddress 1.3.6.1.6.3.12.1.2.1.3	Read create	This object contains a transport address. The format of this address depends on the value of the snmpTargetAddrTDomain object.
snmpTargetAddrTimeout 1.3.6.1.6.3.12.1.2.1.4	Read create	This object indicates the expected maximum round trip time for communicating with the transport address defined by this row.
snmpTargetAddrRetryCount 1.3.6.1.6.3.12.1.2.1.5	Read create	This object specifies a default number of retries to be attempted when a response is not received for a generated message.
snmpTargetAddrTagList 1.3.6.1.6.3.12.1.2.1.6	Read create	This object contains a list of tag values which are used to select target addresses for a particular operation.

TABLE 99

Object and OID	Access	Description
snmpTargetAddrParams 1.3.6.1.6.3.12.1.2.1.7	Read create	The value of this object identifies an entry in the snmpTargetParamsTable. The identified entry contains SNMP parameters to be used when generating messages to be sent to this transport address.
snmpTargetAddrStorageType 1.3.6.1.6.3.12.1.2.1.8	Read create	The storage type for this conceptual row. Conceptual rows having the value <i>permanent</i> need not allow write-access to any columnar objects in the row.
snmpTargetAddrRowStatus 1.3.6.1.6.3.12.1.2.1.9	Read create	<p>The status of this conceptual row.</p> <p>To create a row in this table, a manager must set this object to either <i>createAndGo</i> (4) or <i>createAndWait</i> (5).</p> <p>Until instances of all corresponding columns are appropriately configured, the value of the corresponding instance of the snmpTargetAddrRowStatus column is <i>notReady</i>.</p> <p>In particular, a newly created row cannot be made active until the corresponding instances of snmpTargetAddrTDomain, snmpTargetAddrTAddress, and snmpTargetAddrParams have all been set.</p> <p>The following objects may not be modified while the value of this object is active (1):</p> <ul style="list-style-type: none"> <li>• snmpTargetAddrTDomain</li> <li>• snmpTargetAddrTAddress</li> </ul> <p>An attempt to set these objects while the value of snmpTargetAddrRowStatus is active (1) will result in an <i>inconsistentValue</i> error.</p>

## SNMP target parameters table

TABLE 100

Object and OID	Access	Description
snmpTargetParamsTable 1.3.6.1.6.3.12.1.3	Not accessible	A table of SNMP target information to be used in the generation of SNMP messages.
snmpTargetParamsEntry 1.3.6.1.6.3.12.1.3.1	Not accessible	A set of SNMP target information. The entries in the snmpTargetParamsTable are created and deleted using the snmpTargetParamsRowStatus object.
snmpTargetParamsName 1.3.6.1.6.3.12.1.3.1.1	Not accessible	The object indicates a unique identifier associated with this snmpTargetParamsEntry.
snmpTargetParamsMPModel 1.3.6.1.6.3.12.1.3.1.2	Read create	The object indicates the message processing model to be used when generating SNMP messages.
snmpTargetParamsSecurityModel 1.3.6.1.6.3.12.1.3.1.3	Read create	The object indicates the security model to be used when generating SNMP messages using this entry. An implementation may choose to return an <i>inconsistentValue</i> error if an attempt is made to set this variable to a value for a security model which the implementation does not support.
snmpTargetParamsSecurityName 1.3.6.1.6.3.12.1.3.1.4	Read create	The security name which identifies the principal on whose behalf the SNMP messages will be generated using this entry.

TABLE 100

Object and OID	Access	Description
snmpTargetParamsSecurityLevel 1.3.6.1.6.3.12.1.3.1.5	Read create	The level of security to be used when generating SNMP messages using this entry.
snmpTargetParamsStorageType 1.3.6.1.6.3.12.1.3.1.6	Read create	The storage type for this conceptual row. Conceptual rows having the value <i>permanent</i> need not allow write-access to any columnar objects in the row.
snmpTargetParamsRowStatus 1.3.6.1.6.3.12.1.3.1.7	Read create	<p>The status of this conceptual row.</p> <p>To create a row in this table, a manager must set this object to either <i>createAndGo</i> (4) or <i>createAndWait</i> (5).</p> <p>Until instances of all corresponding columns are appropriately configured, the value of the corresponding instance of the <i>snmpTargetParamsRowStatus</i> column is <i>notReady</i>.</p> <p>In particular, a newly created row cannot be made active until the corresponding <i>snmpTargetParamsMPModel</i>, <i>snmpTargetParamsSecurityModel</i>, <i>snmpTargetParamsSecurityName</i>, and <i>snmpTargetParamsSecurityLevel</i> have all been set.</p> <p>The following objects may not be modified while the value of this object is active (1):</p> <ul style="list-style-type: none"> <li>• <i>snmpTargetParamsMPModel</i></li> <li>• <i>snmpTargetParamsSecurityModel</i></li> <li>• <i>snmpTargetParamsSecurityName</i></li> <li>• <i>snmpTargetParamsSecurityLevel</i></li> </ul> <p>An attempt to set these objects while the value of <i>snmpTargetParamsRowStatus</i> is active (1) will result in an <i>inconsistentValue</i> error.</p>

## SNMP community table

TABLE 101

Object and OID	Access	Description
snmpCommunityTable 1.3.6.1.6.3.18.1.1	Not accessible	The table of community strings configured in the SNMP engine's Local Configuration Datastore (LCD).
snmpCommunityEntry 1.3.6.1.6.3.18.1.1.1	Not accessible	Information about a particular community string.
snmpCommunityIndex 1.3.6.1.6.3.18.1.1.1.1	Read create	The unique index value of a row in this table.
snmpCommunityName 1.3.6.1.6.3.18.1.1.1.2	Read create	The community string for which a row in this table represents a configuration. There is no size constraint specified for this object because RFC 1157 does not impose any explicit limitation on the length of community strings (their size is constrained indirectly by the SNMP message size).
snmpCommunitySecurityName 1.3.6.1.6.3.18.1.1.1.3	Read create	A human-readable string representing the corresponding value of <i>snmpCommunityName</i> in a security model independent format.

TABLE 101

Object and OID	Access	Description
snmpCommunityContextEngineID 1.3.6.1.6.3.18.1.1.1.4	Read create	The contextEngineID indicating the location of the context in which the management information is accessed when using the community string specified by the corresponding instance of snmpCommunityName. The default value is the snmpEngineID of the entity in which this object is instantiated.
snmpCommunityContextName 1.3.6.1.6.3.18.1.1.1.5	Read create	The context in which the management information is accessed when using the community string specified by the corresponding instance of snmpCommunityName.
snmpCommunityTransportTag 1.3.6.1.6.3.18.1.1.1.6	Read create	This object specifies a set of transport endpoints which are used in the following ways: <ul style="list-style-type: none"> <li>• To specify the transport endpoints from which an SNMP entity will accept management requests.</li> <li>• To specify the transport endpoints to which a notification may be sent using the community string matching the corresponding instance of snmpCommunityName.</li> </ul>
snmpCommunityStorageType 1.3.6.1.6.3.18.1.1.1.7	Read create	The storage type for this conceptual row in the snmpCommunityTable. Conceptual rows having the value <i>permanent</i> need not allow write-access to any columnar object in the row.
snmpCommunityStatus 1.3.6.1.6.3.18.1.1.1.8	Read create	The status of this conceptual row in the snmpCommunityTable.

## 13 SNMP community table



# USM MIB Objects

---

## In this chapter

- [USM MIB objects overview](#) ..... 269
- [USM statistics](#) ..... 270
- [USM user group](#) ..... 271

## USM MIB objects overview

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

[Figure 94](#) and [Figure 95](#) depict the organization and structure of the usmMIBObjects MIB.

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

**FIGURE 94** usmMIBObjects overall tree structure

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

FIGURE 95 usmMIBObjects hierarchy

## USM statistics

TABLE 102

Object and OID	Access	Description
usmStatsUnsupportedSecLevels 1.3.6.1.6.3.15.1.1.1	Read only	The total number of packets received by the SNMP engine which were dropped because they requested a securityLevel that was unknown to the SNMP engine or otherwise unavailable.
usmStatsNotInTimeWindows 1.3.6.1.6.3.15.1.1.2	Read only	The total number of packets received by the SNMP engine which were dropped because they appeared outside of the authoritative SNMP engine's window.
usmStatsUnknownUserNames 1.3.6.1.6.3.15.1.1.3	Read only	The total number of packets received by the SNMP engine which were dropped because they referenced a user that was not known to the SNMP engine.
usmStatsUnknownEngineIDs 1.3.6.1.6.3.15.1.1.4	Read only	The total number of packets received by the SNMP engine which were dropped because they referenced an snmpEngineID that was not known to the SNMP engine.
usmStatsWrongDigests 1.3.6.1.6.3.15.1.1.5	Read only	The total number of packets received by the SNMP engine which were dropped because they did not contain the expected digest value.
usmStatsDecryptionErrors 1.3.6.1.6.3.15.1.1.6	Read only	The total number of packets received by the SNMP engine which were dropped because they could not be decrypted.

## USM user group

TABLE 103

Object and OID	Access	Description
usmUserSpinLock 1.3.6.1.6.3.15.1.2.1	Read-write	An advisory lock used to allow several cooperating Command Generator Applications to coordinate their use of facilities to alter secrets in the usmUserTable.
usmUserTable 1.3.6.1.6.3.15.1.2.2	Not accessible	The table of users configured in the SNMP engine's Local Configuration Datastore (LCD).
usmUserEntry 1.3.6.1.6.3.15.1.2.2.1	Not accessible	A user configured in the SNMP engine's Local Configuration Datastore (LCD) for the User-based Security Model.
usmUserEngineID 1.3.6.1.6.3.15.1.2.2.1.1	Not accessible	An SNMP engine's administratively-unique identifier. In a simple agent, this value is always that agent's own snmpEngineID value. The value can also take the value of the snmpEngineID of a remote SNMP engine with which this user can communicate.
usmUserName 1.3.6.1.6.3.15.1.2.2.1.2	Not accessible	A human-readable string representing the name of the user. This is the (User-based Security) Model dependent security ID.
usmUserSecurityName 1.3.6.1.6.3.15.1.2.2.1.3	Read only	A human-readable string representing the user in Security Model independent format. The default transformation of the User-based Security Model dependent security ID to the securityName and vice versa is the identity function so that the securityName is the same as the userName.
usmUserCloneFrom 1.3.6.1.6.3.15.1.2.2.1.4	Read create	A pointer to another conceptual row in this usmUserTable. The user in this other conceptual row is called the clone-from user.
usmUserAuthProtocol 1.3.6.1.6.3.15.1.2.2.1.5	Read create	An indication of whether messages sent on behalf of this user to or from the SNMP engine identified by usmUserEngineID, can be authenticated, and if so, the type of authentication protocol which is used.
usmUserAuthKeyChange 1.3.6.1.6.3.15.1.2.2.1.6	Read create	An object, which when modified, causes the secret authentication key used for messages sent on behalf of this user to or from the SNMP engine, identified by usmUserEngineID, to be modified through a one-way function.
usmUserOwnAuthKeyChange 1.3.6.1.6.3.15.1.2.2.1.7	Read create	Behaves exactly as usmUserAuthKeyChange, with one notable difference: For the set operation to succeed, the usmUserName of the operation requester must match the smUserName that indexes the row which is targeted by this operation. In addition, the USM security model must be used for this operation.
usmUserPrivProtocol 1.3.6.1.6.3.15.1.2.2.1.8	Read create	An indication of whether messages sent on behalf of this user to or from the SNMP engine identified by usmUserEngineID, can be protected from disclosure, and if so, the type of privacy protocol which is used. No support for Privacy protocols other than DES in this object.
usmUserPrivKeyChange 1.3.6.1.6.3.15.1.2.2.1.9	Read create	An object, which when modified, causes the secret encryption key used for messages sent on behalf of this user to or from the SNMP engine identified by usmUserEngineID, to be modified through a one-way function.

**TABLE 103**

Object and OID	Access	Description
usmUserOwnPrivKeyChange 1.3.6.1.6.3.15.1.2.2.1.1 0	Read create	Behaves exactly as usmUserPrivKeyChange, with one notable difference: For the Set operation to succeed, the usmUserName of the operation requester must match the usmUserName that indexes the row which is targeted by this operation. In addition, the USM security model must be used for this operation.
usmUserPublic 1.3.6.1.6.3.15.1.2.2.1.1 1	Read create	A publicly readable value which can be written as part of the procedure for changing a user's secret authentication or privacy key, and later read to determine whether the change of the secret was effected.
usmUserStorageType 1.3.6.1.6.3.15.1.2.2.1.1 2	Read create	The storage type for this conceptual row. Conceptual rows having the value 'permanent' must allow write-access at a minimum to the following: <ul style="list-style-type: none"> <li>• usmUserAuthKeyChange, usmUserOwnAuthKeyChange and usmUserPublic for a user who employs authentication, and</li> <li>• usmUserPrivKeyChange, usmUserOwnPrivKeyChange and usmUserPublic for a user who employs privacy.</li> </ul>
usmUserStatus 1.3.6.1.6.3.15.1.2.2.1.1 3	Read create	The status of this conceptual row.

# IEEE 802.1x PAE MIB Objects

---

## In this chapter

- [IEEE 802.1x PAE MIB objects overview](#) ..... 273
- [Dot1x PAE system group](#) ..... 275
- [Dot1x PAE authenticator group](#) ..... 276

## 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 96](#) through [Figure 98](#) 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 96** 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 97** 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 98 dot1xPaeAuthenticator hierarchy

## Dot1x PAE system group

TABLE 104

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.
dot1xPaePortProtocolVer sion 1.0.8802.1.1.1.1.2.1.2	Read only	The protocol version associated with this port.
dot1xPaePortCapabilitie s 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"> <li>dot1xPaePortAuthCapable (0)</li> <li>dot1xPaePortSuppCapable (1)</li> </ul>
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.
dot1xPaePortReauthenti cate 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

TABLE 105

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.
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"> <li>• initialize (1)</li> <li>• disconnected (2)</li> <li>• connecting (3)</li> <li>• authenticating (4)</li> <li>• authenticated (5)</li> <li>• aborting (6)</li> <li>• held (7)</li> <li>• forceAuth (8)</li> <li>• forceUnauth (9)</li> <li>• restart (10)</li> </ul>
dot1xAuthBackendAuthState 1.0.8802.1.1.1.1.2.1.1.2	Read only	The current state of the backend authentication state machine. Valid values: <ul style="list-style-type: none"> <li>• request (1)</li> <li>• response (2)</li> <li>• success (3)</li> <li>• fail (4)</li> <li>• timeout (5)</li> <li>• idle (6)</li> <li>• initialize (7)</li> <li>• ignore (8)</li> </ul>
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 backend authentication state machine.



TABLE 105

object and OID	Access	Description
dot1xAuthServerTimeout 1.0.8802.1.1.1.1.2.1.1.1 0	Read-write	The value, in seconds, of the serverTimeout constant currently in use by the backend authentication state machine.
dot1xAuthMaxReq 1.0.8802.1.1.1.1.2.1.1.1 1	Read-write	The value of the maxReq constant currently in use by the backend authentication state machine.
dot1xAuthReAuthPeriod 1.0.8802.1.1.1.1.2.1.1.1 2	Read-write	The value, in seconds, of the reAuthPeriod constant currently in use by the re-authentication timer state machine.
dot1xAuthReAuthEnable d 1.0.8802.1.1.1.1.2.1.1.1 3	Read-write	The enable or disable control used by the re-authentication timer state machine (8.5.5.1).
dot1xAuthKeyTxEnabled 1.0.8802.1.1.1.1.2.1.1.1 4	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.
dot1xAuthEapolFramesR x 1.0.8802.1.1.1.1.2.2.1.1	Read only	The number of valid EAPOL frames of any type that have been received by this authenticator.
dot1xAuthEapolFramesT x 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.
dot1xAuthEapolStartFra mesRx 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.
dot1xAuthEapolLogoffFra mesRx 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.
dot1xAuthEapolRespIdFra mesRx 1.0.8802.1.1.1.1.2.2.1.5	Read only	The number of EAP response or ID frames that have been received by this authenticator.
dot1xAuthEapolRespFra mesRx 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.
dot1xAuthEapolReqIdFra mesTx 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.
dot1xAuthEapolReqFram esTx 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.

TABLE 105

object and OID	Access	Description
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.
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.
dot1xAuthAuthSuccessfulWhileAuthenticating 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 backend 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 backend 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 backend authentication state machine indicating authentication failure (authFail = TRUE).
dot1xAuthAuthReauthSuccessfulWhileAuthenticating 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.

TABLE 105

object and OID	Access	Description
dot1xAuthAuthEapLogoffWhileAuthenticated 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.
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.

**TABLE 105**

object and OID	Access	Description
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"> <li>• remoteAuthServer(1)</li> <li>• localAuthServer(2)</li> </ul>
dot1xAuthSessionTime 1.0.8802.1.1.1.1.2.4.1.7	Read only	The duration of the session in seconds.
dot1xAuthSessionTerminationCause 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"> <li>• supplicantLogoff (1)</li> <li>• portFailure (2)</li> <li>• supplicantRestart (3)</li> <li>• reauthFailed (4)</li> <li>• authControlForceUnauth (5)</li> <li>• portReInit (6)</li> <li>• portAdminDisabled (7)</li> <li>• notTerminatedYet (999)</li> </ul>
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**

dot1xPaeSupplicant group is not supported.

# LLDP MIB Objects

---

## In this chapter

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## LLDP MIB objects overview

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

[Figure 99](#) through [Figure 103](#) 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 99** 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 100** 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 101** 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 102** 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 103 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

TABLE 106

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 non-volatile storage after a re-initialization of the management system.



TABLE 106

object and OID	Access	Description
IldpMessageTxHoldMultiplier 1.0.8802.1.1.2.1.1.2	Read-write	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: $TTL = \min(65535, (IldpMessageTxInterval * IldpMessageTxHoldMultiplier))$ 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. The default value for this object is four seconds. The value of this object must be restored from non-volatile storage after a re-initialization of the management system.
IldpReinitDelay 1.0.8802.1.1.2.1.1.3	Read-write	The object indicates the delay (in units of seconds) from when IldpPortConfigAdminStatus object of a particular port becomes "disabled" until re-initialization will be attempted. The default value for this object is two seconds. The value of this object must be restored from non-volatile storage after a re-initialization of the management system.
IldpTxDelay 1.0.8802.1.1.2.1.1.4	Read-write	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: $1 \leq IldpTxDelay \leq (0.25 * IldpMessageTxInterval)$ The default value for this object is two seconds. The value of this object must be restored from non-volatile storage after a re-initialization of the management system.
IldpNotificationInterval 1.0.8802.1.1.2.1.1.5	Read-write	This object controls the transmission of LLDP notifications. If notification transmission is enabled for particular ports, the suggested default throttling period is 5 seconds. The value of this object must be restored from non-volatile storage after a re-initialization of the management system.
IldpPortConfigTable 1.0.8802.1.1.2.1.1.6	Not accessible	The table that controls LLDP frame transmission on individual ports.
IldpPortConfigEntry 1.0.8802.1.1.2.1.1.6.1	Not accessible	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.
IldpPortConfigPortNum 1.0.8802.1.1.2.1.1.6.1.1	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 IldpPortConfigTable.
IldpPortConfigAdminStatus 1.0.8802.1.1.2.1.1.6.1.2	Read-write	The administratively desired status of the local LLDP agent.
IldpPortConfigNotificationEnable 1.0.8802.1.1.2.1.1.6.1.3	Read-write	The object controls, on a per port basis, whether or not notifications from the agent are enabled. The values are as follows: <ul style="list-style-type: none"> <li>• true(1) - The notifications are enabled.</li> <li>• false(2) - The notifications are not enabled.</li> </ul>

TABLE 106

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	This table is not supported.

## LLDP statistics group

TABLE 107

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 sysUpTime object (defined in IETF RFC 3418) at the time an entry is created, modified, or deleted in the in 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.

TABLE 107

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 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

TABLE 108

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, IldpLocSysName object should have the same value of 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, IldpLocSysDesc object should have the same value of 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.

TABLE 108

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 802 LAN station's port description associated with the local system. If the local agent supports IETF RFC 2863, IldpLocPortDesc object should have the same value of 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 should have 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 LLDP PDUs transmitted by the local LLDP agent. The management address length field is needed so that the receiving systems that do not implement SNMP will not be required to implement an iana family numbers or address length equivalency table in order to decode the management address.
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

TABLE 109

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.

TABLE 109

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 should 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 should be as defined for SnmpAdminString TC.

## LLDP-EXT-DOT1-MIB

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

### LLDP-EXT-DOT1-MIB organization

Figure 104 and Figure 105 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 104 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 105 LLDP-EXT-DOT1-MIB hierarchy



## IldpXdot1 configuration group

TABLE 110

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 value 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	The IldpXdot1ConfigPortVlanTxEnable, which is defined as a truth value and configured by the network management, determines whether the IEEE 802.1 organizationally defined port VLAN TLV transmission is allowed on a given LLDP transmission capable port. The value of this object must be restored from non-volatile storage after a re-initialization of the management system.
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 will be transmitted.
IldpXdot1ConfigVlanName TxEnable 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 will be transmitted on the port defined by the given IldpXdot1LocVlanNameEntry. The value of this object must be restored from non-volatile storage after a re-initialization of the management system.
IldpXdot1ConfigProtocolVlan Table 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.
IldpXdot1ConfigProtocolVlan Entry 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 will be transmitted.
IldpXdot1ConfigProtocolVlan TxEnable 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 will be transmitted on the port defined by the given IldpXdot1LocProtoVlanEntry. The value of this object must be restored from non-volatile storage after a re-initialization of the management system.
IldpXdot1ConfigProtocolVlan Table 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.

TABLE 110

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 will be 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 will be transmitted on the port defined by the given IldpXdot1LocProtocolEntry. The value of this object must be restored from non-volatile storage after a re-initialization of the management system.

## IldpXdot1 local data group

TABLE 111

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 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 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 port's VLAN identifier associated with the local system. A value of zero shall be used if the system either does not know the PVID or does not support port-based VLAN operation. This object displays zero although the TE interfaces are associated with VLANs.  <b>NOTE:</b> This object takes the value from the PVID sent by NSM. This PVID is sent from NSM to LLDP only for the untagged frames. Port VLAN ID or PVID, is used for classifying untagged packets. For untagged VLAN it can be set in access port, or converged port using the <b>switchport [access   converged] vlan &lt;vlan_id&gt;</b> command. All the other VLANs which are tagged will display zero.
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 shall be used if the system either does not know the protocol VLAN ID (PPVID) or does not support port and protocol VLAN operation.

TABLE 111

object and OID	Access	Description
lldpXdot1LocProtoVlanSupported 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.
lldpXdot1LocProtoVlanEnabled 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>fcoepport</i> is configured then that interface supports protocol-based VLAN and <i>lldpXdot1LocProtoVlanEnabled</i> should return true (1). This is the local property of the interface and it does not depend on whether <i>dot1-tlv</i> is being advertised or not.
lldpXdot1LocVlanNameTable 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.
lldpXdot1LocVlanNameEntry 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 <i>lldpXdot1LocVlanId</i> , configured on the given port.
lldpXdot1LocVlanId 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.
lldpXdot1LocVlanName 1.0.8802.1.1.2.1.5.32962.1.2.3.1.2	Read only	The string value used to identify VLAN name identified by the VLAN ID associated with the given port on the local system.
lldpXdot1LocProtocolTable 1.0.8802.1.1.2.1.5.32962.1.2.4	Not accessible	This table contains one or more rows per protocol identity information on the local system known to this agent.
lldpXdot1LocProtocolEntry 1.0.8802.1.1.2.1.5.32962.1.2.4.1	Not accessible	The information about particular protocols that are accessible through the given port component.
lldpXdot1LocProtocolIndex 1.0.8802.1.1.2.1.5.32962.1.2.4.1.1	Not accessible	This object represents an arbitrary local integer value used by this agent to identify a particular protocol identity.
lldpXdot1LocProtocolId 1.0.8802.1.1.2.1.5.32962.1.2.4.1.2	Read only	The octet string value used to identify the protocols associated with the given port of the local system.

## lldpXdot1 remote data group

TABLE 112

object and OID	Access	Description
lldpXdot1RemoteData lldpXdot1RemTable 1.0.8802.1.1.2.1.5.329 62.1.3	Not accessible	IEEE 802.1 remote system information.
lldpXdot1RemTable 1.0.8802.1.1.2.1.5.329 62.1.3.1	Not accessible	This table contains one or more rows per physical network connection known to this agent.
lldpXdot1RemEntry 1.0.8802.1.1.2.1.5.329 62.1.3.1.1	Not accessible	The information about a particular port component.
lldpXdot1RemPortVlanId 1.0.8802.1.1.2.1.5.329 62.1.3.1.1.1	Read only	The integer value used to identify the port's VLAN identifier associated with the remote system. If the remote system either does not know the PVID or does not support port-based VLAN operation, the value of lldpXdot1RemPortVlanId should be zero.
lldpXdot1RemProtoVlanTable 1.0.8802.1.1.2.1.5.329 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 should 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.

TABLE 112

object and OID	Access	Description
lldpXdot1RemVlanName 1.0.8802.1.1.2.1.5.329 62.1.3.3.1.2	Read only	The string value used to identify VLAN name identified by the VLAN ID associated with the remote system.
lldpXdot1RemProtocolTable 1.0.8802.1.1.2.1.5.329 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.
lldpXdot1RemProtocolIndex 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.
lldpXdot1RemProtocolId 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 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 106](#) and [Figure 107](#) 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 106 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 107 LLDP-EXT-DOT3-MIB hierarchy

## IldpXdot3 configuration group

TABLE 113

object and OID	Access	Description
IldpXdot3Config 1.0.8802.1.1.2.1.5.4623.1.1	Not accessible	IEEE 802.3 configuration information.
IldpXdot3PortConfigTable 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.
IldpXdot3PortConfigEntry 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.
IldpXdot3PortConfigTLVsTxEnable 1.0.8802.1.1.2.1.5.4623.1.1.1.1	Read-write	The IldpXdot3PortConfigTLVsTxEnable, 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"> <li>The bit macPhyConfigStatus (0) indicates that LLDP agent should transmit MAC/PHY configuration or status TLV.</li> <li>The bit powerViaMDI (1) indicates that LLDP agent should transmit Power through MDI TLV.</li> <li>The bit linkAggregation (2) indicates that LLDP agent should transmit Link Aggregation TLV.</li> <li>The bit maxFrameSize (3) indicates that LLDP agent should transmit Maximum-frame-size TLV.</li> </ul>

## IldpXdot3 local data group

TABLE 114

object and OID	Access	Description
IldpXdot3LocalData 1.0.8802.1.1.2.1.5.4623.1.2	Not accessible	IEEE 802.3 local device information.
IldpXdot3LocPortTable 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.
IldpXdot3LocPortEntry 1.0.8802.1.1.2.1.5.4623.1.2.1.1	Not accessible	The information about a particular port component.
IldpXdot3LocPortAutoNegSupported 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.
IldpXdot3LocPortAutoNegEnabled 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.

TABLE 114

object and OID	Access	Description
lldpXdot3LocPortAutoNegAdvertisedCap 1.0.8802.1.1.2.1.5.462 3.1.2.1.1.3	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.
lldpXdot3LocPortOperMa uType 1.0.8802.1.1.2.1.5.462 3.1.2.1.1.4	Read only	An integer value that indicates the operational MAU type of the given port on the local system.
lldpXdot3LocPowerTable 1.0.8802.1.1.2.1.5.462 3.1.2.2	Not accessible	This table contains power Ethernet information of the local system known to the agent. <b>NOTE:</b> This table is not supported.
lldpXdot3LocLinkAggTabl e 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.
lldpXdot3LocLinkAggEntr y 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.
lldpXdot3LocLinkAggStat us 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.
lldpXdot3LocLinkAggPort Id 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 should be set to zero.
lldpXdot3LocMaxFrameS izeTable 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.
lldpXdot3LocMaxFrameS izeEntry 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.
lldpXdot3LocMaxFrameS ize 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

TABLE 115

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 remote system) supports auto-negotiation.
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. <b>NOTE:</b> 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 remote system's port component.
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 should be zero.

**TABLE 115**

object and OID	Access	Description
lldpXdot3RemMaxFrame SizeTable 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.
lldpXdot3RemMaxFrame SizeEntry 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.
lldpXdot3RemMaxFrame Size 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.

# IEEE 802.3 LAG MIB Objects

---

## In this chapter

- [IEEE 802.3 LAG MIB overview](#) ..... 303
- [Aggregator group](#) ..... 305
- [Aggregator port group](#) ..... 307

## 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 108](#) through [Figure 113](#) 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 108** 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 109 dot3adAggTable hierarchy**

```

- dot3adAggPortListTable 1.2.840.10006.300.43.1.1.2
  - dot3adAggPortListEntry 1.2.840.10006.300.43.1.1.2.1
    - dot3adAggPort group

```

**FIGURE 110 dot3adAggPortListTable hierarchy**

```

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

```

**FIGURE 111 dot3adAggPortTable hierarchy**

- dot3adAggPortStatsTable 1.2.840.10006.300.43.1.2.2
  - dot3adAggPortStatsEntry 1.2.840.10006.300.43.1.2.2.1
    - dot3adAggPortStatsLACPDUssRx 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
    - dot3adAggPortStatsLACPDUssTx 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 112 dot3adAggPortStatsTable hierarchy

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

FIGURE 113 dot3adAggPortDebugTable hierarchy

## Aggregator group

TABLE 116

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 <b>show debug port-channel all</b> command returns the aggregator MAC address.

TABLE 116

object and OID	Access	Description
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 actor's system ID.
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.
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 will be 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 partner's system ID. If the aggregation is manually configured, this system priority value will be a value assigned by the local system.
dot3adAggPartnerOperKey 1.2.840.10006.300.43.1.1.1.1.10	Read only	The current operational value of the key for the aggregator's current protocol partner. This is a 16-bit value. If the aggregation is manually configured, this key value will be a value assigned by the local System.
dot3adAggCollectorMaxDelay 1.2.840.10006.300.43.1.1.1.1.11	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

TABLE 117

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 actor's system ID.
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 partner's system ID. The assigned value is used, along with the value of aAggPortPartnerAdminSystemID, aAggPortPartnerAdminKey, aAggPortPartnerAdminPort, and aAggPortPartnerAdminPortPriority, in order to achieve manually configured aggregation.
dot3adAggPortPartnerOperSystemPriority 1.2.840.10006.300.43.1.2.1.1.7	Read only	A 2-octet read-only value indicating the operational value of priority associated with the partner's system ID. The value of this attribute may contain the manually configured value carried in aAggPortPartnerAdminSystemPriority if there is no protocol partner.
dot3adAggPortPartnerAdminSystemID 1.2.840.10006.300.43.1.2.1.1.8	Read-write	A 6-octet read-write MAC address value representing the administrative value of the aggregation port's protocol partner's system ID. The assigned value is used, along with the value of aAggPortPartnerAdminSystemPriority, aAggPortPartnerAdminKey, aAggPortPartnerAdminPort, and aAggPortPartnerAdminPortPriority, in order to achieve manually configured aggregation.

**NOTE:** This object is not supported.

TABLE 117

object and OID	Access	Description
dot3adAggPortPartnerOperSystemID 1.2.840.10006.300.43.1.2.1.1.9	Read only	A 6-octet read-only MAC address value representing the current value of the aggregation port's protocol partner's system ID. A value of zero indicates that there is no known protocol Partner. The value of this attribute may contain the manually configured value carried in aAggPortPartnerAdminSystemID if there is no protocol partner. <b>NOTE:</b> This object is not supported.
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 that this aggregation port is currently attached to. 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 LACP PDUs 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.
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 aggregation port's protocol partner. The value of this attribute may contain the manually configured value carried in aAggPortPartnerAdminPort if there is no protocol partner. This 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.



TABLE 117

object and OID	Access	Description
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 (43.4.2) as transmitted by the actor in LACP PDUs.
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 LACP PDUs.
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 values 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 Link Aggregation Control Protocol 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 LACP PDUs received on this aggregation port.
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 (43B.4), but contain an unknown PDU, or addressed to the slow protocols group MAC address (43B.4), but do not carry the Slow Protocols Ethernet Type.

**TABLE 117**

object and OID	Access	Description
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 LACP PDUs 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.
dot3adAggPortDebugTable 1.2.840.10006.300.43.1.2.3	Not accessible	A table that contains link aggregation debug information about every port that is associated with this device. A row appears in this table for each physical port.
dot3adAggPortDebugEntry 1.2.840.10006.300.43.1.2.3.1	Not accessible	A list of the debug parameters for a port.
dot3adAggPortDebugRxState 1.2.840.10006.300.43.1.2.3.1.1	Read only	This object represents the receive state machine for the Aggregation Port. Valid values: <ul style="list-style-type: none"> <li>• current (1)</li> <li>• expired (2)</li> <li>• defaulted (3)</li> <li>• initialize (4)</li> <li>• lacpDisabled (5)</li> <li>• portDisabled (6)</li> </ul>
dot3adAggPortDebugLastRxTime 1.2.840.10006.300.43.1.2.3.1.2	Read only	The value of aTimeSinceSystemReset when the last LACPDU was received by this aggregation port.
dot3adAggPortDebugMuxState 1.2.840.10006.300.43.1.2.3.1.3	Read only	This object represents the Mux state machine for the Aggregation Port. Valid values: <ul style="list-style-type: none"> <li>• detached (1)</li> <li>• waiting (2)</li> <li>• attached (3)</li> <li>• collecting (4)</li> <li>• distributing (5)</li> <li>• collectingDistributing (6)</li> </ul>
dot3adAggPortDebugMuxReason 1.2.840.10006.300.43.1.2.3.1.4	Read only	A human-readable text string indicating the reason for the most recent change of Mux machine state.

TABLE 117

object and OID	Access	Description
dot3adAggPortDebugActorChurnState 1.2.840.10006.300.43.1.2.3.1.5	Read only	The state of the Actor Churn detection machine (43.4.17) for the aggregation port. Valid values: <ul style="list-style-type: none"> <li>noChurn - Indicates that the state machine is in either the NO_ACTOR_CHURN or the ACTOR_CHURN_MONITOR state</li> <li>churn - Indicates that the state machine is in the ACTOR_CHURN state.</li> </ul>
dot3adAggPortDebugPartnerChurnState 1.2.840.10006.300.43.1.2.3.1.6	Read only	The state of the Partner Churn detection machine (43.4.17) for the aggregation port. Valid values: <ul style="list-style-type: none"> <li>noChurn - Indicates that the state machine is in either the NO_PARTNER_CHURN or the PARTNER_CHURN_MONITOR state</li> <li>churn - Indicates that the state machine is in the PARTNER_CHURN state.</li> </ul>
dot3adAggPortDebugActorChurnCount 1.2.840.10006.300.43.1.2.3.1.7	Read only	The count of the number of times the Actor Churn state machine has entered the ACTOR_CHURN state.
dot3adAggPortDebugPartnerChurnCount 1.2.840.10006.300.43.1.2.3.1.8	Read only	The count of the number of times the Partner Churn state machine has entered the PARTNER_CHURN state.
dot3adAggPortDebugActorSyncTransitionCount 1.2.840.10006.300.43.1.2.3.1.9	Read only	The count of the number of times the Actor's Mux state machine (43.4.15) has entered the IN_SYNC state.
dot3adAggPortDebugPartnerSyncTransitionCount 1.2.840.10006.300.43.1.2.3.1.10	Read only	The count of the number of times the Partner's Mux state machine (43.4.15) has entered the IN_SYNC state.
dot3adAggPortDebugActorChangeCount 1.2.840.10006.300.43.1.2.3.1.11	Read only	The count of the number of times the Actor's perception of the LAG ID for this aggregation port has changed.
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 (see 43.3.6.1) 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.

## 17 Aggregator port group

# Bridge-MIB Objects

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## 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 114 through Figure 118 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 114 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
  - dot1dStp group
    - dot1dStpProtocolSpecification 1.3.6.1.2.1.17.2.1
    - dot1dStpPriority 1.3.6.1.2.1.17.2.2
    - dot1dStpTimeSinceTopologyChange 1.3.6.1.2.1.17.2.3
    - dot1dStpTopChanges 1.3.6.1.2.1.17.2.4
    - dot1dStpDesignatedRoot 1.3.6.1.2.1.17.2.5
    - dot1dStpRootCost 1.3.6.1.2.1.17.2.6
    - dot1dStpRootPort 1.3.6.1.2.1.17.2.7
    - dot1dStpMaxAge 1.3.6.1.2.1.17.2.8
    - dot1dStpHelloTime 1.3.6.1.2.1.17.2.9
    - dot1dStpHoldTime 1.3.6.1.2.1.17.2.10
    - dot1dStpForwardDelay 1.3.6.1.2.1.17.2.11
    - dot1dStpBridgeMaxAge 1.3.6.1.2.1.17.2.12
    - dot1dStpBridgeHelloTime 1.3.6.1.2.1.17.2.13
    - dot1dStpBridgeForwardDelay 1.3.6.1.2.1.17.2.14

    - dot1dStpPortTable 1.3.6.1.2.1.17.2.15
      - dot1dStpPortEntry 1.3.6.1.2.1.17.2.15.1
        - dot1dStpPort 1.3.6.1.2.1.17.2.15.1.1
        - dot1dStpPortPriority 1.3.6.1.2.1.17.2.15.1.2
        - dot1dStpPortState 1.3.6.1.2.1.17.2.15.1.3
        - dot1dStpPortEnable 1.3.6.1.2.1.17.2.15.1.4
        - dot1dStpPortPathCost 1.3.6.1.2.1.17.2.15.1.5
        - dot1dStpPortDesignatedRoot 1.3.6.1.2.1.17.2.15.1.6
        - dot1dStpPortDesignatedCost 1.3.6.1.2.1.17.2.15.1.7
        - dot1dStpPortDesignatedBridge 1.3.6.1.2.1.17.2.15.1.8
        - dot1dStpPortDesignatedPort 1.3.6.1.2.1.17.2.15.1.9
        - dot1dStpPortForwardTransitions 1.3.6.1.2.1.17.2.15.1.10
        - dot1dStpPortPathCost32 1.3.6.1.2.1.17.2.15.1.11

  - dot1dTp
    - dot1dTpFdbTable 1.3.6.1.2.1.17.4.3
      - dot1dTpFdbEntry 1.3.6.1.2.1.17.4.3.1
        - dot1dTpFdbAddress 1.3.6.1.2.1.17.4.3.1.1
        - dot1dTpFdbPort 1.3.6.1.2.1.17.4.3.1.2
        - dot1dTpFdbStatus 1.3.6.1.2.1.17.4.3.1.3
    - dot1dTpPortTable 1.3.6.1.2.1.17.4.4
      - dot1dTpPortEntry 1.3.6.1.2.1.17.4.4.1
        - dot1dTpPort 1.3.6.1.2.1.17.4.4.1.1
        - dot1dTpPortMaxInfo 1.3.6.1.2.1.17.4.4.1.2
        - dot1dTpPortInFrames 1.3.6.1.2.1.17.4.4.1.3
        - dot1dTpPortOutFrames 1.3.6.1.2.1.17.4.4.1.4
        - dot1dTpPortInDiscards 1.3.6.1.2.1.17.4.4.1.5

```

**FIGURE 115** 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 116** P-Bridge MIB hierarchy

## 18 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 117 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 118 RSTP hierarchy

## Bridge-MIB

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

## Bridge-MIB traps

TABLE 118

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).

TABLE 119

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"> <li>• unknown (1)</li> <li>• transparent-only (2)</li> <li>• sourceroute-only (3)</li> <li>• srt (4)</li> </ul>
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.

**TABLE 119**

Object and OID	Access	Description
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}.
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

This contains objects that denote the bridge's state with respect to the Spanning Tree Protocol.

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

**TABLE 120**

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.
dot1dStpProtocolSpecific 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"> <li>• unknown (1)</li> <li>• decLb100 (2)</li> <li>• ieee8021d (3)</li> </ul>
dot1dStpPriority 1.3.6.1.2.1.17.2.2	Read-write	The value of the write-able portion of the bridge ID (that is, the first two octets of the (8 octet long) bridge ID). The other (last) 6 octets of the bridge ID are given by the value of dot1dBaseBridgeAddress. On bridges supporting IEEE 802.1t or IEEE 802.1w, permissible values are 0 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) since the last time a topology change was detected by the bridge entity. For RSTP, this reports the time since the tcWhile timer for any port on this bridge was nonzero.
dot1dStpTopChanges 1.3.6.1.2.1.17.2.4	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.

TABLE 120

Object and OID	Access	Description
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.
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 PDUs shall be 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 towards the forwarding state. The value determines how long the port stays in each of the listening and learning states, which precede the forwarding state. This value is also used when a topology change has been detected and is underway, to age all dynamic entries in the forwarding database.
dot1dStpBridgeMaxAge 1.3.6.1.2.1.17.2.12	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 1 second. An agent may return a badValue error, if a set is attempted to a value that is not a whole number of seconds.
dot1dStpBridgeHelloTime 1.3.6.1.2.1.17.2.13	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 1 second. An agent may return a badValue error if a set is attempted to a value that is not a whole number of seconds.
dot1dStpBridgeForwardDelay 1.3.6.1.2.1.17.2.14	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 1 second. An agent may return a badValue error if a set is attempted to a value that is not a whole number of seconds.
dot1dStpPortTable 1.3.6.1.2.1.17.2.15	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 0-240, in steps of 16.

TABLE 120

Object and OID	Access	Description
dot1dStpPortState 1.3.6.1.2.1.17.2.15.1.3	Read only	The port's current state, as defined by application of the Spanning Tree Protocol. This state controls what action a port takes on reception of a frame. Values: <ul style="list-style-type: none"> <li>• disabled (1)</li> <li>• blocking (2)</li> <li>• listening (3)</li> <li>• learning (4)</li> <li>• forwarding (5)</li> <li>• broken (6)</li> </ul>
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"> <li>• enabled (1)</li> <li>• disabled (2)</li> </ul>
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 towards the spanning tree root which include this port. 802.1D-1998 recommends that the default value of this parameter be in inverse proportion to the speed of the attached LAN.
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 this port's segment.
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 this port's segment.
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 towards the spanning tree root which include this port. 802.1D-1998 recommends that the default value of this parameter be in inverse proportion to the speed of the attached LAN. This object replaces dot1dStpPortPathCost to support IEEE 802.1t.

## dot1dTp group

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 will implement this sub-tree.

TABLE 121

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.
dot1dTpFdbStatus 1.3.6.1.2.1.17.4.3.1.3	Read only	The status of this entry. <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>learned (3) - the value of the corresponding instance of dot1dTpFdbPort was learned, and is being used.</li> <li>self (4) - the value of the corresponding instance of dot1dTpFdbAddress represents one of the bridge's addresses. The corresponding instance of dot1dTpFdbPort indicates which of the bridge's ports has this address.</li> <li>mgmt (5) - the value of the corresponding instance of dot1dTpFdbAddress is also the value of an existing instance of dot1dStaticAddress.</li> </ul>
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 will receive or transmit.
dot1dTpPortInFrames 1.3.6.1.2.1.17.4.4.1.3	Read only	The number of frames that have been received by this port from its segment. <b>NOTE:</b> 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.

**TABLE 121**

Object and OID	Access	Description
dot1dTpPortOutFrames 1.3.6.1.2.1.17.4.4.1.4	Read only	The number of frames that have been transmitted by this port to its segment.  <b>NOTE:</b> A frame transmitted on the interface corresponding to this port is only counted by this object if and only if it is for a protocol being processed by the local bridging function, including the bridge management frames.
dot1dTpPortInDiscards 1.3.6.1.2.1.17.4.4.1.5	Read only	The count of received valid frames that were discarded (that is, filtered) by the forwarding process.

## dot1d static group

**TABLE 122**

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 this entry's filtering information 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 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 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.  <b>NOTE:</b> This object is not supported.
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"> <li>• other (1) - This entry is currently in use, but the conditions under which it will remain so differ from the following values.</li> <li>• invalid (2) - Writing this value to the object removes the corresponding entry.</li> <li>• permanent (3) - This entry is currently in use and will remain so after the next reset of the bridge.</li> <li>• deleteOnReset (4) - This entry is currently in use and will remain so until the next reset of the bridge.</li> <li>• deleteOnTimeout (5) - This entry is currently in use and will remain so until it is aged out.</li> </ul>

## P-Bridge MIB

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

The following tables are not supported:

- dot1dTpHCPortTable
- dot1dUserPriorityRegenTable
- dot1dTrafficClassTable
- dot1dPortOutboundAccessPriorityTable
- dot1dPortGarpTable
- dot1dPortGmrpTable

**TABLE 123**

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"> <li>• unknown (1)</li> <li>• transparent-only (2)</li> <li>• sourceroute-only (3)</li> <li>• srt (4)</li> </ul>
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

TABLE 124

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"> <li>dot1dExtendedFilteringServices (0) - Can perform filtering of individual multicast addresses controlled by GMRP.</li> <li>dot1dTrafficClasses (1) - Can map user priority to multiple traffic classes.</li> <li>dot1qStaticEntryIndividualPort (2) - dot1qStaticUnicastReceivePort &amp; dot1qStaticMulticastReceivePort can represent non-zero entries.</li> <li>dot1qIVLCapable (3) - Independent VLAN Learning (IVL).</li> <li>dot1qSVLCapable (4) - Shared VLAN Learning (SVL).</li> <li>dot1qHybridCapable (5) - Both IVL &amp; SVL simultaneously.</li> <li>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.</li> <li>dot1dLocalVlanCapable (7) - Can support multiple local bridges, outside of the scope of 802.1Q defined VLANs.</li> </ul>
dot1dTrafficClassesEnable d 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. When false (2), 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 should be enabled on the device, in all VLANs, and on all ports for which it has not been specifically disabled.</p> <p>When disabled (2), GMRP is disabled in all VLANs, on all ports, and all GMRP packets will be 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"> <li>dot1qDot1qTagging (0) - Supports 802.1Q VLAN tagging of frames and GVRP.</li> <li>dot1qConfigurableAcceptableFrameTypes (1) - Allows modified values of dot1qPortAcceptableFrameTypes.</li> <li>dot1qIngressFiltering (2) - Supports the discarding of any frame received on a port, whose VLAN classification does not include that port in its member set.</li> </ul>

## dot1dPriority group

TABLE 125

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.

The following tables are not supported:

- dot1qPortVlanTable
- dot1qPortVlanHCStatisticsTable
- dot1qLearningConstraintsTable
- dot1vProtocolGroupTable
- dot1vProtocolPortTable

## dot1qBase group

TABLE 126

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.

TABLE 126

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 should be enabled on the device, on all ports for which it has not been specifically disabled. When disabled (2), GVRP is disabled on all ports, and all GVRP packets will be forwarded transparently.

## dot1qTp group

TABLE 127

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).

TABLE 127

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"> <li>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.</li> <li>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.</li> <li>learned (3) - the value of the corresponding instance of dot1dTpFdbPort was learned, and is being used.</li> <li>self (4) - the value of the corresponding instance of dot1dTpFdbAddress represents one of the bridge's addresses. The corresponding instance of dot1dTpFdbPort indicates which of the bridge's ports has this address.</li> <li>mgmt (5) - the value of the corresponding instance of dot1dTpFdbAddress is also the value of an existing instance of dot1dStaticAddress.</li> </ul>
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 should be forwarded, configured statically by management or dynamically by GMRP.
dot1qForwardAllPorts 1.3.6.1.2.1.17.7.1.2.4.1.1	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.

TABLE 127

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 shall be 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 will be 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

TABLE 128

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 will be flooded in the event that it has not been learned. It also specifies the set of ports on which a specific unicast address may be dynamically learned.

TABLE 128

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

TABLE 128

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

## dot1qVlan group

TABLE 129

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.
dot1qVlanFdbld 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 dot1qFdbld 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.

TABLE 129

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"> <li>• other (1) - This entry is currently in use, but the conditions under which it will remain so differ from the following values.</li> <li>• permanent (2) - This entry, corresponding to an entry in dot1qVlanStaticTable, is currently in use and will remain so after the next reset of the device. The port lists for this entry include ports from the equivalent dot1qVlanStaticTable entry and ports learned dynamically.</li> <li>• dynamicGvrp (3) - This entry is currently in use and will remain so until removed by GVRP. There is no static entry for this VLAN, and it will be removed when the last port leaves the VLAN.</li> </ul>
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 will be 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 should 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. <b>NOTE:</b> 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).



TABLE 129

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 defined by IEEE 802.1w.

TABLE 130

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"> <li>stpCompatible (0) - Indicates the Spanning Tree Protocol specified in IEEE 802.1D-1998.</li> <li>rstp (2) - Indicates the Rapid Spanning Tree Protocol specified in IEEE 802.1w and clause 17 of 802.1D-2004.</li> </ul>
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.

TABLE 130

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"> <li>• true (1) - Indicates that this port should be assumed as an edge port.</li> <li>• false (2) - Indicates that this port should be assumed as a non edge port.</li> </ul>
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 will be changed as well. This object will also be changed to false on reception of a BPDU.
dot1dStpPortAdminPointToPoint 1.3.6.1.2.1.17.2.19.1.4	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"> <li>• forceTrue (0) - Indicates that this port should always be treated as if it is connected to a point-to-point link.</li> <li>• forceFalse (1) - Indicates that this port should be treated as having a shared media connection.</li> <li>• 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.</li> </ul> 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.

# BD MIB Objects

---

## In this chapter

- [BD MIB objects overview](#) ..... 335
- [BD Traps](#) ..... 336
- [BD configuration](#) ..... 337
- [BD statistics](#) ..... 337

## BD MIB objects overview

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

This MIB module is for the Brocade Bottleneck Detection feature.

[Figure 119](#) through [Figure 122](#) depict the organization and structure of the BD MIB.

```

- iso
  - org
    - dod
      - internet
        - private
          - enterprises
            - bcsi
              - commDev
                - fibreChannel
                  - fcSwitch
                    - bd
                      - bdTraps
                      - bdConfig
                      - bdStats

```

**FIGURE 119** BD MIB overall tree structure

```

- bdTraps
  - bdTrap 1.3.6.1.4.1.1588.2.1.1.51.0.1
  - bdClearTrap 1.3.6.1.4.1.1588.2.1.1.51.0.2

```

**FIGURE 120** bdTraps hierarchy

```

- bdConfig
  - bdStatus 1.3.6.1.4.1.1588.2.1.1.51.1.1
  - bdLThreshold 1.3.6.1.4.1.1588.2.1.1.51.1.2
  - bdCThreshold 1.3.6.1.4.1.1588.2.1.1.51.1.3
  - bdQTime 1.3.6.1.4.1.1588.2.1.1.51.1.4
  - bdWinAvgTime 1.3.6.1.4.1.1588.2.1.1.51.1.5
  - bdThreshold 1.3.6.1.4.1.1588.2.1.1.51.1.6
  - nBdType 1.3.6.1.4.1.1588.2.1.1.51.1.7

```

FIGURE 121 bdConfig hierarchy

```

- bdStats
  - bdNumOfEntries 1.3.6.1.4.1.1588.2.1.1.51.2.1
  - bdStatsTable 1.3.6.1.4.1.1588.2.1.1.51.2.2
    - bdStatsEntry 1.3.6.1.4.1.1588.2.1.1.51.2.2.1
      - userPortNumber 1.3.6.1.4.1.1588.2.1.1.51.2.2.1.1
      - bdSampleTime 1.3.6.1.4.1.1588.2.1.1.51.2.2.1.2
      - bdType 1.3.6.1.4.1.1588.2.1.1.51.2.2.1.3
      - bdStatsValue10SecsSample 1.3.6.1.4.1.1588.2.1.1.51.2.2.1.4
      - bdStatsValue60SecsSample 1.3.6.1.4.1.1588.2.1.1.51.2.2.1.5
      - bdStatsValue300SecsSample 1.3.6.1.4.1.1588.2.1.1.51.2.2.1.6
    - bdAggrStats 1.3.6.1.4.1.1588.2.1.1.51.2.3
  - bdAbsoluteValue 1.3.6.1.4.1.1588.2.1.1.51.2.4
  - bdAvgFrameSize 1.3.6.1.4.1.1588.2.1.1.51.2.5

```

FIGURE 122 bdStats hierarchy

## BD Traps

The OID represents the BD traps.

TABLE 131

Trap name and OID	Variables	Description
bdTrap 1.3.6.1.4.1.1588.2.1.1.51.1.0.1	userPortNumber bdWinAvgTime nBdType bdThreshold bdAggrStats bdAbsoluteValue swVfld bdAvgFrameSize	This trap is sent for both latency bottleneck and congestion bottleneck with nBdType accordingly. This trap is triggered when the threshold is exceeded.
bdClearTrap 1.3.6.1.4.1.1588.2.1.1.51.1.0.2	userPortNumber bdWinAvgTime nBdType bdThreshold bdAggrStats bdAbsoluteValue swVfld bdAvgFrameSize	This trap is sent after a latency or congestion bottleneck is cleared.

## BD configuration

The OID represents the Bottleneck configuration.

### NOTE

When alerting is never enabled in the lifetime of the daemon, junk values are expected for alert-related parameters.

When alerting is enabled before being disabled, non-junk values are expected for alert-related parameters.

**TABLE 132**

Object and OID	Access	Description
bdStatus 1.3.6.1.4.1.1588.2.1.1.51.1.1	Read only	This object represents the status of bottleneck detection feature if enabled in the switch. Valid values: <ul style="list-style-type: none"> <li>• true (1)</li> <li>• false (2)</li> </ul>
bdLThreshold 1.3.6.1.4.1.1588.2.1.1.51.1.2	Read only	This object is the severity threshold for latency bottleneck. This threshold indicates the percentage of one-second intervals affected by latency conditions within a specified time window. The value of this OID is between 0 and 1.
bdCThreshold 1.3.6.1.4.1.1588.2.1.1.51.1.3	Read only	This object is the severity threshold for congestion bottleneck. This threshold indicates the percentage of one-second intervals affected by congestion conditions within a specified time window. The value of this OID is between 0 and 1.
bdQTime 1.3.6.1.4.1.1588.2.1.1.51.1.4	Read only	The minimum number of seconds between consecutive alerts. The value assigned to this parameter applies to both latency and congestion monitoring. In this duration, there will not be any traps sent.
bdWinAvgTime 1.3.6.1.4.1.1588.2.1.1.51.1.5	Read only	The time window in seconds over which the percentage of seconds affected by bottleneck conditions is computed and compared with the threshold.
bdThreshold 1.3.6.1.4.1.1588.2.1.1.51.1.6	accessible-for-notify	This object represents the threshold for BD. This is accessible only for bdTrap and bdClearTrap.
nBdType 1.3.6.1.4.1.1588.2.1.1.51.1.7	accessible-for-notify	This object represents the BD type. This is accessible only for bdTrap and bdClearTrap.

## BD statistics

This OID represents the BD statistics.

TABLE 133

Object and OID	Access	Description
bdNumOfEntries 1.3.6.1.4.1.1588.2.1.1.51.2.1	Read only	The number of entries in the statistics table.
bdStatsTable 1.3.6.1.4.1.1588.2.1.1.51.2.2	Not accessible	The table of stats entries represents both types of BD. This can have maximum 30 samples per port for congestion bottleneck and 30 samples per port for latency bottleneck. Each sample in the statistics is taken every 10 seconds.
bdStatsEntry 1.3.6.1.4.1.1588.2.1.1.51.2.2.1	Not accessible	An entry of BD statistics.
userPortNumber 1.3.6.1.4.1.1588.2.1.1.51.2.2.1.1	Read only	This object represents the user port indices of bottleneck monitored ports like F_port, E_port, L_port, and FCOE_port.
bdSampleTime 1.3.6.1.4.1.1588.2.1.1.51.2.2.1.2	Read only	This object represents the sample time. The value is returned in Epoch[Unix] time.
bdType 1.3.6.1.4.1.1588.2.1.1.51.2.2.1.3	Read only	This object represents the bottleneck type. <ul style="list-style-type: none"> <li>• congestion (1)</li> <li>• latency (2)</li> </ul>
bdStatsValue10SecsSample 1.3.6.1.4.1.1588.2.1.1.51.2.2.1.4	Read only	This sample is an average of 10 samples collected every second.
bdStatsValue60SecsSample 1.3.6.1.4.1.1588.2.1.1.51.2.2.1.5	Read only	This sample is an average of 60 samples collected every second.
bdStatsValue300SecsSample 1.3.6.1.4.1.1588.2.1.1.51.2.2.1.6	Read only	This sample is an average of 300 samples collected every second.
bdAggrStats 1.3.6.1.4.1.1588.2.1.1.51.2.3	accessible-for-notify	This object represents the aggregate stats value. This value is the sum of all the samples divided by the average window and multiplied by 100. This object is accessible only for bdTrap and bdClearTrap.
bdAbsoluteValue 1.3.6.1.4.1.1588.2.1.1.51.2.4	accessible-for-notify	This is the absolute value of bdAggrStats. It is the number of affected seconds. This is accessible only for bdTrap and bdClearTrap.
bdAvgFrameSize 1.3.6.1.4.1.1588.2.1.1.51.2.5	accessible-for-notify	This object represents the average size in bytes of all frames that were transmitted on the ports during the averaging window. This is accessible only for bdTrap and bdClearTrap.

# MIB Object Groupings

---

## In this appendix

- [Switch variables](#) ..... 339
- [Sensor variables](#) ..... 339
- [Port variables](#) ..... 339
- [Event variables](#) ..... 340
- [ISL and end device variables](#) ..... 340
- [SNMP configuration variables](#) ..... 340
- [iSCSI instance information variables](#) ..... 341

## Switch variables

MIB variables that assist in monitoring or modifying the status of switches are in the following tables or groups.

- [connUnitTable](#) ..... 205
- [connUnitRevsTable](#) ..... 211
- [FIBRE-CHANNEL-FE-MIB organization](#) ..... 71
- [FCFABRIC-ELEMENT-MIB organization](#) ..... 88
- [Flash administration](#) ..... 143

## Sensor variables

MIB variables that assist in monitoring or modifying the status or state of fans, power supply, and temperature are in the following tables or groups.

- [connUnitSensorTable](#) ..... 211
- [swNumSensors](#) ..... 145

## Port variables

MIB variables that assist in monitoring or modifying ports are in the following tables or groups.

### Variables for state and status

- [Connectivity unit group](#) ..... 204

- fcFxPortTable ..... 79
- fcFxConfTable..... 95
- fcFxPortStatusTable..... 81
- fcFxPortPhysTable ..... 81
- fcFxPortCapTable..... 86
- Fibre Channel port group ..... 152

### Variables for statistics and measurement

- Statistics group ..... 225
- fcFxPortErrorTable ..... 83
- fcFxPortC2AccountingTable ..... 85
- fcFeCapabilities group..... 86

## Event variables

MIB variables that assist in monitoring or modifying events are in the following tables or groups.

- connUnitEventTable..... 221
- Event group ..... 158

## ISL and end device variables

MIB variables that assist in monitoring or modifying ISL and end devices are in the following tables or groups.

### ISL variables

- connUnitLinkTable..... 223
- Switch Fabric group..... 149

### End Device variables

- connUnitLinkTable..... 223
- fcFxLoginTable..... 82
- swFCPortName ..... 156

## SNMP configuration variables

MIB variables that assist in configuring SNMP are in the following tables or groups.

- trapRegTable ..... 232
- Switch agent configuration group..... 151



## iSCSI instance information variables

MIB variables that assist in gathering information about iSCSI instances are in the following tables.

- [iSCSI instance attributes table](#) ..... 254
- [iSCSI node attributes table](#) ..... 255
- [iSCSI session statistics table](#) ..... 259

## A iSCSI instance information variables

# Mapping of CLI Counters to MIB Objects

## In this appendix

- [portStatsShow command](#) ..... 343
- [portErrShow command](#) ..... 344
- [portStats64Show command](#) ..... 345
- [portShow command](#) ..... 346

This appendix maps the counters displayed by the CLI commands to the corresponding MIB objects.

## portStatsShow command

**Table 134** lists the counters displayed by the **portStatsShow** command and the corresponding MIB objects.

**TABLE 134** portStatsShow command

Counters	MIB Object	MIB OID
stat_wtx	<a href="#">connUnitPortStatCountTxElements</a> multiplied by four	1.3.6.1.3.94.4.5.1.6
stat_wrx	<a href="#">connUnitPortStatCountRxElements</a> multiplied by four	1.3.6.1.3.94.4.5.1.7
stat_ftx	<a href="#">connUnitPortStatCountTxObjects</a>	1.3.6.1.3.94.4.5.1.4
stat_frx	<a href="#">connUnitPortStatCountRxObjects</a>	1.3.6.1.3.94.4.5.1.5
stat_c2_frx	<a href="#">connUnitPortStatCountClass2RxFrames</a>	1.3.6.1.3.94.4.5.1.20
stat_c3_frx	<a href="#">connUnitPortStatCountClass3RxFrames</a>	1.3.6.1.3.94.4.5.1.26
stat_lc_rx	<a href="#">swConnUnitLCRX</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.16
stat_mc_rx	<a href="#">connUnitPortStatCountRxMulticastObjects</a>	1.3.6.1.3.94.4.5.1.29
stat_mc_to	Not supported	
stat_mc_tx	<a href="#">connUnitPortStatCountTxMulticastObjects</a>	1.3.6.1.3.94.4.5.1.30
tim_rdy_pri	<a href="#">swConnUnitRDYPriority</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.17
tim_txcrd_z	<a href="#">connUnitPortStatCountBBCreditZero</a>	1.3.6.1.3.94.4.5.1.8
er_enc_in	<a href="#">connUnitPortStatCountEncodingDisparityErrors</a>	1.3.6.1.3.94.4.5.1.50
er_crc	<a href="#">swConnUnitCRCWithBadEOF</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.1
er_trunc	<a href="#">connUnitPortStatCountFramesTruncated</a>	1.3.6.1.3.94.4.5.1.47
er_toolong	<a href="#">connUnitPortStatCountFramesTooLong</a>	1.3.6.1.3.94.4.5.1.50
er_bad_eof	<a href="#">swConnUnitBadEOF</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.15

**TABLE 134** portStatsShow command (Continued)

Counters	MIB Object	MIB OID
er64_enc_out	<a href="#">connUnitPortStatCountEncodingDisparityErrors</a> subtracted from <a href="#">connUnitPortStatCountInvalidTxWords</a>	1.3.6.1.3.94.4.5.1.50 - 1.3.6.1.3.94.4.5.1.41
er_bad_os	<a href="#">connUnitPortStatCountInvalidOrderedSets</a>	1.3.6.1.3.94.4.5.1.45
er_rx_c3_timeout	<a href="#">swConnUnitC3DiscardDueToRXTimeout</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.25
er_tx_c3_timeout	<a href="#">swConnUnitC3DiscardDueToTXTimeout</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.27
er_c3_dest_unreach	<a href="#">swConnUnitC3DiscardDueToDestUnreachable</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.26
er_other_discard	<a href="#">swConnUnitC3DiscardOther</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.28
er_pcs_blk	<a href="#">swConnUnitPCSErrorCounter</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.29
er_type1_miss	<a href="#">swConnUnitFTB1Miss</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.10
er_type2_miss	<a href="#">swConnUnitFTB2Miss</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.11
er_type6_miss	<a href="#">swConnUnitFTB6Miss</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.12
er_zone_miss	<a href="#">swConnUnitZoneMiss</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.13
er_lun_zone_miss	<a href="#">swConnUnitLunZoneMiss</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.14
er_crc_good_eof	<a href="#">connUnitPortStatCountInvalidCRC</a>	1.3.6.1.3.94.4.5.1.40
er_inv_arb	<a href="#">swConnUnitInvalidARB</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.9
open	<a href="#">swConnUnitOpen</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.8
transfer	<a href="#">swConnUnitTransferConnection</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.7
opened	<a href="#">swConnUnitOpend</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.6
starve_stop	<a href="#">swConnUnitStopTenancyStarVation</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.5
fl_tenancy	<a href="#">swConnUnitFLNumOfTenancy</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.3
nl_tenancy	<a href="#">swConnUnitNLNumOfTenancy</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.4
zero_tenancy	<a href="#">swConnUnitZeroTenancy</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.2

## portErrShow command

Table 135 lists the counters displayed by the **portErrShow** command and the corresponding MIB objects.

**TABLE 135** portErrShow command

Counters	MIB Object	MIB OID
frames_tx	<a href="#">connUnitPortStatCountTxObjects</a>	1.3.6.1.3.94.4.5.1.4
frames_rx	<a href="#">connUnitPortStatCountRxObjects</a>	1.3.6.1.3.94.4.5.1.5
er_enc_in	<a href="#">connUnitPortStatCountEncodingDisparityErrors</a>	1.3.6.1.3.94.4.5.1.50
crc_err	<a href="#">swConnUnitCRCWithBadEOF</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.1
crc_g_eof	<a href="#">connUnitPortStatCountInvalidCRC</a>	1.3.6.1.3.94.4.5.1.40
too_short	<a href="#">connUnitPortStatCountFramesTruncated</a>	1.3.6.1.3.94.4.5.1.47

TABLE 135 portErrShow command (Continued)

Counters	MIB Object	MIB OID
too_long	<a href="#">connUnitPortStatCountFramesTooLong</a>	1.3.6.1.3.94.4.5.1.46
bad_eof	<a href="#">swConnUnitBadEOF</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.15
enc_out	<a href="#">connUnitPortStatCountEncodingDisparityErrors</a> subtracted from <a href="#">connUnitPortStatCountInvalidTxWords</a>	1.3.6.1.3.94.4.5.1.50 - 1.3.6.1.3.94.4.5.1.41
disc_c3	<a href="#">connUnitPortStatCountClass3Discards</a>	1.3.6.1.3.94.4.5.1.28
link_fail	<a href="#">connUnitPortStatCountLinkFailures</a>	1.3.6.1.3.94.4.5.1.39
loss_of_sync	<a href="#">connUnitPortStatCountLossofSynchronization</a>	1.3.6.1.3.94.4.5.1.44
loss_of_sig	<a href="#">connUnitPortStatCountLossofSignal</a>	1.3.6.1.3.94.4.5.1.43
frjt	<a href="#">connUnitPortStatCountFRJTframes</a>	1.3.6.1.3.94.4.5.1.12
fbsy	<a href="#">connUnitPortStatCountFBSYFrames</a>	1.3.6.1.3.94.4.5.1.10

## portStats64Show command

Table 136 lists the counters displayed by the **portStats64Show** command and the corresponding MIB objects.

TABLE 136 portStats64Show command

Counters	MIB Object	MIB OID
stat64_wtx	<a href="#">connUnitPortStatCountTxElements</a> multiplied by four	1.3.6.1.3.94.4.5.1.6
stat64_wrx	<a href="#">connUnitPortStatCountRxElements</a> multiplied by four	1.3.6.1.3.94.4.5.1.7
stat64_ftx	<a href="#">connUnitPortStatCountTxObjects</a>	1.3.6.1.3.94.4.5.1.4
stat64_frx	<a href="#">connUnitPortStatCountRxObjects</a>	1.3.6.1.3.94.4.5.1.5
stat64_c2_frx	<a href="#">connUnitPortStatCountClass2RxFrames</a>	1.3.6.1.3.94.4.5.1.20
stat64_c3_frx	<a href="#">connUnitPortStatCountClass3RxFrames</a>	1.3.6.1.3.94.4.5.1.26
stat64_lc_rx	<a href="#">swConnUnitLCRX</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.16
stat64_mc_rx	<a href="#">connUnitPortStatCountRxMulticastObjects</a>	1.3.6.1.3.94.4.5.1.29
stat64_mc_to	Not supported	
stat64_mc_tx	<a href="#">connUnitPortStatCountTxMulticastObjects</a>	1.3.6.1.3.94.4.5.1.30
tim64_rdy_pri	<a href="#">swConnUnitRDYPriority</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.17
tim64_txcrd_z	<a href="#">connUnitPortStatCountBBCreditZero</a>	1.3.6.1.3.94.4.5.1.8
er64_enc_in	<a href="#">connUnitPortStatCountEncodingDisparityErrors</a>	1.3.6.1.3.94.4.5.1.50
er64_crc	<a href="#">connUnitPortStatCountInvalidCRC</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.1
er64_trunc	<a href="#">connUnitPortStatCountFramesTruncated</a>	1.3.6.1.3.94.4.5.1.47
er64_toolong	<a href="#">connUnitPortStatCountFramesTooLong</a>	1.3.6.1.3.94.4.5.1.50
er64_bad_eof	<a href="#">swConnUnitBadEOF</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.15

## B portShow command

**TABLE 136** portStats64Show command (Continued)

Counters	MIB Object	MIB OID
er64_enc_out	<a href="#">connUnitPortStatCountEncodingDisparityErrors</a> subtracted from <a href="#">connUnitPortStatCountInvalidTxWords</a>	1.3.6.1.3.94.4.5.1.50 - 1.3.6.1.3.94.4.5.1.41
er64_disc_c3	<a href="#">connUnitPortStatCountClass3Discards</a>	1.3.6.1.3.94.4.5.1.28
stat64_PRJTFrames	Not supported	
stat64_PBSYFrames	Not supported	
stat64_inputBuffersFull	Not supported	
stat64_rxClass1Frames	Not supported	

## portShow command

Table 137 lists the counters displayed by the **portShow** command and the corresponding MIB objects.

**TABLE 137** portShow command

Counters	MIB Object	MIB OID
Interrupts	<a href="#">swConnUnitInterrupts</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.19
Unknown	<a href="#">swConnUnitUnknownInterrupts</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.20
Lli	<a href="#">swConnUnitLli</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.18
Proc_rqrd	<a href="#">swConnUnitProcRequired</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.22
Timed_out	<a href="#">swConnUnitTimedOut</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.21
portState	<a href="#">swConnUnitStateChange</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.24
Tx_unavail	<a href="#">swConnUnitTxBufferUnavailable</a>	1.3.6.1.4.1.1588.2.1.1.1.27.1.23
Link_failure	<a href="#">connUnitPortStatCountLinkFailures</a>	1.3.6.1.3.94.4.5.1.39
Loss_of_sig	<a href="#">connUnitPortStatCountLossOfSignal</a>	1.3.6.1.3.94.4.5.1.43
Loss_of_sync	<a href="#">connUnitPortStatCountLossOfSynchronization</a>	1.3.6.1.3.94.4.5.1.44
Protocol_err	<a href="#">connUnitPortStatCountPrimitiveSequenceProtocolErrors</a>	1.3.6.1.3.94.4.5.1.42
Invalid_word	<a href="#">connUnitPortStatCountInvalidTxWords</a>	1.3.6.1.3.94.4.5.1.41
Invalid_crc	<a href="#">connUnitPortStatCountInvalidCRC</a>	1.3.6.1.3.94.4.5.1.40
Delim_err	<a href="#">connUnitPortStatCountDelimiterErrors</a>	1.3.6.1.3.94.4.5.1.49
Address_err	<a href="#">connUnitPortStatCountAddressErrors</a>	1.3.6.1.3.94.4.5.1.48
Lr_in	<a href="#">connUnitPortStatCountTxLinkResets</a>	1.3.6.1.3.94.4.5.1.34
Lr_out	<a href="#">connUnitPortStatCountRxLinkResets</a>	1.3.6.1.3.94.4.5.1.33
Ols_in	<a href="#">connUnitPortStatCountRxOfflineSequences</a>	1.3.6.1.3.94.4.5.1.36
Ols_out	<a href="#">connUnitPortStatCountTxOfflineSequences</a>	1.3.6.1.3.94.4.5.1.37
frjt	<a href="#">connUnitPortStatCountFRJTFrames</a>	1.3.6.1.3.94.4.5.1.12
fbsy	<a href="#">connUnitPortStatCountFBSYFrames</a>	1.3.6.1.3.94.4.5.1.10

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