

53-1001768-01  
30 March 2010



# Fabric OS

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## MIB Reference

Supporting Fabric OS v6.4.0

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## Document History

Document Title	Publication Number	Summary of Changes	Publication Date
Brocade MIB Reference Manual v2.3	53-0000069-02		December 2000
Brocade MIB Reference Manual v3.0	53-0000134-03		July 2001
Brocade MIB Reference Manual v3.0, 4.0	53-0000184-02		March 2002
Brocade MIB Reference Manual (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
Brocade MIB Reference Manual (v4.1.2, v4.1, v4.0.x, v3.1, v3.0.x, v2.6.x)	53-0000521-03	Added FICON information.	May 2003
Brocade MIB Reference Manual (v4.1.2, v4.1, v4.0.x, v3.1, v3.0.x, v2.6.x)	53-0000521-04	Revised FICON information.	October 2003
Brocade MIB Reference Manual (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

Document Title	Publication Number	Summary of Changes	Publication Date
Brocade Fabric OS MIB Reference Manual	53-0000521-08	Updated to support the Brocade 4100.	September 2004
Brocade Fabric OS MIB Reference Manual	53-0000521-09	Updated to support the Brocade 48000 and 200E.	April 2005
Brocade Fabric OS MIB Reference Manual	53-1000045-01	Updated to support the Brocade 4900, 7500, and FR4-18i blade.	January 2006
Brocade Fabric OS MIB Reference	53-1000241-01	Changed name, updated to support Fabric OS 5.2.x.	September 2006
Brocade Fabric OS MIB Reference	53-1000439-01	New branding, updated to support Fabric OS 5.3.0.	June 2007
Brocade Fabric OS MIB Reference	53-1000602-01	Updated to support the Brocade DCX Data Center Backbone Director.	October 2007
Brocade Fabric OS MIB Reference	53-1000602-02	Updated to support the Brocade 300, 5100, and 5300 switches.	March 2008
Brocade Fabric OS MIB Reference	53-1001156-01	Updated to support the Brocade DCX-4S and Brocade Encryption Switch.	November 2008
Fabric OS MIB Reference	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
Fabric OS MIB Reference	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



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# About This Document

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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, "FE MIB Objects,"](#) provides information for FE MIB object types.
- [Chapter 4, "Entity MIB Objects,"](#) provides information for Entity MIB object types.
- [Chapter 5, "SW-MIB Objects,"](#) provides information for FC Switch MIB (SW-MIB) object types.
- [Chapter 6, "High-Availability MIB Objects,"](#) provides information for High-Availability MIB object types.
- [Chapter 7, "FICON MIB Objects,"](#) provides information for FICON MIB (LINK-INCIDENT-MIB) object types.
- [Chapter 8, "FibreAlliance MIB Objects,"](#) provides information for FibreAlliance MIB (FCMGMT-MIB) object types.
- [Chapter 9, "FCIP MIB Objects,"](#) provides information on FCIP MIB support for 7500 switches and FC4-18i blades.
- [Chapter 10, "iSCSI MIB Objects,"](#) provides information on iSCSI MIB support for 7500 switches and FC4-18i blades.
- [Chapter 11, "USM MIB Objects,"](#) provides information on USM MIB object types.
- [Chapter 12, "BD MIB,"](#) provides information on BD MIB object types.
- [Appendix A, "MIB Object Groupings,"](#) is a function-based listing of MIB objects.

- [Appendix B, “MIB OIDs and their Matching Object Names,”](#) provides a listing of the MIB object names and the corresponding MIB Object ID (OID) associated with each.

## Supported hardware and software

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 v6.4.0, documenting all possible configurations and scenarios is beyond the scope of this document.

This document supports Brocade Fabric OS versions v6.4.0 and earlier versions v6.3.0, v6.2.0, v6.1.2\_CEE, v6.1.0, v6.0.0, v5.3.x, v 5.2.x, v5.1.x, v5.0.x, v3.2.x, v3.1.x 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 7500
- Brocade 7500E
- Brocade 7600
- 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 (new)

- FC10-6 port blade
- FR4-18i router blade
- FX8-24 DCX Extension Blade
- Brocade 48000 director
  - FA4-18 Fibre Channel application blade
  - FC4-16 port blade
  - FC4-16IP
  - FC4-32 port blade
  - FC4-48 port blade
  - FC10-6 port blade
  - FR4-18i router blade
- Brocade VA-40FC

## 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 FC8-64 port blade, and Brocade VA-40FC
  - MIB Capability enhancement
  - Desired Severity Level for swEventTrap and swFabricWatchTrap
  - The following MIB objects included:
    - BD MIB
    - swConnUnitPortStatExtentionTable
    - swFabricReconfigTrap
    - swFabricSegmentTrap
    - swExtTrap
    - swMemUsageLimit1
    - swMemUsageLimit3
- Information that was changed:
  - swIPv6ChangeTrap
  - ifPhysAddress
  - fcFeModuleFxpPortCapacity
  - swFCPortFlag
  - swFwName
  - connunitNumPorts
  - swFCPortCapacity
  - fcFeModuleFxpPortCapacity
  - 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.

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#### 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.

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## DANGER

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

## Key terms

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

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

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

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These references are made for informational purposes only.

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

## Additional information

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

### Brocade resources

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

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

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

For additional Brocade documentation, visit the Brocade website:

<http://www.brocade.com>

Release notes are available on the MyBrocade website and are also bundled with the 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

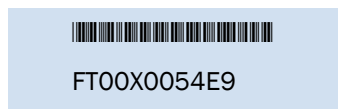
Contact your switch supplier for hardware, firmware, and software support, including product repairs and part ordering. To expedite your call, have the following information immediately available:

### 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, 7500, 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 7600*—On the bottom of the chassis
- *Brocade 48000*—Inside the chassis next to the power supply bays
- *Brocade DCX*—On the bottom right on the port side of the chassis
- *Brocade DCX-4S*—On the bottom right on the port side of the chassis, directly above the cable management comb

3. World Wide Name (WWN)

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 1](#) shows the security level options.

# 1 Understanding SNMP basics

**TABLE 1** 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		

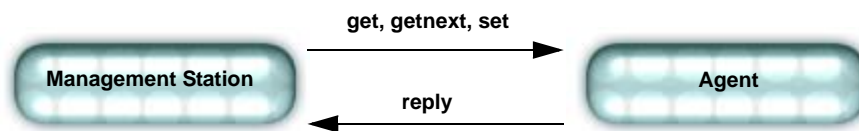
## Understanding SNMP basics

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**, **setnext**, and **getresponse**, are sent from the management station, and the agent replies once the value is obtained or modified ([Figure 2](#)). Agents use variables to report such data as the number of bytes and packets in and out of the device, or the number of broadcast messages sent and received. These variables are also known as *managed objects*. All managed objects are contained in the MIB.



**FIGURE 2** SNMP query

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



**FIGURE 3** SNMP trap

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

## Understanding MIBs

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

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

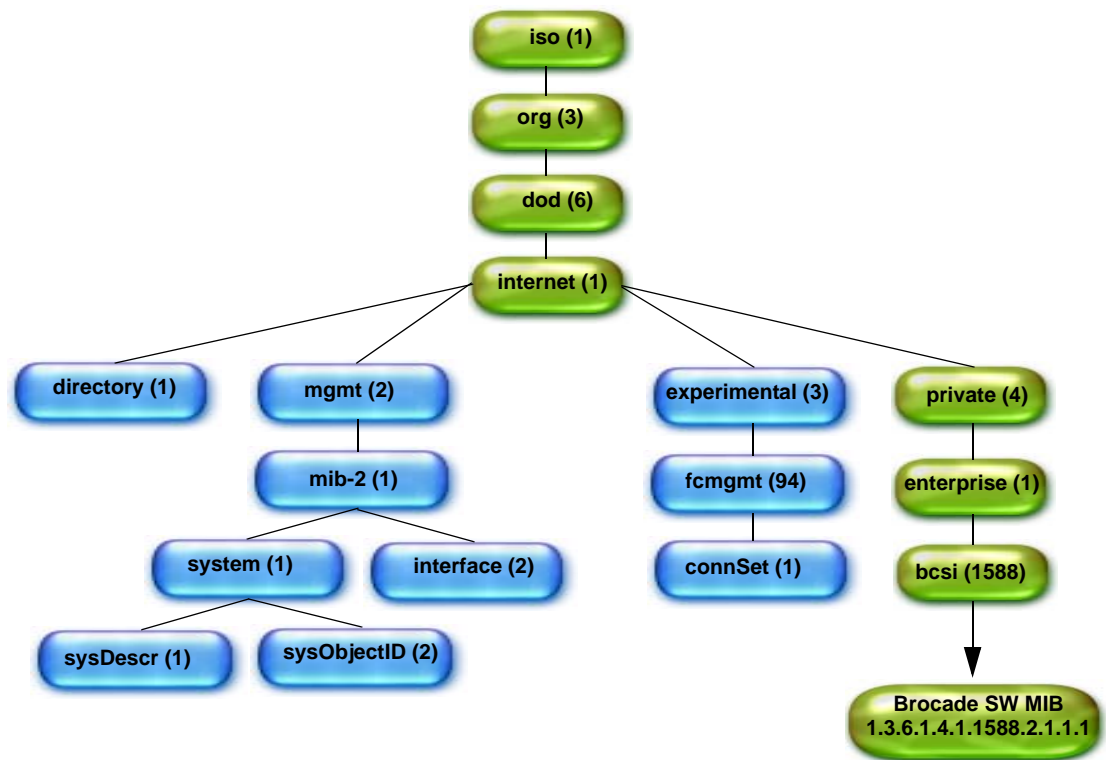


FIGURE 4 Brocade MIB tree location

# 1 Understanding SNMP basics

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

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 v3.0. and later releases.
- *Fabric Element* (FE) MIB: accepted by the Internet Engineering Task Force (IETF).  
Brocade supports FE\_RCF2837.mib under the MIB-II branch in Fabric OS v6.4.0, v6.3.0, v6.2.0, v6.1.2\_CEE, v6.1.0, v6.0.0, v3.2.0, and v3.1.x and the experimental version, FE\_EXP.mib, in Fabric OS v2.6.x and 3.0.x. This 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. Refer to "[Loading Brocade MIBs](#)" on page 6 for more information.

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.

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 FOS 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
- connUnitSensorStatusChange
- connUnitPortStatusChange
- connUnitEventTrap

The MIB-II system description swEventTrapLevel determines the output for the connUnitEventTrap. 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. Refer to the *Fabric OS Command Reference* for more information on this command.

### *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 or fanenable, etc).
- 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. fruHistoryTrap is not generated when standby CP is removed.

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

### *SW traps*

There are eleven 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. Desired severity level is introduced to filter swEvent trap based on severity level.

# 1 Loading Brocade MIBs

5. swFabricWatchTrap  
This trap is generated when any Fabric Watch threshold is reached. Desired severity level is introduced to filter swFabricWatchTrap based on 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 to deprecation state and not for just 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.

The Brocade trap (SW-TRAP) can be configured to send traps using the `snmpConfig` command. SW traps are available upto FOS v6.3.0. In FOS v6.4.0 SW traps are not available due to the enhancement to the `mibcapability` command. For more information on this command, refer to the [Table 5](#) or *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
- FE\_EXP.mib
- FICON.mib
- HA.mib
- IBMBladeCenterTrapMIB.mib
- SW.mib

## Standard MIBS:

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

- 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
- SNMP-VIEW-BASED-ACM-MIB
- SNMP-USER-BASED-SM-MIB
- SNMP-TARGET-MIB

## Before loading MIBs

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

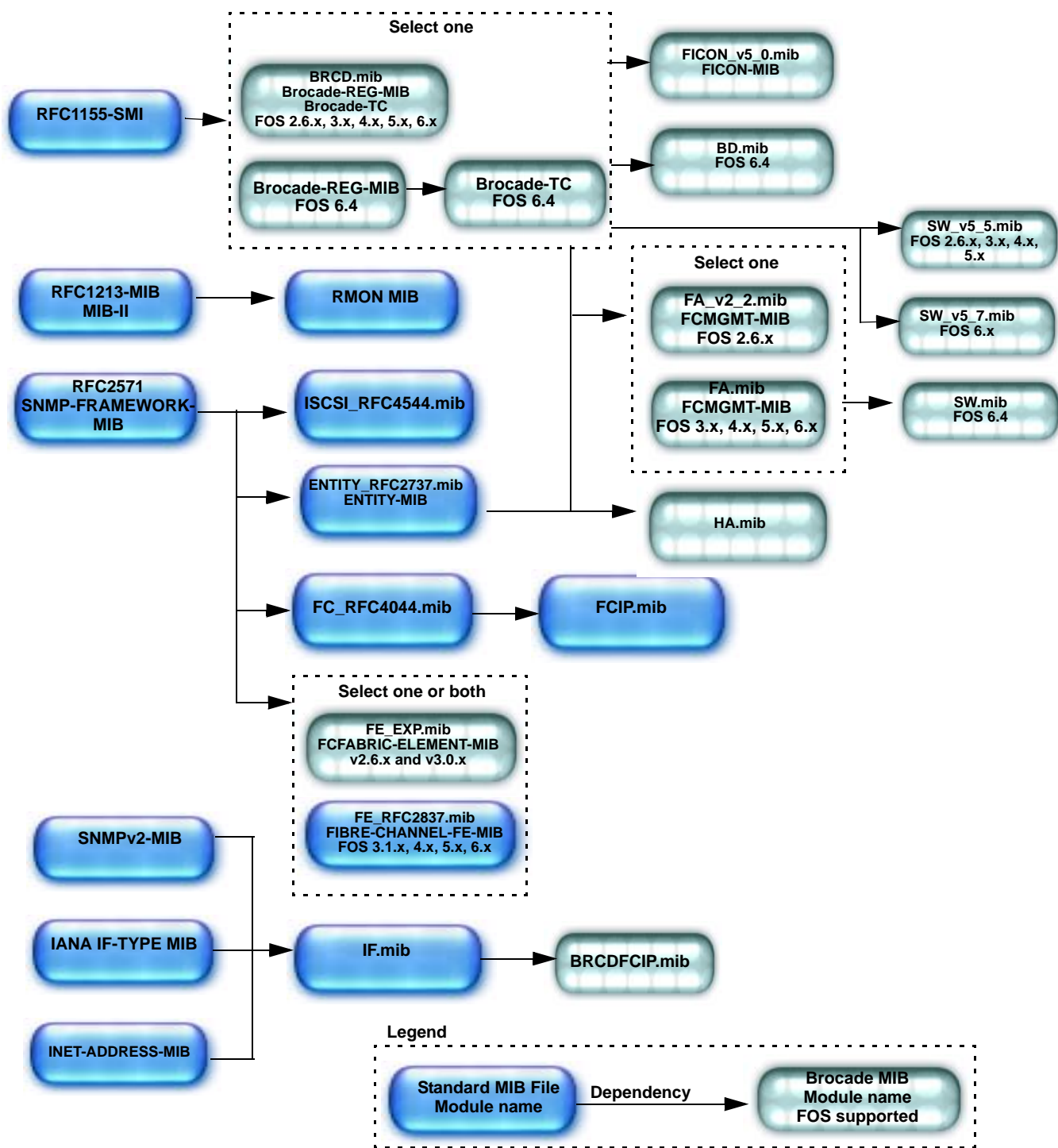
**TABLE 2** Fabric OS-supported SNMP versions

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
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

1. SNMPv2 is supported from Fabric OS v5.0.4 and higher, but SNMP v2 traps are not supported.
2. Fabric OS v5.x support 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.



---

**NOTE**

FA\_v3\_0.mib obsoletes the use of the connUnitPortStatFabricTable used in the FA\_v2\_2.mib. FA\_v3\_0.mib now uses the connUnitPortStatTable for port statistics. The FA\_v3\_0.mib and the FA\_v2\_2.mib cannot be loaded concurrently on the same SNMP management system.

The FE\_RFC2837.mib and the FE\_EXP.mib can be loaded concurrently on the same SNMP management system. The FE\_EXP.mib was listed in the experimental OID section. The FE\_RFC2837.mib has subsequently been ratified by the standards organizations.

All versions of Fabric OS support SNMPv1. Fabric OS v5.0.1 support SNMPv3-USM (snmpUsmMIB) MIB. Fabric OS version 5.3.0 supports the FCIP MIB and ifXtable.

---

**FIGURE 5 Brocade SNMP MIB dependencies and advised installation order**

## SNMP CLI usage

An example of the SNMPv3 User/Traps configuration is provided below.

### *Configuring SNMPv3 user/traps*

1. Create user on 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 user on 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 as shown below.

```
DCX_54: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]
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.

DCX\_54:root>

DCX\_54: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

```

# 1 Loading Brocade MIBs

```
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
DCX_54:root>
```

SNMP Notification Generator:

To display the traps and MIBs supported in Fabric OS:  
DCX\_54: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-segment-trap sw-fabric-reconfig-trap
002	FICON-MIB	link-rnid-device-registration link-rnid-device-deregistration link-lirr-listerner-added link-lirr-listerner-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:
DCX_54:root> snmpTraps --send
Number of traps sent : 27
To send all traps to the recipient 10.35.52.33:
DCX_54:root> snmpTraps --send -ip_address 10.35.52.33
Number of traps sent : 27
To send the sw-fc-port-scn trap to the configured recipients:
DCX_54: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
DCX_54:root> snmpTraps --send -trap_name sw-fc-port-scn -ip_address
10.35.52.33
Number of traps sent : 1

```

```

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
[...]

```

# 1 Loading Brocade MIBs

```
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
```



```

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

```

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
```

# 1 Access Gateway and Brocade MIBs

```
SNMP GET Security Level: Authentication and Privacy
SNMP SET Security Level: Authentication and Privacy
```

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.)

## Access Gateway and Brocade MIBs

Brocade Access Gateway supports the following MIBs ([Table 3](#))

**TABLE 3** Access Gateway MIB support

MIB name	Supported	Description
MIB-2	Yes	Updated to support Access Gateway in v5.2.1.
Entity-MIB	Yes	
HA-MIB	Yes	
SW-MIB	No	Disabled in Access Gateway because the conventions are specific to fabric switches.
FA-MIB	Yes	The <code>connUnitSnsTable</code> is not supported because a switch in Access Gateway does support name server services.
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	Limited	Implemented to support WAN interfaces in Fabric OS v5.3.0.
iSCSI MIB	Limited	Supports displaying information about virtual targets (VTs), iSCSI sessions, and TCP connection tables, as derived from specific MIB tables.
IF-MIB	Yes	
BD-MIB	Yes	Supported for F-ports.

## Firmware upgrades and enabled traps

The pre- Fabric OS v4.4 firmware had trap group level settings i.e, 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. So 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 4) to configure MIBs in the Fabric OS. Refer to the *Fabric OS Administrator's Guide* for procedures for configuring SNMP on the Brocade switches.

**TABLE 4** 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.
snmpMibCapSet	Obsoleted command. Use snmpConfig command.
snmpMibCapShow	Obsoleted command. Use snmpConfig command.
snmpTraps	To support SNMP notification generator feature, Notification generator framework has been implemented to send various SNMP traps.

For more information about the commands, refer to Table 5.

**TABLE 5** Detailed description of the commands

Command	Operands	Arguments
<b>snmpConfig</b> <code>--show</code>   <code>--set</code>   <code>--default</code> [snmpv1   snmpv3   accessControl   mibCapability  systemGroup  secllevel]	<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>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 6.3.0 and later, the <code>--set snmpv3</code> 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 (see example). Informs are by default disabled. IPv6 Informs are currently not supported.</p> <p><b>accessControl</b> Selects access-control-related parameters. These parameters include the access host subnet area and access permission (read-write).</p>

# 1 Fabric OS commands for configuring SNMP

**TABLE 5 Detailed description of the commands (Continued)**

Command	Operands	Arguments
		<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>
<p><b>snmpConfig -set</b> mibCapability [-mib_name mib_name [-bitmask bit_mask]]</p>	<p><b>-set</b> mibCapability</p> <p>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.</p>	<p><b>-mib_name</b> mib_name</p> <p>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.</p> <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> <p><b>-bitmask</b> bit_mask</p> <p>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 5th from the right.</p>
<p><b>snmpConfig -enable   -disable</b> mibCapability -mib_name mib_name [-trap_name trap_name]</p>	<p><b>-enable</b> mibCapability -mib_name mib_name</p> <p>Enables the specified MIB non-interactively.</p> <p><b>-disable</b> mibCapability -mib_name mib_name</p> <p>Disables the specified MIB non-interactively. When used with the trap name operand, only the specified trap is disabled.</p>	<p><b>-trap_name</b> trap_name</p> <p>Specifies the name of the trap to be disabled. This operand is optional. Use <b>snmpConfig -show</b> mibCapability for a listing of valid traps.</p>
<p><b>snmpConfig -help</b></p>	<p><b>-help</b></p> <p>Displays the command usage.</p>	

TABLE 5 Detailed description of the commands (Continued)

Command	Operands	Arguments
<b>snmptraps</b> <b>-send</b> [- <b>trap_name</b> trap_name] [- <b>ip_address</b> ip_address]	<b>-send</b> Sends one or all SNMP traps to all configured recipients or to a specified recipient.	<b>-trap_name</b> trap_name Specifies the trap by name. Use <b>snmptraps -show</b> for a listing of valid traps.  <b>-ip_address</b> ip_address Specifies the recipient by its IP address. The IP address must be specified in IPv4 format. IPv6 addresses are currently not supported.
<b>snmptraps -show</b>	<b>-show</b> Displays all configured SNMP traps and MIBs supported in Fabric OS v6.4.0 and later.	
<b>snmptraps -help</b>	<b>-help</b> Displays the command usage.	

## Support for Administrative Domains

Administrative Domains are supported in Fabric OS Version 5.3.0 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 Version 5.3.0 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 Version 5.3.0 and later releases.

## Support for Virtual Fabric

Virtual Fabric is supported in Fabric OS Version 6.2.0 and later releases.

# 1 Support for Virtual Fabric

# 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 17 depict the organization and structure of MIB-II.

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

FIGURE 6 MIB-II overall hierarchy

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

FIGURE 7 System hierarchy



```

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

```

**FIGURE 8** Interfaces hierarchy

```

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

```

**FIGURE 9** AT hierarchy

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

FIGURE 10 IP hierarchy

```
- icmp (1.3.6.1.2.1.5)
  - icmpInMsgs 1.3.6.1.2.1.5.1
  - icmpInErrors 1.3.6.1.2.1.5.2
  - icmpInDestUnreaches 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
  - icmpOutDestUnreaches 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

## 2 MIB II overview

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

**FIGURE 12** TCP hierarchy

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

**FIGURE 13** UDP hierarchy

```

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

```

**FIGURE 14** EGP hierarchy

```

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

```

**FIGURE 15** SNMP hierarchy

```

- rmon (1.3.6.1.2.1.16)
  - 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
      - alarm 1.3.6.1.2.1.16.3
        - alarmTable 1.3.6.1.2.1.16.3.1
          - alarmEntry 1.3.6.1.2.1.16.3.1.1
            - alarmIndex 1.3.6.1.2.1.16.3.1.1.1
            - alarmInterval 1.3.6.1.2.1.16.3.1.1.2
            - alarmVariable 1.3.6.1.2.1.16.3.1.1.3
            - alarmSampleType 1.3.6.1.2.1.16.3.1.1.4
            - alarmValue 1.3.6.1.2.1.16.3.1.1.5
            - alarmStartupAlarm 1.3.6.1.2.1.16.3.1.1.6
            - alarmRisingThreshold 1.3.6.1.2.1.16.3.1.1.7
            - alarmFallingThreshold 1.3.6.1.2.1.16.3.1.1.8
            - alarmRisingEventIndex 1.3.6.1.2.1.16.3.1.1.9
            - alarmFallingEventIndex 1.3.6.1.2.1.16.3.1.1.10
            - alarmOwner 1.3.6.1.2.1.16.3.1.1.11
            - alarmStatus 1.3.6.1.2.1.16.3.1.1.12
          - event 1.3.6.1.2.1.16.9
            - eventTable 1.3.6.1.2.1.16.9.1
              - eventEntry 1.3.6.1.2.1.16.9.1.1
                - eventIndex 1.3.6.1.2.1.16.9.1.1.1
                - eventDescription 1.3.6.1.2.1.16.9.1.1.2
                - eventType 1.3.6.1.2.1.16.9.1.1.3
                - eventCommunity 1.3.6.1.2.1.16.9.1.1.4
                - eventLastTimeSent 1.3.6.1.2.1.16.9.1.1.5
                - eventOwner 1.3.6.1.2.1.16.9.1.1.6
                - eventStatus 1.3.6.1.2.1.16.9.1.1.7
              - logTable 1.3.6.1.2.1.16.9.2
                - logEntry 1.3.6.1.2.1.16.9.2.1
                  - logEventIndex 1.3.6.1.2.1.16.9.2.1.1
                  - logIndex 1.3.6.1.2.1.16.9.2.1.2
                  - logTime 1.3.6.1.2.1.16.9.2.1.3
                  - logDescription 1.3.6.1.2.1.16.9.2.1.4

```

FIGURE 16 RMON hierarchy

```

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

```

FIGURE 17 ifMIB hierarchy

## Textual conventions

Table 6 lists the textual conventions used for MIB-II.

TABLE 6 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.

### sysDescr 1.3.6.1.2.1.1.1

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

**Format** This must contain only printable ASCII characters.

**Set command** Set this value using the **snmpconfig** command.

**Default** The switch type. The default value is either Fibre Channel Switch or Access Gateway.

### sysObjectID 1.3.6.1.2.1.1.2

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

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

**Default** The device type. The default value is either:

- Fibre Channel Switches:  
iso.org.dod.internet.private.enterprises.bcsi.commDev.fibrechannel.fcSwitch.sw
- Brocade Access Gateway:  
iso.org.dod.internet.private.enterprises.bcsi.commDev.fibrechannel.fcSwitch.sw

### sysUpTime 1.3.6.1.2.1.1.3

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

**Set command** Set this value using the **switchuptime** command.

### sysContact 1.3.6.1.2.1.1.4

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

**Default** Field Support

**Set command** Set this value using the **snmpconfig** command.



## sysName 1.3.6.1.2.1.1.5

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

**Default** Preassigned name of the logical switch.

**Set command** Set this value using the **snmpconfig** command.

## sysLocation 1.3.6.1.2.1.1.6

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

**Default** End User Premise

**Set command** Set this value using the **snmpconfig** command.

## sysServices 1.3.6.1.2.1.1.7

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

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

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

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

## Interfaces group

Implementation of the Interfaces group is mandatory for all systems. FCIP tunnel support is added in Fabric OS 5.3.0 and higher. To support FCIP tunneling, entries are created in the ifTable for each WAN interface (GbE port), each FC port, and each FCIP tunnel (transport interface).

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

## ifNumber 1.3.6.1.2.1.2.1

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

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

## ifTable 1.3.6.1.2.1.2.2

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

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

## ifEntry 1.3.6.1.2.1.2.2.1

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

<b>Index</b>	ifIndex
--------------	---------

## ifIndex 1.3.6.1.2.1.2.2.1.1

A unique value for each interface.

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

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

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

## ifDescr 1.3.6.1.2.1.2.2.1.2

A textual string containing information about the interface. 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.

<b>Values</b>	<ul style="list-style-type: none"><li>• For WAN interface- <i>GbE port for FCIP</i></li></ul>
---------------	---

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

### ifType 1.3.6.1.2.1.2.2.1.3

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

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

### ifMtu 1.3.6.1.2.1.2.2.1.4

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

- Values**
- For interfaces that are used to transmit network datagrams, the value is the size of the largest network datagram that can be sent on the interface (these values are different for Fabric OS v4.x).
- eth0 returns 1500
  - lo returns 16436
  - fc0 returns 2024
  - FCIP GbE returns 1500
  - sit0 returns 1480
  - port0 returns 2112

### ifSpeed 1.3.6.1.2.1.2.2.1.5

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

- Values**
- For interfaces that do not vary in bandwidth or interfaces for which no accurate estimation can be made, this object should contain the nominal bandwidth. For Fabric OS v4.x, 2 Gbps returns.
- eth0 returns 100000000 and not null
  - fc port returns 1,000,000,000 for 1 Gbps port
  - fc port returns 2000000000 for 2 Gbps port
  - fc port returns 4000000000 for 4 Gbps port
  - For 10G: Value displayed is 4294967295
  - For 8G: Value displayed is 4294967294

## ifPhysAddress 1.3.6.1.2.1.2.2.1.6

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

- Values** For interfaces that do not have such an address (for example, a serial line), this object should contain an octet string of zero length.
- eth0 returns the MAC address for GbE ports
  - lo returns null
  - SNMP represents the FC port ID in ASCII hex 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. To get the FC port ID, convert the decimal into hex (the hex value of 65536 is 01 00 00, where the first two digits are the domain, the next two digits are the area, and the last two digits are the port number).  
ASCII hex (36:35:35:33:36) => decimal (65536) => hex (01 00 00)

## ifAdminStatus 1.3.6.1.2.1.2.2.1.7

The desired state of the interface.

- Values**
- up (1)
  - down (2) or
  - testing (3)
- Supports Read only, should return same value with ifOperStatus for WAN and FC ports interfaces.

---

**NOTE**

The testing (3) state indicates that no operational packets can be passed. This object is read-only in Fabric OS v4.x and above.

---

## ifOperStatus 1.3.6.1.2.1.2.2.1.8

The current operational state of the interface.

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

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

---

**NOTE**

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

---

**ifLastChange 1.3.6.1.2.1.2.2.1.9**

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

**ifInOctets 1.3.6.1.2.1.2.2.1.10**

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

**ifInUcastPkts 1.3.6.1.2.1.2.2.1.11**

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

Not supported.

**ifInNUcastPkts 1.3.6.1.2.1.2.2.1.12**

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

Not supported.

**ifInDiscards 1.3.6.1.2.1.2.2.1.13**

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

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

**ifInErrors 1.3.6.1.2.1.2.2.1.14**

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

**ifInUnknownProtos 1.3.6.1.2.1.2.2.1.15**

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

Not supported.

**ifOutOctets 1.3.6.1.2.1.2.2.1.16**

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

### ifOutUcastPkts 1.3.6.1.2.1.2.2.1.17

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

### ifOutNUcastPkts 1.3.6.1.2.1.2.2.1.18

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

Not supported.

### ifOutDiscards 1.3.6.1.2.1.2.2.1.19

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

### ifOutErrors 1.3.6.1.2.1.2.2.1.20

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

### ifOutQLen 1.3.6.1.2.1.2.2.1.21

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

Not supported.

### ifSpecific 1.3.6.1.2.1.2.2.1.22

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

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

- Returns**
- eth0 returns null OID
  - lo returns null OID
  - fc0 returns null OID

## AT group

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

## atTable 1.3.6.1.2.1.3.1

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

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

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

### atEntry 1.3.6.1.2.1.3.1.1

Each entry contains one network address to physical address equivalence.

**Index** atIfIndex, atNetAddress

#### atIfIndex 1.3.6.1.2.1.3.1.1.1

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

#### atPhysAddress 1.3.6.1.2.1.3.1.1.2

The media-dependent physical address.

#### atNetAddress 1.3.6.1.2.1.3.1.1.3

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

## IP group

Implementation of the IP group is mandatory for all systems.

### ipForwarding 1.3.6.1.2.1.4.1

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

## ipDefaultTTL 1.3.6.1.2.1.4.2

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

## ipInReceives 1.3.6.1.2.1.4.3

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

## ipInHdrErrors 1.3.6.1.2.1.4.4

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

## ipInAddrErrors 1.3.6.1.2.1.4.5

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

## ipForwDatagrams 1.3.6.1.2.1.4.6

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

## ipInUnknownProtos 1.3.6.1.2.1.4.7

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

## ipInDiscards 1.3.6.1.2.1.4.8

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

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

## ipInDelivers 1.3.6.1.2.1.4.9

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



### ipOutRequests 1.3.6.1.2.1.4.10

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

### ipOutDiscards 1.3.6.1.2.1.4.11

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

---

**NOTE**

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

---

### ipOutNoRoutes 1.3.6.1.2.1.4.12

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

---

**NOTE**

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

---

### ipReasmTimeout 1.3.6.1.2.1.4.13

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

### ipReasmReqds 1.3.6.1.2.1.4.14

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

### ipReasmOKs 1.3.6.1.2.1.4.15

The number of IP datagrams successfully reassembled.

### ipReasmFails 1.3.6.1.2.1.4.16

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

---

**NOTE**

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

---

### **ipFragOKs 1.3.6.1.2.1.4.17**

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

### **ipFragFails 1.3.6.1.2.1.4.18**

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

### **ipFragCreates 1.3.6.1.2.1.4.19**

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

### **ipAddrTable 1.3.6.1.2.1.4.20**

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

#### **ipAddrEntry 1.3.6.1.2.1.4.20.1**

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

**Index** ipAdEntAddr

##### **ipAdEntAddr 1.3.6.1.2.1.4.20.1.1**

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

##### **ipAdEntIfIndex 1.3.6.1.2.1.4.20.1.2**

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

##### **ipAdEntNetMask 1.3.6.1.2.1.4.20.1.3**

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

**ipAdEntBcastAddr 1.3.6.1.2.1.4.20.1.4**

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

**ipAdEntReasmMaxSize 1.3.6.1.2.1.4.20.1.5**

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

Not supported.

**ipRouteTable 1.3.6.1.2.1.4.21**

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

**ipRouteEntry 1.3.6.1.2.1.4.21.1**

A route to a particular destination.

<b>Index</b>	ipRouteDest
--------------	-------------

**ipRouteDest 1.3.6.1.2.1.4.21.1.1**

The destination IP address of this route.

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

**ipRouteIfIndex 1.3.6.1.2.1.4.21.1.2**

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

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

**ipRouteMetric1 1.3.6.1.2.1.4.21.1.3**

The primary routing metric for this route.

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

### ipRouteMetric2 1.3.6.1.2.1.4.21.1.4

An alternate routing metric for this route.

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

### ipRouteMetric3 1.3.6.1.2.1.4.21.1.5

An alternate routing metric for this route.

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

### ipRouteMetric4 1.3.6.1.2.1.4.21.1.6

An alternate routing metric for this route.

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

### ipRouteNextHop 1.3.6.1.2.1.4.21.1.7

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

### ipRouteType 1.3.6.1.2.1.4.21.1.8

The type of route. Setting this object to 2 (invalid) has the effect of invalidating the corresponding entry in the ipRouteTable object. That is, it effectively 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.

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

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

### ipRouteProto 1.3.6.1.2.1.4.21.1.9

The routing mechanism by which this route was learned.

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

### ipRouteAge 1.3.6.1.2.1.4.21.1.10

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

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

Not supported.

### ipRouteMask 1.3.6.1.2.1.4.21.1.11

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

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

---

#### NOTE

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

---

All IP routing subsystems implicitly use this mechanism.

### ipRouteMetric5 1.3.6.1.2.1.4.21.1.12

An alternate routing metric for this route.

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

### ipRouteInfo 1.3.6.1.2.1.4.21.1.13

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

### ipNetToMediaTable 1.3.6.1.2.1.4.22

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

---

**NOTE**

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

---

## ipNetToMediaEntry 1.3.6.1.2.1.4.22.1

Each entry contains one IP address to physical address equivalence.

**Index** ipNetToMediaIfIndex, ipNetToMediaNetAddress

### ipNetToMediaIfIndex 1.3.6.1.2.1.4.22.1.1

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

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

### ipNetToMediaPhysAddress 1.3.6.1.2.1.4.22.1.2

The media-dependent physical address.

### ipNetToMediaNetAddress 1.3.6.1.2.1.4.22.1.3

The IpAddress corresponding to the media-dependent physical address.

### ipNetToMediaType 1.3.6.1.2.1.4.22.1.4

The type of mapping.

### ipRoutingDiscards 1.3.6.1.2.1.4.23

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

Not supported.

## ICMP group

Implementation of the ICMP group is mandatory for all systems.

**icmplnMsgs 1.3.6.1.2.1.5.1**

The total number of ICMP messages that the entity received.

This counter includes all ICMP messages counted by icmplnErrors.

**icmplnErrors 1.3.6.1.2.1.5.2**

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

**icmplnDestUnreachs 1.3.6.1.2.1.5.3**

The number of ICMP Destination Unreachable messages received.

**icmplnTimeExcds 1.3.6.1.2.1.5.4**

The number of ICMP Time Exceeded messages received.

**icmplnParmProbs 1.3.6.1.2.1.5.5**

The number of ICMP Parameter Problem messages received.

**icmplnSrcQuenchs 1.3.6.1.2.1.5.6**

The number of ICMP Source Quench messages received.

**icmplnRedirects 1.3.6.1.2.1.5.7**

The number of ICMP Redirect messages received.

**icmplnEchos 1.3.6.1.2.1.5.8**

The number of ICMP Echo (request) messages received.

**icmplnEchoReps 1.3.6.1.2.1.5.9**

The number of ICMP Echo Reply messages received.

**icmplnTimestamps 1.3.6.1.2.1.5.10**

The number of ICMP Timestamp (request) messages received.

### **icmpInTimestampReps 1.3.6.1.2.1.5.11**

The number of ICMP Timestamp Reply messages received.

### **icmpInAddrMasks 1.3.6.1.2.1.5.12**

The number of ICMP Address Mask Request messages received.

### **icmpInAddrMaskReps 1.3.6.1.2.1.5.13**

The number of ICMP Address Mask Reply messages received.

### **icmpOutMsgs 1.3.6.1.2.1.5.14**

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

---

**NOTE**

This counter includes all those counted by icmpOutErrors.

---

### **icmpOutErrors 1.3.6.1.2.1.5.15**

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

### **icmpOutDestUnreachs 1.3.6.1.2.1.5.16**

The number of ICMP Destination Unreachable messages sent.

### **icmpOutTimeExcds 1.3.6.1.2.1.5.17**

The number of ICMP Time Exceeded messages sent.

### **icmpOutParmProbs 1.3.6.1.2.1.5.18**

The number of ICMP Parameter Problem messages sent.

### **icmpOutSrcQuenchs 1.3.6.1.2.1.5.19**

The number of ICMP Source Quench messages sent.



**icmpOutRedirects 1.3.6.1.2.1.5.20**

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

**icmpOutEchos 1.3.6.1.2.1.5.21**

The number of ICMP Echo (request) messages sent.

**icmpOutEchoReps 1.3.6.1.2.1.5.22**

The number of ICMP Echo Reply messages sent.

**icmpOutTimestamps 1.3.6.1.2.1.5.23**

The number of ICMP Timestamp (request) messages sent.

**icmpOutTimestampReps 1.3.6.1.2.1.5.24**

The number of ICMP Timestamp Reply messages sent.

**icmpOutAddrMasks 1.3.6.1.2.1.5.25**

The number of ICMP Address Mask Request messages sent.

**icmpOutAddrMaskReps 1.3.6.1.2.1.5.26**

The number of ICMP Address Mask Reply messages sent.

**TCP group**

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

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

**tcpRtoAlgorithm 1.3.6.1.2.1.6.1**

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

### tcpRtoMin 1.3.6.1.2.1.6.2

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

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

### tcpRtoMax 1.3.6.1.2.1.6.3

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

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

### tcpMaxConn 1.3.6.1.2.1.6.4

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

### tcpActiveOpens 1.3.6.1.2.1.6.5

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

### tcpPassiveOpens 1.3.6.1.2.1.6.6

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

### tcpAttemptFails 1.3.6.1.2.1.6.7

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

### tcpEstabResets 1.3.6.1.2.1.6.8

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

### tcpCurrEstab 1.3.6.1.2.1.6.9

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

### tcpInSegs 1.3.6.1.2.1.6.10

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

### tcpOutSegs 1.3.6.1.2.1.6.11

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

### tcpRetransSegs 1.3.6.1.2.1.6.12

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

## TCP connection table

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

### tcpConnTable 1.3.6.1.2.1.6.13

A table containing TCP connection-specific information.

### tcpConnEntry 1.3.6.1.2.1.6.13.1

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

**Index** tcpConnLocalAddress, tcpConnLocalPort, tcpConnRemAddress, tcpConnRemPort

### tcpConnState 1.3.6.1.2.1.6.13.1.1

The state of this TCP connection.

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

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

## 2 tcpConnLocalAddress 1.3.6.1.2.1.6.13.1.2

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

**Values** Possible values are:

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

---

**NOTE**

Fabric OS v3.1.x and v4.x do not allow the SET operation on this variable.

---

### tcpConnLocalAddress 1.3.6.1.2.1.6.13.1.2

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

### tcpConnLocalPort 1.3.6.1.2.1.6.13.1.3

The local port number for this TCP connection.

### tcpConnRemAddress 1.3.6.1.2.1.6.13.1.4

The remote IP address for this TCP connection.

### tcpConnRemPort 1.3.6.1.2.1.6.13.1.5

The remote port number for this TCP connection.

### tcpInErrs 1.3.6.1.2.1.6.14

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

## tcpOutRsts 1.3.6.1.2.1.6.15

The number of TCP segments sent containing the RST flag.

## UDP group

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

## udpInDatagrams 1.3.6.1.2.1.7.1

The total number of UDP datagrams delivered to UDP users.

## udpNoPorts 1.3.6.1.2.1.7.2

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

## udpInErrors 1.3.6.1.2.1.7.3

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

## udpOutDatagrams 1.3.6.1.2.1.7.4

The total number of UDP datagrams sent from this entity.

## udpTable 1.3.6.1.2.1.7.5

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

## udpEntry 1.3.6.1.2.1.7.5.1

Information about a particular current UDP listener.

**Index**    udpLocalAddress, udpLocalPort

## udpLocalAddress 1.3.6.1.2.1.7.5.1.1

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

## udpLocalPort 1.3.6.1.2.1.7.5.1.2

The local port number for this UDP listener.

## EGP group

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

## Transmission group

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

## SNMP group

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

### snmplnPks 1.3.6.1.2.1.11.1

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

### snmpOutPkts 1.3.6.1.2.1.11.2

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

### snmplnBadVersions 1.3.6.1.2.1.11.3

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

### snmplnBadCommunityNames 1.3.6.1.2.1.11.4

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

### snmplnBadCommunityUses 1.3.6.1.2.1.11.5

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

### snmplnASNParseErrs 1.3.6.1.2.1.11.6

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

---

**NOTE**

1.3.6.1.2.1.11.7 is not supported.

---

### snmplnTooBig 1.3.6.1.2.1.11.8

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

### snmplnNoSuchNames 1.3.6.1.2.1.11.9

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

### snmplnBadValues 1.3.6.1.2.1.11.10

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

### snmplnReadOnly 1.3.6.1.2.1.11.11

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

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

### snmplnGenErrs 1.3.6.1.2.1.11.12

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

### snmplnTotalReqVars 1.3.6.1.2.1.11.13

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

## **snmplnTotalSetVars 1.3.6.1.2.1.11.14**

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

## **snmplnGetRequests 1.3.6.1.2.1.11.15**

**Status** Mandatory

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

## **snmplnGetNexts 1.3.6.1.2.1.11.16**

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

## **snmplnSetRequests 1.3.6.1.2.1.11.17**

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

## **snmplnGetResponses 1.3.6.1.2.1.11.18**

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

## **snmplnTraps 1.3.6.1.2.1.11.19**

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

## **snmpOutTooBig 1.3.6.1.2.1.11.20**

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

## **snmpOutNoSuchNames 1.3.6.1.2.1.11.21**

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



## snmpOutBadValues 1.3.6.1.2.1.11.22

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

---

**NOTE**

1.3.6.1.2.1.11.23 is not supported.

---

## snmpOutGenErrs 1.3.6.1.2.1.11.24

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

## snmpOutGetRequests 1.3.6.1.2.1.11.25

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

## snmpOutGetNexts 1.3.6.1.2.1.11.26

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

## snmpOutSetRequests 1.3.6.1.2.1.11.27

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

## snmpOutGetResponses 1.3.6.1.2.1.11.28

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

## snmpOutTraps 1.3.6.1.2.1.11.29

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

## snmpEnableAuthenTraps 1.3.6.1.2.1.11.30

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

**Values** Possible values are:

- enabled (1)

## 2 snmpSilentDrops 1.3.6.1.2.1.11.31

- disabled (2)

This object is stored in nonvolatile memory so that it remains constant between reinitializations of the switch. This value can be changed with the **snmpconfig** command.

### snmpSilentDrops 1.3.6.1.2.1.11.31

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

### snmpProxyDrops 1.3.6.1.2.1.11.32

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

## RMON group

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

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

### statistics 1.3.6.1.2.1.16.1

A collection of statistics kept for a particular Ethernet interface.

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

### etherStatsTable 1.3.6.1.2.1.16.1.1

A list of Ethernet statistics entries.

### etherStatsEntry 1.3.6.1.2.1.16.1.1.1

A collection of statistics kept for a particular Ethernet interface.

### **etherStatsIndex 1.3.6.1.2.1.16.1.1.1.1**

The value of this object uniquely identifies this etherStats entry.

### **etherStatsDataSource 1.3.6.1.2.1.16.1.1.1.2**

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

### **etherStatsDropEvents 1.3.6.1.2.1.16.1.1.1.3**

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

---

**NOTE**

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

---

### **etherStatsOctets 1.3.6.1.2.1.16.1.1.1.4**

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

### **etherStatsPkts 1.3.6.1.2.1.16.1.1.1.5**

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

### **etherStatsBroadcastPkts 1.3.6.1.2.1.16.1.1.1.6**

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

---

**NOTE**

This does not include multicast packets.

---

### **etherStatsMulticastPkts 1.3.6.1.2.1.16.1.1.1.7**

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

---

**NOTE**

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

---

### etherStatsCRCAlignErrors 1.3.6.1.2.1.16.1.1.1.8

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

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

### etherStatsUndersizePkts 1.3.6.1.2.1.16.1.1.1.9

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

### etherStatsOversizePkts 1.3.6.1.2.1.16.1.1.1.10

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

### etherStatsFragments 1.3.6.1.2.1.16.1.1.1.11

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

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

---

**NOTE**

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

---

### etherStatsJabbers 1.3.6.1.2.1.16.1.1.1.12

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

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

### etherStatsCollisions 1.3.6.1.2.1.16.1.1.1.13

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

### etherStatsPkts64Octets 1.3.6.1.2.1.16.1.1.1.14

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

**etherStatsPkts65to127Octets 1.3.6.1.2.1.16.1.1.1.15**

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

**etherStatsPkts128to255Octets 1.3.6.1.2.1.16.1.1.1.16**

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

**etherStatsPkts256to511Octets 1.3.6.1.2.1.16.1.1.1.17**

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

**etherStatsPkts512to1023Octets 1.3.6.1.2.1.16.1.1.1.18**

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

**etherStatsPkts1024to1518Octets 1.3.6.1.2.1.16.1.1.1.19**

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

**etherStatsOwner 1.3.6.1.2.1.16.1.1.1.20**

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

**etherStatsStatus 1.3.6.1.2.1.16.1.1.1.21**

The status of this etherStats entry.

**alarm 1.3.6.1.2.1.16.3**

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

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

**alarmTable 1.3.6.1.2.1.16.3.1**

A list of alarm entries.

## alarmEntry 1.3.6.1.2.1.16.3.1.1

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

### alarmIndex 1.3.6.1.2.1.16.3.1.1.1

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

### alarmInterval 1.3.6.1.2.1.16.3.1.1.2

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

### alarmVariable 1.3.6.1.2.1.16.3.1.1.3

The object identifier of the particular variable to be sampled.

### alarmSampleType 1.3.6.1.2.1.16.3.1.1.4

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

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

### alarmValue 1.3.6.1.2.1.16.3.1.1.5

The value of the statistic during the last sampling period.

### alarmStartupAlarm 1.3.6.1.2.1.16.3.1.1.6

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

### alarmRisingThreshold 1.3.6.1.2.1.16.3.1.1.7

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

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

**alarmFallingThreshold 1.3.6.1.2.1.16.3.1.1.8**

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

**alarmRisingEventIndex 1.3.6.1.2.1.16.3.1.1.9**

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

**alarmFallingEventIndex 1.3.6.1.2.1.16.3.1.1.10**

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

**alarmOwner 1.3.6.1.2.1.16.3.1.1.11**

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

**alarmStatus 1.3.6.1.2.1.16.3.1.1.12**

The status of this alarm entry.

**event 1.3.6.1.2.1.16.9**

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

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

**eventTable 1.3.6.1.2.1.16.9.1**

A list of events to be generated.

**eventEntry 1.3.6.1.2.1.16.9.1.1**

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

**eventIndex 1.3.6.1.2.1.16.9.1.1.1**

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

## eventDescription 1.3.6.1.2.1.16.9.1.1.2

A comment describing this event entry.

## eventType 1.3.6.1.2.1.16.9.1.1.3

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

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

## eventCommunity 1.3.6.1.2.1.16.9.1.1.4

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

## eventLastTimeSent 1.3.6.1.2.1.16.9.1.1.5

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

## eventOwner 1.3.6.1.2.1.16.9.1.1.6

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

## eventStatus 1.3.6.1.2.1.16.9.1.1.7

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

## logTable 1.3.6.1.2.1.16.9.2

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

## logEntry 1.3.6.1.2.1.16.9.2.1

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

## logEventIndex 1.3.6.1.2.1.16.9.2.1.1

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



### **logIndex 1.3.6.1.2.1.16.9.2.1.2**

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

### **logTime 1.3.6.1.2.1.16.9.2.1.3**

The value of sysUpTime when this log entry was created.

### **logDescription 1.3.6.1.2.1.16.9.2.1.4**

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

## **ifMIB group**

The ifMIB group is implemented in Fabric OS 5.3.0 and higher to support FCIP tunnels. There are entries in the ifXTable for each WAN interface (GbE port), each FC port, and each FCIP tunnel (transport interface). The ifXtable is used to support 64 bit FC statistics counters.

### **ifXTable 1.3.6.1.2.1.31.1.1**

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

### **ifXentry 1.3.6.1.2.1.31.1.1.1**

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

### **ifName 1.3.6.1.2.1.31.1.1.1.1**

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

### **ifInMulticastPkts 1.3.6.1.2.1.31.1.1.1.2**

The number of packets, delivered by this sub-layer to a higher (sub-)layer, which were addressed to a multicast address at this sub-layer. For a MAC layer protocol, this includes both Group and Functional addresses. Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of ifCounterDiscontinuityTime.

Not supported.

### **ifInBroadcastPkts 1.3.6.1.2.1.31.1.1.1.3**

The number of packets, delivered by this sub-layer to a higher (sub-)layer, which were addressed to a broadcast address at this sub-layer. Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of ifCounterDiscontinuityTime.

Not supported.

### **ifOutMulticastPkts 1.3.6.1.2.1.31.1.1.1.4**

The total number of packets that higher-level protocols requested be transmitted, and which were addressed to a multicast address at this sub-layer, including those that were discarded or not sent. For a MAC layer protocol, this includes both Group and Functional addresses. Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of ifCounterDiscontinuityTime.

Not supported.

### **ifOutBroadcastPkts 1.3.6.1.2.1.31.1.1.1.5**

The total number of packets that higher-level protocols requested be transmitted, and which were addressed to a Broadcast address at this sub-layer, including those that were discarded or not sent. For a MAC layer protocol, this includes both Group and Functional addresses. Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of ifCounterDiscontinuityTime

Not supported.

### **ifHCInOctets 1.3.6.1.2.1.31.1.1.1.6**

The total number of octets received on the interface, including framing characters. This object is a 64-bit version of ifInOctets. Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of ifCounterDiscontinuityTime

### **ifHCInUcastPkts 1.3.6.1.2.1.31.1.1.1.7**

The number of packets, delivered by this sub-layer to a higher (sub-)layer, which were not addressed to a multicast or broadcast address at this sub-layer. This object is a 64-bit version of ifInUcastPkts. Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of ifCounterDiscontinuityTime.

### **ifHCInMulticastPkts 1.3.6.1.2.1.31.1.1.1.8**

The number of packets, delivered by this sub-layer to a higher (sub-)layer, which were addressed to a multicast address at this sub-layer. For a MAC layer protocol, this includes both Group and Functional addresses. This object is a 64-bit version of ifInMulticastPkts. Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of ifCounterDiscontinuityTime.

Not supported.

### **ifHCInBroadcastPkts 1.3.6.1.2.1.31.1.1.1.9**

The number of packets, delivered by this sub-layer to a higher (sub-)layer, which were addressed to a broadcast address at this sub-layer. This object is a 64-bit version of ifInBroadcastPkts. Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of ifCounterDiscontinuityTime

Not supported.

### **ifHCOutOctets 1.3.6.1.2.1.31.1.1.1.10**

The total number of octets transmitted out of the interface, including framing characters. This object is a 64-bit version of ifOutOctets. Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of ifCounterDiscontinuityTime.

### **ifHCOutUcastPkts 1.3.6.1.2.1.31.1.1.1.11**

The total number of packets that higher-level protocols requested be transmitted, and which were not addressed to a multicast or broadcast address at this sub-layer, including those that were discarded or not sent. This object is a 64-bit version of ifOutUcastPkts. Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of ifCounterDiscontinuityTime.

### **ifHCOutMulticastPkts 1.3.6.1.2.1.31.1.1.1.12**

The total number of packets that higher-level protocols requested be transmitted, and which were addressed to a multicast address at this sub-layer, including those that were discarded or not sent. For a MAC layer protocol, this includes both Group and Functional addresses. This object is a 64-bit version of ifOutMulticastPkts. Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of ifCounterDiscontinuityTime

Not supported.

### **ifHCOutBroadcastPkts 1.3.6.1.2.1.31.1.1.1.13**

The total number of packets that higher-level protocols requested be transmitted, and which were addressed to a broadcast address at this sub-layer, including those that were discarded or not sent. This object is a 64-bit version of ifOutBroadcastPkts. Discontinuities in the value of this counter can occur at re-initialization of the management system, and at other times as indicated by the value of ifCounterDiscontinuityTime.

Not supported.

### **ifLinkUpDownTrapEnable 1.3.6.1.2.1.31.1.1.1.14**

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

### **ifHighSpeed 1.3.6.1.2.1.31.1.1.1.15**

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

### **ifPromiscuousMode 1.3.6.1.2.1.31.1.1.1.16**

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

Hard-coded to false.

### **ifConnectorPresent 1.3.6.1.2.1.31.1.1.1.17**

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

## ifAlias 1.3.6.1.2.1.31.1.1.1.18

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

Not supported.

## ifCounterDiscontinuityTime 1.3.6.1.2.1.31.1.1.1.17

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

Not supported.

## Generic traps

### coldStart 1.3.6.1.6.3.1.1.5.1

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

This trap is generated for the following switch events:

- reboot
- fastboot

### Warmstart 1.3.6.1.6.3.1.1.5.2

A warmStart trap signifies that the sending protocol entity is reinitializing itself such that neither the agent configuration nor the protocol entity implementation is altered.

This trap is generated for the following switch events:

- firmwaredownload
- hafailover

## linkDown 1.3.6.1.6.3.1.1.5.3

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

This trap is generated for the following ports:

- FCIP GE ports [Brocade 7800E/Brocade 7500/FR4-18i router blade/FX8-24 DCX Extension Blade]
- ISCSI GE ports [FC4-16IP]
- FCOE 10G ports [Brocade 8000, FCOE10-24 DCX Blade]
- FCIP xGE ports [FX8-24 DCX Extension Blade]
- FCIP tunnel on GE ports
- FCIP tunnel on xGE ports
- FCIP GE ports - copper

This trap is generated for the following switch events:

- portdisable
- fcoe -disable [for FCOE ports]

## linkup 1.3.6.1.6.3.1.1.5.4

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

This trap is generated for the following ports:

- FCIP GE ports [Brocade 7800E/Brocade 7500/FR4-18i router blade/FX8-24 DCX Extension Blade]
- ISCSI GE ports [FC4-16IP]
- FCOE 10G ports [Brocade 8000, FCOE10-24 DCX Blade]
- FCIP xGE ports [FX8-24 DCX Extension Blade]
- FCIP tunnel on GE ports
- FCIP tunnel on xGE ports
- FCIP GE ports - copper

This trap is generated for the following switch events:

- portenable
- fcoe -enable

## authenticationFailure 1.3.6.1.6.3.1.1.5.5

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.

This trap is generated when you perform GET or SET with invalid community strings (snmpv1).

---

**NOTE**

authTraps must be enabled in the switch with the command: **snmpconfig -set systemgroup.**

---

## 2 authenticationFailure 1.3.6.1.6.3.1.1.5.5



# 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 7](#) lists which FE MIB is supported in which Fabric OS version.

**TABLE 7** FE MIBs and supported Fabric OS versions

Fabric OS version	FIBRE-CHANNEL-FE-MIB (MIB-II branch)	FCFABRIC-ELEMENT-MIB (experimental branch)
v6.4.0	Yes	No
v6.3.0	Yes	No
v6.2.0	Yes	No
v6.1.2_CEE	Yes	No
v6.1.0	Yes	No
v6.0.0	Yes	No
v5.x	Yes	No

**TABLE 7 FE MIBs and supported Fabric OS versions**

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

## 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](#) . . . . . 73
- [Definitions for FIBRE-CHANNEL-FE-MIB](#) . . . . . 77
- [fcFeConfig group](#) . . . . . 79
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- [fcFeAccounting group](#) . . . . . 90
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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 18 through Figure 23 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 18 fcFeMIB hierarchy

### 3 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 19 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
          - fcFxpPortNxPortRxDataFieldSize 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 20 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 21 fcFeError hierarchy

### 3 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 22 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 23 fcFeCapabilities hierarchy

## Definitions for FIBRE-CHANNEL-FE-MIB

Table 8 lists the definitions for fcFeMIB.

**TABLE 8** 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)

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

**TABLE 8 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 8 FIBRE-CHANNEL-FE-MIB definitions (Continued)**

Type definition	Value	Description
FcFeFxPortCapacity	Integer from 1 to 448	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 576. For the Brocade DCX-4S, this value is 288. For the Brocade 48000, this value is 384.
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 384	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.

### fcFeFabricName 1.3.6.1.2.1.75.1.1.1

The Name\_Identifier of the fabric to which this fabric element belongs.

**Returns** Displays the WWN of the primary switch in the fabric.

### fcFeElementName 1.3.6.1.2.1.75.1.1.2

The Name\_Identifier of the fabric element.

### 3 fcFeModuleCapacity 1.3.6.1.2.1.75.1.1.3

**Returns** Displays the WWN of the switch.

### fcFeModuleCapacity 1.3.6.1.2.1.75.1.1.3

The maximum number of modules in the fabric element, regardless of their current state.

**Value** The valid value for all Brocade switches is 1.

### fcFeModuleTable 1.3.6.1.2.1.75.1.1.4

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

An entry containing the configuration parameters of a module.

**Index** 1: fcFeModuleIndex

### fcFeModuleIndex 1.3.6.1.2.1.75.1.1.4.1.1

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

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 [“sysDescr 1.3.6.1.2.1.1.1”](#) on page 30.

### fcFeModuleObjectID 1.3.6.1.2.1.75.1.1.4.1.3

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 [“sysObjectID 1.3.6.1.2.1.1.2”](#) on page 30.

### fcFeModuleOperStatus 1.3.6.1.2.1.75.1.1.4.1.4

Indicates the operational status of the module.

- Values**
- 1 - online, module functioning properly
  - 2 - offline, module not available
  - 3 - testing, module in test mode
  - 4 - faulty, module is defective

### fcFeModuleLastChange 1.3.6.1.2.1.75.1.1.4.1.5

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.

### fcFeModuleFxpPortCapacity 1.3.6.1.2.1.75.1.1.4.1.6

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.

**Values** Valid values are:

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	576 ports
Brocade DCX-4S	288 ports
Brocade 48000	384 ports

### fcFeModuleName 1.3.6.1.2.1.75.1.1.4.1.7

The Name\_Identifier of the module.

**Return** Displays the WWN of the switch.

## fcFxpPortTable 1.3.6.1.2.1.75.1.1.5

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

An entry containing the configuration and service parameters of an Fx\_Port.

**Index** 1: fcFeModuleIndex  
2: fcFxpPortIndex

### fcFxpPortIndex 1.3.6.1.2.1.75.1.1.5.1.1

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 reinitialized.

### fcFxpPortName 1.3.6.1.2.1.75.1.1.5.1.2

The World Wide Name of this Fx\_Port. Each Fx\_Port has a unique port World Wide Name within the fabric.

**Return** Displays the WWN of the port.

### fcFxpPortFcpVersionHigh 1.3.6.1.2.1.75.1.1.5.1.3

The highest or most recent version of FC-PH that the Fx\_Port is configured to support. This value is always 32.

### fcFxpPortFcpVersionLow 1.3.6.1.2.1.75.1.1.5.1.4

The lowest or earliest version of FC-PH that the Fx\_Port is configured to support. This value is always 6.

### fcFxpPortBbCredit 1.3.6.1.2.1.75.1.1.5.1.5

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.

### fcFxpPortRxBufSize 1.3.6.1.2.1.75.1.1.5.1.6

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**

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 1.3.6.1.2.1.75.1.1.5.1.8](#)” on page 83) 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**

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**

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**

A flag indicating whether the Fx\_Port supports an Intermixed Dedicated Connection.

- 1 - true
- 2 - false

**fcFxpPortStackedConnMode 1.3.6.1.2.1.75.1.1.5.1.11**

A value indicating the mode of Stacked Connect supported by the Fx\_Port.

- 1 - none
- 2 - transparent
- 3 - locked down

**fcFxpPortClass2SeqDeliv 1.3.6.1.2.1.75.1.1.5.1.12**

A flag indicating whether Class 2 Sequential Delivery is supported by the Fx\_Port.

- 1 - true
- 2 - false

**fcFxpPortClass3SeqDeliv 1.3.6.1.2.1.75.1.1.5.1.13**

A flag indicating whether Class 3 Sequential Delivery is supported by the Fx\_Port.

- 1 - true
- 2 - false

### 3 fcFxpPortHoldTime 1.3.6.1.2.1.75.1.1.5.1.14

#### fcFxpPortHoldTime 1.3.6.1.2.1.75.1.1.5.1.14

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.

#### fcFxpPortStatusTable 1.3.6.1.2.1.75.1.2.1

A table that contains operational status and parameters of the Fx\_Ports, one entry for each Fx\_Port in the fabric element.

#### fcFxpPortStatusEntry 1.3.6.1.2.1.75.1.2.1.1

An entry containing operational status and parameters of an Fx\_Port.

**Augments** 1: fcFxpPortEntry

#### fcFxpPortID 1.3.6.1.2.1.75.1.2.1.1.1

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.

#### fcFxpPortBbCreditAvailable 1.3.6.1.2.1.75.1.2.1.1.2

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 fcFxpPortBbCredit.

#### fcFxpPortOperMode 1.3.6.1.2.1.75.1.2.1.1.3

The current operational mode of the Fx\_Port.

**Values** Possible values are:

- 1: unknown (1)
- 2: fPort (2)
- 3: flPort (3)

## fcFxpPortAdminMode 1.3.6.1.2.1.75.1.2.1.1.4

The desired operational mode of the Fx\_Port.

---

### NOTE

This object is read-only. It is listed incorrectly in the MIB definition as read-write.

---

## Fx\_Port Physical Level Table

This table contains the physical level status and parameters of the Fx\_Ports, one entry for each Fx\_Port in the fabric element.

## fcFxpPortPhysTable 1.3.6.1.2.1.75.1.2.2

A table that contains the physical level status and parameters of the Fx\_Ports, one entry for each Fx\_Port in the fabric element.

## fcFxpPortPhysEntry 1.3.6.1.2.1.75.1.2.2.1

An entry containing physical level status and parameters of an Fx\_Port.

## fcFxpPortPhysAdminStatus 1.3.6.1.2.1.75.1.2.2.1.1

The desired state of the Fx\_Port. A management station might place the Fx\_Port in a desired state by setting this object accordingly.

**Values** Possible values are:

- 1: online (1)
- 2: offline (2)
- 3: testing (3)

The testing state (3) indicates that no operational frames can be passed. When a fabric element initializes, all Fx\_Ports start with fcFxpPortPhysAdminStatus in the offline state (2). As the result of either explicit management action or per configuration information accessible by the fabric element, fcFxpPortPhysAdminStatus is then changed to either the online (1) or testing (3) states or remains in the offline state (2).

---

### NOTE

This object is read-only. It is listed incorrectly in the MIB definition as read-write.

---

## fcFxpPortPhysOperStatus 1.3.6.1.2.1.75.1.2.2.1.2

The current operational status of the Fx\_Port.

**Values** Possible values are:

### 3 fcFxpPortPhysLastChange 1.3.6.1.2.1.75.1.2.2.1.3

- 1: online (1)
- 2: offline (2)
- 3: testing (3)
- 4: linkFailure (4)

The testing state (3) indicates that no operational frames can be passed. If fcFxpPortPhysAdminStatus is offline (2), then fcFxpPortPhysOperStatus should be offline (2). If fcFxpPortPhysAdminStatus is changed to online (1), then fcFxpPortPhysOperStatus 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).

### fcFxpPortPhysLastChange 1.3.6.1.2.1.75.1.2.2.1.3

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.

### fcFxpPortPhysRttov 1.3.6.1.2.1.75.1.2.2.1.4

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.

---

**NOTE**

This object is read-only. It is listed incorrectly in the MIB definition as read-write.

---

### Fx\_Port Fabric login table

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.

### fcFxploginTable 1.3.6.1.2.1.75.1.2.3

A table that contains services parameters established from the most recent fabric login, explicit or implicit, one entry for each Fx\_Port in the fabric element.

### fcFxploginEntry 1.3.6.1.2.1.75.1.2.3.1

An entry containing service parameters established from a successful fabric login.

- Indexes**
- 1: fcFeModuleIndex
  - 2: fcFxpPortIndex
  - 3: fcFxpPortNxLoginIndex



### fcFxpPortNxLoginIndex 1.3.6.1.2.1.75.1.2.3.1.1

The associated Nx\_Port in the attachment for which the entry contains information.

### fcFxpPortFcphVersionAgreed 1.3.6.1.2.1.75.1.2.3.1.2

The version of FC-PH that the Fx\_Port has agreed to support from the fabric login.

### fcFxpPortNxPortBbCredit 1.3.6.1.2.1.75.1.2.3.1.3

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 fcFxpPortBbCreditModel.

### fcFxpPortNxPortRxDataFieldSize 1.3.6.1.2.1.75.1.2.3.1.4

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.

### fcFxpPortCosSuppAgreed 1.3.6.1.2.1.75.1.2.3.1.5

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.

### fcFxpPortIntermixSuppAgreed 1.3.6.1.2.1.75.1.2.3.1.6

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.

### fcFxpPortStackedConnModeAgreed 1.3.6.1.2.1.75.1.2.3.1.7

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.

### fcFxpPortClass2SeqDelivAgreed 1.3.6.1.2.1.75.1.2.3.1.8

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.

**Values** Possible values are:

- yes (1) The Fx\_Port has agreed to support Class 2 sequential delivery from the fabric login.
- no (2) The Fx\_Port has not agreed to support Class 2 sequential delivery from the fabric login.

### fcFxpPortClass3SeqDelivAgreed 1.3.6.1.2.1.75.1.2.3.1.9

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.

**Values** Possible values are:

- yes (1) The Fx\_Port has agreed to support Class 3 sequential delivery from the fabric login.
- no (2) The Fx\_Port has not agreed to support Class 3 sequential delivery from the fabric login.

### fcFxpPortNxPortName 1.3.6.1.2.1.75.1.2.3.1.10

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

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

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.

---

**NOTE**

This object is read-only. It is listed incorrectly in the MIB definition as read-write.

---

## 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.

### fcFxpPortErrorTable 1.3.6.1.2.1.75.1.3.1

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 reinitialized, 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**

An entry containing error counters of a Fx\_Port.

**Augments** 1: fcFxpPortEntry

### **fcFxpPortLinkFailures 1.3.6.1.2.1.75.1.3.1.1.1**

The number of link failures detected by this Fx\_Port.

### **fcFxpPortSyncLosses 1.3.6.1.2.1.75.1.3.1.1.2**

The number of loss of synchronization errors detected by the Fx\_Port.

### **fcFxpPortSigLosses 1.3.6.1.2.1.75.1.3.1.1.3**

The number of loss of signal errors detected by the Fx\_Port.

### **fcFxpPortPrimSeqProtoErrors 1.3.6.1.2.1.75.1.3.1.1.4**

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**

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**

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**

The number of delimiter errors detected by this Fx\_Port.

### **fcFxpPortAddressIdErrors 1.3.6.1.2.1.75.1.3.1.1.8**

The number of address identifier errors detected by this Fx\_Port.

### **fcFxpPortLinkResetIns 1.3.6.1.2.1.75.1.3.1.1.9**

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**

The number of Link Reset Protocol errors issued by this Fx\_Port to the attached Nx\_Port.

### **fcFxpPortOlsIns 1.3.6.1.2.1.75.1.3.1.1.11**

The number of Offline Sequence errors received by this Fx\_Port.

### **fcFxpPortOlsOuts 1.3.6.1.2.1.75.1.3.1.1.12**

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.

### **fcFxpPortC1AccountingTable 1.3.6.1.2.1.75.1.4.1**

A table that contains Class 1 accounting information recorded since the management agent reinitialized, one entry for each Fx\_Port in the fabric element.

### **fcFxpPortC1AccountingEntry 1.3.6.1.2.1.75.1.4.1.1**

An entry containing Class 1 accounting information for each Fx\_Port.

**Augments:** 1: fcFxpPortEntry

### **fcFxpPortC1InFrames 1.3.6.1.2.1.75.1.4.1.1.1**

The number of Class 1 frames (other than Class 1 connect-request) received by this Fx\_Port from its attached Nx\_Port.

**fcFxpOrtC1OutFrames 1.3.6.1.2.1.75.1.4.1.1.2**

The number of Class 1 frames (other than Class 1 connect-request) delivered through this Fx\_Port to its attached Nx\_Port.

**fcFxpOrtC1InOctets 1.3.6.1.2.1.75.1.4.1.1.3**

The number of Class 1 frame octets, including the frame delimiters, received by this Fx\_Port from its attached Nx\_Port.

**fcFxpOrtC1OutOctets 1.3.6.1.2.1.75.1.4.1.1.4**

The number of Class 1 frame octets, including the frame delimiters, delivered through this Fx\_Port to its attached Nx\_Port.

**fcFxpOrtC1Discards 1.3.6.1.2.1.75.1.4.1.1.5**

The number of Class 1 frames discarded by this Fx\_Port.

**fcFxpOrtC1FbsyFrames 1.3.6.1.2.1.75.1.4.1.1.6**

The number of F\_BSY frames generated by this Fx\_Port against Class 1 connect-request.

**fcFxpOrtC1FrjtFrames 1.3.6.1.2.1.75.1.4.1.1.7**

The number of F\_RJT frames generated by this Fx\_Port against Class 1 connect-request.

**fcFxpOrtC1InConnections 1.3.6.1.2.1.75.1.4.1.1.8**

The number of Class 1 connections successfully established in which the attached Nx\_Port is the source of the connect-request.

**fcFxpOrtC1OutConnections 1.3.6.1.2.1.75.1.4.1.1.9**

The number of Class 1 connections successfully established in which the attached Nx\_Port is the destination of the connect-request.

**fcFxpOrtC1ConnTime 1.3.6.1.2.1.75.1.4.1.1.10**

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.

## fcFxpOrtC2AccountingTable 1.3.6.1.2.1.75.1.4.2

A table that contains Class 2 accounting information recorded since the management agent has reinitialized, one entry for each Fx\_Port in the fabric element.

### fcFxpOrtC2AccountingEntry 1.3.6.1.2.1.75.1.4.2.1

An entry containing Class 2 accounting information for each Fx\_Port.

**Augments:** 1: fcFxpOrtEntry

#### fcFxpOrtC2InFrames 1.3.6.1.2.1.75.1.4.2.1.1

The number of Class 2 frames received by this Fx\_Port from its attached Nx\_Port.

#### fcFxpOrtC2OutFrames 1.3.6.1.2.1.75.1.4.2.1.2

The number of Class 2 frames delivered through this Fx\_Port to its attached Nx\_Port.

#### fcFxpOrtC2InOctets 1.3.6.1.2.1.75.1.4.2.1.3

The number of Class 2 frame octets, including the frame delimiters, received by this Fx\_Port from its attached Nx\_Port.

#### fcFxpOrtC2OutOctets 1.3.6.1.2.1.75.1.4.2.1.4

The number of Class 2 frame octets, including the frame delimiters, delivered through this Fx\_Port to its attached Nx\_Port.

#### fcFxpOrtC2Discards 1.3.6.1.2.1.75.1.4.2.1.5

The number of Class 2 frames discarded by this Fx\_Port.

#### fcFxpOrtC2FbsyFrames 1.3.6.1.2.1.75.1.4.2.1.6

The number of F\_BSY frames generated by this Fx\_Port against Class 2 frames.

#### fcFxpOrtC2FrjtFrames 1.3.6.1.2.1.75.1.4.2.1.7

The number of F\_RJT frames generated by this Fx\_Port against Class 2 frames.

### **fcFxC3AccountingTable 1.3.6.1.2.1.75.1.4.3**

A table that contains Class 3 accounting information recorded since the management agent has reinitialized, one entry for each Fx\_Port in the fabric element.

#### **fcFxC3AccountingEntry 1.3.6.1.2.1.75.1.4.3.1**

An entry containing Class 3 accounting information for each Fx\_Port.

**Augments:** 1: fcFxC3Entry

#### **fcFxC3InFrames 1.3.6.1.2.1.75.1.4.3.1.1**

The number of Class 3 frames received by this Fx\_Port from its attached Nx\_Port.

#### **fcFxC3OutFrames 1.3.6.1.2.1.75.1.4.3.1.2**

The number of Class 3 frames delivered through this Fx\_Port to its attached Nx\_Port.

#### **fcFxC3InOctets 1.3.6.1.2.1.75.1.4.3.1.3**

The number of Class 3 frame octets, including the frame delimiters, received by this Fx\_Port from its attached Nx\_Port.

#### **fcFxC3OutOctets 1.3.6.1.2.1.75.1.4.3.1.4**

The number of Class 3 frame octets, including the frame delimiters, delivered through this Fx\_Port to its attached Nx\_Port.

#### **fcFxC3Discards 1.3.6.1.2.1.75.1.4.3.1.5**

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.

### **fcFxpPortCapTable 1.3.6.1.2.1.75.1.5.1**

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**

An entry containing the capabilities of a Fx\_Port.

**Augments:** 1: fcFxpPortEntry

#### **fcFxpPortCapFcpHVersionHigh 1.3.6.1.2.1.75.1.5.1.1.1**

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**

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**

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**

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**

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**

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**

A value indicating the set of Classes of Service that the Fx\_Port is capable of supporting.



**fcFxpPortCapIntermix 1.3.6.1.2.1.75.1.5.1.1.8**

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.

**fcFxpPortCapStackedConnMode 1.3.6.1.2.1.75.1.5.1.1.9**

A value indicating the mode of Stacked Connect request that the Fx\_Port is capable of supporting.

**fcFxpPortCapClass2SeqDeliv 1.3.6.1.2.1.75.1.5.1.1.10**

A flag indicating whether the Fx\_Port is capable of supporting Class 2 Sequential Delivery.

**fcFxpPortCapClass3SeqDeliv 1.3.6.1.2.1.75.1.5.1.1.11**

A flag indicating whether the Fx\_Port is capable of supporting Class 3 Sequential Delivery.

**fcFxpPortCapHoldTimeMax 1.3.6.1.2.1.75.1.5.1.1.12**

The maximum holding time (in microseconds) that the Fx\_Port is capable of supporting.

**fcFxpPortCapHoldTimeMin 1.3.6.1.2.1.75.1.5.1.1.13**

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](#) . . . . . 96
- [Definitions for FCFABRIC-ELEMENT-MIB](#) . . . . . 99
- [fcFeConfig group](#) . . . . . 101
- [fcFeOp group](#) . . . . . 106
- [fcFeError group](#) . . . . . 112
- [fcFeAcct group](#) . . . . . 113
- [fcFeCap group](#) . . . . . 114

---

**NOTE**

Brocade does not support the settable “Write” function for any of the Fibre Channel FE MIB objects except “[fcFxpPortPhysAdminStatus 1.3.6.1.2.1.75.1.2.2.1.1](#)”.

---

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

```

- iso
  - org
    - dod
      - internet
        - experimental
          - fibreChannel
            - fcFabric
              - fcFe
                - fcFeConfig
                  - fcFabricName
                  - fcElementName
                  - fcFeModuleCapacity
                  - fcFeModuleTable
                  - fcFxpConfTable
                - fcFeOp
                  - fcFxpPortOperTable
                  - fcFxpPortPhysTable
                  - fcFxplogiTable
                - fcFeError
                  - fcFxpPortErrorTable
                - fcFeAcct
                  - fcFxpPortC1AcctTable
                  - fcFxpPortC2AcctTable
                  - fcFxpPortC3AcctTable
                - fcFeCap
                  - fcFxpPortCapTable

```

**FIGURE 24** 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
      - fcFeModuleFxpPortCapacity 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
  - fcFxpConfTable 1.3.6.1.3.42.2.1.1.5
    - fcFxpConfEntry 1.3.6.1.3.42.2.1.1.5.1
      - fcFxpConfModuleIndex 1.3.6.1.3.42.2.1.1.5.1.1
      - fcFxpConfFxpPortIndex 1.3.6.1.3.42.2.1.1.5.1.2
      - fcFxpPortName 1.3.6.1.3.42.2.1.1.5.1.3
      - fcFxpPortFcphVersionHigh 1.3.6.1.3.42.2.1.1.5.1.4
      - fcFxpPortFcphVersionLow 1.3.6.1.3.42.2.1.1.5.1.5
      - fcFxpPortBbCredit 1.3.6.1.3.42.2.1.1.5.1.6
      - fcFxpPortRxBufSize 1.3.6.1.3.42.2.1.1.5.1.7
      - fcFxpPortRatov 1.3.6.1.3.42.2.1.1.5.1.8
      - fcFxpPortEdtov 1.3.6.1.3.42.2.1.1.5.1.9
      - fcFxpPortCosSupported 1.3.6.1.3.42.2.1.1.5.1.10
      - fcFxpPortIntermixSupported 1.3.6.1.3.42.2.1.1.5.1.11
      - fcFxpPortStackedConnMode 1.3.6.1.3.42.2.1.1.5.1.12
      - fcFxpPortClass2SeqDeliv 1.3.6.1.3.42.2.1.1.5.1.13
      - fcFxpPortClass3SeqDeliv 1.3.6.1.3.42.2.1.1.5.1.14
      - fcFxpPortHoldTime 1.3.6.1.3.42.2.1.1.5.1.15
      - fcFxpPortBaudRate 1.3.6.1.3.42.2.1.1.5.1.16
      - fcFxpPortMedium 1.3.6.1.3.42.2.1.1.5.1.17
      - fcFxpPortTxType 1.3.6.1.3.42.2.1.1.5.1.18
      - fcFxpPortDistance 1.3.6.1.3.42.2.1.1.5.1.19

```

**FIGURE 25** fcFeConfig hierarchy

### 3 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 26 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 27 fcFeError hierarchy

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

**FIGURE 28** fcFeAcct hierarchy

```
- fcFeCap
  - fcFxpPortCapTable 1.3.6.1.3.42.2.1.5.1
    - fcFxpPortCapEntry 1.3.6.1.3.42.2.1.5.1.1
      - fcFxpPortCapModuleIndex 1.3.6.1.3.42.2.1.5.1.1.1
      - fcFxpPortCapFxpPortIndex 1.3.6.1.3.42.2.1.5.1.1.2
      - fcFxpPortCapFcphVersionHigh 1.3.6.1.3.42.2.1.5.1.1.3
      - fcFxpPortCapFcphVersionLow 1.3.6.1.3.42.2.1.5.1.1.4
      - fcFxpPortCapBbCreditMax 1.3.6.1.3.42.2.1.5.1.1.5
      - fcFxpPortCapBbCreditMin 1.3.6.1.3.42.2.1.5.1.1.6
      - fcFxpPortCapRxDataFieldSizeMax 1.3.6.1.3.42.2.1.5.1.1.7
      - fcFxpPortCapRxDataFieldSizeMin 1.3.6.1.3.42.2.1.5.1.1.8
      - fcFxpPortCapCos 1.3.6.1.3.42.2.1.5.1.1.9
      - fcFxpPortCapIntermix 1.3.6.1.3.42.2.1.5.1.1.10
      - fcFxpPortCapStackedConnMode 1.3.6.1.3.42.2.1.5.1.1.11
      - fcFxpPortCapClass2SeqDeliv 1.3.6.1.3.42.2.1.5.1.1.12
      - fcFxpPortCapClass3SeqDeliv 1.3.6.1.3.42.2.1.5.1.1.13
      - fcFxpPortCapHoldTimeMax 1.3.6.1.3.42.2.1.5.1.1.14
      - fcFxpPortCapHoldTimeMin 1.3.6.1.3.42.2.1.5.1.1.15
      - fcFxpPortCapBaudRates 1.3.6.1.3.42.2.1.5.1.1.16
      - fcFxpPortCapMedia 1.3.6.1.3.42.2.1.5.1.1.17
```

**FIGURE 29** fcFeCap hierarchy

## Definitions for FCFABRIC-ELEMENT-MIB

Table 9 lists the definitions used for FCFABRIC-ELEMENT-MIB.

**TABLE 9** 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)

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

**TABLE 9 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 9 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.

### 3 fcFabricName 1.3.6.1.3.42.2.1.1.1

Implementation of this group is mandatory.

#### fcFabricName 1.3.6.1.3.42.2.1.1.1

The Name\_Identifier of the fabric to which this fabric element belongs.

**Return** Returns the WWN of the primary switch in the fabric.

#### fcElementName 1.3.6.1.3.42.2.1.1.2

The Name\_Identifier of the fabric element.

**Return** Returns the WWN of the switch.

#### fcFeModuleCapacity 1.3.6.1.3.42.2.1.1.3

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 1 for all the supported switches.

#### fc Fabric Element Module Table

This table contains one entry for each module, information of the modules.

#### fcFeModuleTable 1.3.6.1.3.42.2.1.1.4

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

An entry containing the configuration parameters of a module.

**Status** Mandatory

**Index** fcFeModuleIndex

#### fcFeModuleIndex 1.3.6.1.3.42.2.1.1.4.1.1

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

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 “[sysDescr 1.3.6.1.2.1.1.1](#)” on page 30.

### fcFeModuleObjectID 1.3.6.1.3.42.2.1.1.4.1.3

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 “[sysObjectID 1.3.6.1.2.1.1.2](#)” on page 30.

### fcFeModuleOperStatus 1.3.6.1.3.42.2.1.1.4.1.4

Indicates the operational status of the module:

- online (1) The module is functioning properly.
- offline (2) The module is not available.
- testing (3) The module is under testing.
- faulty (4) The module is defective in some way.

### fcFeModuleLastChange 1.3.6.1.3.42.2.1.1.4.1.5

Contains the value of “[sysUpTime 1.3.6.1.2.1.1.3](#)” 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.

### fcFeModuleFxpPortCapacity 1.3.6.1.3.42.2.1.1.4.1.6

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 fcFeModuleFxpPortCapacity, inclusive; however, the numbers are not required to be contiguous.

### fcFeModuleName 1.3.6.1.3.42.2.1.1.4.1.7

The Name\_Identifier of the module.

The return value is the WWN of the switch.

## Fx\_Port Configuration Table

This table contains, one entry for each Fx\_Port, the configuration parameters of the ports.

### fcFxConfTable 1.3.6.1.3.42.2.1.1.5

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

An entry containing the configuration and service parameters of an Fx\_Port.

**Index** FcFxConfModuleIndex, fcFxConfFxPortIndex

### fcFxConfModuleIndex 1.3.6.1.3.42.2.1.1.5.1.1

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

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 reinitialized.

### fcFxPortName 1.3.6.1.3.42.2.1.1.5.1.3

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

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

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

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.

### fcFxpPortRxBufSize 1.3.6.1.3.42.2.1.1.5.1.7

The largest Data\_Field Size (in octets) for an FT\_1 frame that can be received by the Fx\_Port.

### fcFxpPortRatov 1.3.6.1.3.42.2.1.1.5.1.8

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 1.3.6.1.2.1.75.1.1.5.1.8](#)” on page 83) plus twice the maximum time that a frame might be delayed within the fabric and still be delivered.

### fcFxpPortEdtov 1.3.6.1.3.42.2.1.1.5.1.9

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 1.3.6.1.3.42.2.1.1.5.1.10

A value indicating the set of Classes of Service supported by the Fx\_Port.

**Values** Possible values are:

- Class F (0)
- Class 1 (1)
- Class 2 (2)
- Class 3 (3)
- Class 4 (4)
- Class 5 (5)
- Class 6 (6)

### fcFxpPortIntermixSupported 1.3.6.1.3.42.2.1.1.5.1.11

A flag indicating whether the Fx\_Port supports an Intermixed Dedicated Connection.

**Values** Possible values are:

- yes (1)
- no (2)

### fcFxpPortStackedConnMode 1.3.6.1.3.42.2.1.1.5.1.12

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

A flag indicating whether Class 2 sequential delivery is supported by the Fx\_Port.

**Values** Possible values are:

- yes (1)
- no (2)

### fcFxpPortClass3SeqDeliv 1.3.6.1.3.42.2.1.1.5.1.14

A flag indicating whether Class 3 sequential delivery is supported by the Fx\_Port.

**Values** Possible values are:

- yes (1)
- no (2)

### fcFxpPortHoldTime 1.3.6.1.3.42.2.1.1.5.1.15

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

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

The FC-0 medium of the Fx\_Port.

### fcFxpPortTxType 1.3.6.1.3.42.2.1.1.5.1.18

The FC-0 transmitter type of the Fx\_Port.

### fcFxpPortDistance 1.3.6.1.3.42.2.1.1.5.1.19

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.

---

**NOTE**

Implementation of this group is mandatory.

---

**fcFxpPortOperTable 1.3.6.1.3.42.2.1.2.1**

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**

An entry containing operational status and parameters of an Fx\_Port.

**Index** fcFxpPortOperModuleIndex, fcFxpPortOperFxPortIndex

**fcFxpPortOperModuleIndex 1.3.6.1.3.42.2.1.2.1.1.1**

Identifies the module containing the Fx\_Port for which this entry contains information.

**fcFxpPortOperFxPortIndex 1.3.6.1.3.42.2.1.2.1.1.2**

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 reinitialized.

**fcFxpPortID 1.3.6.1.3.42.2.1.2.1.1.3**

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.

**fcFPortAttachedPortName 1.3.6.1.3.42.2.1.2.1.1.4**

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.

**fcFPortConnectedPort 1.3.6.1.3.42.2.1.2.1.1.5**

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.

### fcFxpPortBbCreditAvailable 1.3.6.1.3.42.2.1.2.1.1.6

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 fcFxpPortBbCredit.

### fcFxpPortOperMode 1.3.6.1.3.42.2.1.2.1.1.7

The current operational mode of the Fx\_Port.

### fcFxpPortAdminMode 1.3.6.1.3.42.2.1.2.1.1.8

The desired operational mode of the Fx\_Port.

### fcFxpPortPhysTable 1.3.6.1.3.42.2.1.2.3

A table that contains, one entry for each Fx\_Port in the fabric element, physical level status and parameters of the Fx\_Ports.

### fcFxpPortPhysEntry 1.3.6.1.3.42.2.1.2.3.1

An entry containing physical level status and parameters of an Fx\_Port.

**Index** fcFxpPortPhysModuleIndex, fcFxpPortPhysFxPortIndex

### fcFxpPortPhysModuleIndex 1.3.6.1.3.42.2.1.2.3.1.1

Identifies the module containing the Fx\_Port for which this entry contains information.

### fcFxpPortPhysFxPortIndex 1.3.6.1.3.42.2.1.2.3.1.2

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 reinitialized.

### fcFxpPortPhysAdminStatus 1.3.6.1.3.42.2.1.2.3.1.3

The desired state of the Fx\_Port:

- online (1) Place port online
- offline (2) Take port offline
- testing (3) Initiate test procedures

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 fcFxpPortPhysAdminStatus in the offline state (2). As the result of either explicit management action or per configuration information accessible by the fabric element, fcFxpPortPhysAdminStatus is then changed to either the online (1) or testing (3) states or remains in the offline state (2).

### fcFxpPortPhysOperStatus 1.3.6.1.3.42.2.1.2.3.1.4

The current operational status of the Fx\_Port:

- online (1) Log in might proceed.
- offline (2) Log in cannot proceed.
- testing (3) Port is under test.
- link-failure (4) Failure after online/testing.

The testing state (3) indicates that no operational frames can be passed. If fcFxpPortPhysAdminStatus is offline (2), then fcFxpPortPhysOperStatus should be offline (2). If fcFxpPortPhysAdminStatus is changed to online (1), then fcFxpPortPhysOperStatus 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).

### fcFxpPortPhysLastChange 1.3.6.1.3.42.2.1.2.3.1.5

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.

### fcFxpPortPhysRttov 1.3.6.1.3.42.2.1.2.3.1.6

The Receiver\_Transmitter\_Timeout value of the Fx\_Port. This is used by the receiver logic to detect Loss of Synchronization.

### Fx\_Port Fabric login table

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.

### fcFxplogiTable 1.3.6.1.3.42.2.1.2.4

A table that contains, one entry for each Fx\_Port in the fabric element, services parameters established from the most recent fabric login, explicit or implicit.

### fcFxplogiEntry 1.3.6.1.3.42.2.1.2.4.1

An entry containing service parameters established from a successful fabric login.

### 3 fcFxlgiModuleIndex 1.3.6.1.3.42.2.1.2.4.1.1

**Index** fcFxlginModuleIndex, fcFxlginFxPortIndex, fcFxlginNxPortIndex

#### **fcFxlgiModuleIndex 1.3.6.1.3.42.2.1.2.4.1.1**

Identifies the module containing the Fx\_Port for which this entry contains information.

#### **fcFxlgiFxPortIndex 1.3.6.1.3.42.2.1.2.4.1.2**

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 reinitialized.

#### **fcFxlgiNxPortIndex 1.3.6.1.3.42.2.1.2.4.1.3**

The object identifies the associated Nx\_Port in the attachment for which the entry contains information.

#### **fcFxlPortFcpVersionAgreed 1.3.6.1.3.42.2.1.2.4.1.4**

The version of FC-PH that the Fx\_Port has agreed to support from the fabric login.

#### **fcFxlPortNxPortBbCredit 1.3.6.1.3.42.2.1.2.4.1.5**

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 fcFxlPortBbCreditModel.

#### **fcFxlPortNxPortRxDataFieldSize 1.3.6.1.3.42.2.1.2.4.1.6**

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.

#### **fcFxlPortCosSuppAgreed 1.3.6.1.3.42.2.1.2.4.1.7**

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.

#### **fcFxlPortIntermixSuppAgreed 1.3.6.1.3.42.2.1.2.4.1.8**

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.

**Values** Possible values are:



- yes (1)
- no (2)

### fcFxpPortStackedConnModeAgreed 1.3.6.1.3.42.2.1.2.4.1.9

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.

### fcFxpPortClass2SeqDelivAgreed 1.3.6.1.3.42.2.1.2.4.1.10

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.

**Values** Possible values are:

- yes (1)
- no (2)

### fcFxpPortClass3SeqDelivAgreed 1.3.6.1.3.42.2.1.2.4.1.11

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.

**Values** Possible values are:

- yes (1)
- no (2)

### fcFxpPortNxPortName 1.3.6.1.3.42.2.1.2.4.1.12

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.

### fcFxpPortConnectedNxPort 1.3.6.1.3.42.2.1.2.4.1.13

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.

### fcFxpPortBbCreditModel 1.3.6.1.3.42.2.1.2.4.1.14

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.

### fcFxPortErrorTable 1.3.6.1.3.42.2.1.3.1

This table contains one entry for each Fx\_Port in the fabric element, and counters recording numbers of errors detected since the management agent reinitialized.

The first six columnar objects after the port index correspond to the counters in the Link ErrorStatus Block.

### fcFxPortErrorEntry 1.3.6.1.3.42.2.1.3.1.1

An entry containing error counters of an Fx\_Port.

**Index** fcFxPortErrorModuleIndex, fcFxPortErrorFxPortIndex

#### fcFxPortErrorModuleIndex 1.3.6.1.3.42.2.1.3.1.1.1

Identifies the module containing the Fx\_Port for which this entry contains information.

#### fcFxPortErrorFxPortIndex 1.3.6.1.3.42.2.1.3.1.1.2

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 reinitialized.

#### fcFxPortLinkFailures 1.3.6.1.3.42.2.1.3.1.1.3

The number of link failures detected by this Fx\_Port.

#### fcFxPortSyncLosses 1.3.6.1.3.42.2.1.3.1.1.4

The number of loss of synchronization errors detected by the Fx\_Port.

#### fcFxPortSigLosses 1.3.6.1.3.42.2.1.3.1.1.5

The number of loss of signal errors detected by the Fx\_Port.

**fcFxpPortPrimSeqProtoErrors 1.3.6.1.3.42.2.1.3.1.1.6**

The number of primitive sequence protocol errors detected by the Fx\_Port.

**fcFxpPortInvalidTxWords 1.3.6.1.3.42.2.1.3.1.1.7**

The number of invalid transmission word errors detected by the Fx\_Port.

**fcFxpPortInvalidCrcs 1.3.6.1.3.42.2.1.3.1.1.8**

The number of invalid Cyclic Redundancy Checks (CRCs) detected by this Fx\_Port.

**fcFxpPortDelimiterErrors 1.3.6.1.3.42.2.1.3.1.1.9**

The number of Delimiter errors detected by this Fx\_Port.

**fcFxpPortAddressIdErrors 1.3.6.1.3.42.2.1.3.1.1.10**

The number of address identifier errors detected by this Fx\_Port.

**fcFxpPortLinkResetIns 1.3.6.1.3.42.2.1.3.1.1.11**

The number of Link Reset Protocol errors received by this Fx\_Port from the attached Nx\_Port.

**fcFxpPortLinkResetOuts 1.3.6.1.3.42.2.1.3.1.1.12**

The number of Link Reset Protocol errors issued by this Fx\_Port to the attached Nx\_Port.

**fcFxpPortOlsIns 1.3.6.1.3.42.2.1.3.1.1.13**

The number of Offline Sequence errors received by this Fx\_Port.

**fcFxpPortOlsOuts 1.3.6.1.3.42.2.1.3.1.1.14**

The number of Offline Sequence errors issued by this Fx\_Port.

**fcFeAcct group**

Brocade supports fcFxpPortC2AccountingTable and fcFxpPortC3AccountingTable.

## 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.

### fcFxPortCapTable 1.3.6.1.3.42.2.1.5.1

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

An entry containing the capabilities of a Fx\_Port.

**Index** fcFxPortCapModuleIndex, fcFxPortCapFxPortIndex

### fcFxPortCapModuleIndex 1.3.6.1.3.42.2.1.5.1.1.1

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

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 reinitialized.

### fcFxPortCapFcphVersionHigh 1.3.6.1.3.42.2.1.5.1.1.3

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

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

The maximum number of receive buffers available for holding Class 1 connect-request Class 2 or Class 3 frames from the attached Nx\_Port.

**fcFxpPortCapBbCreditMin 1.3.6.1.3.42.2.1.5.1.1.6**

The minimum number of receive buffers available for holding Class 1 connect-request Class 2 or Class 3 frames from the attached Nx\_Port.

**fcFxpPortCapRxDataFieldSizeMax 1.3.6.1.3.42.2.1.5.1.1.7**

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 1.3.6.1.3.42.2.1.5.1.1.8**

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 1.3.6.1.3.42.2.1.5.1.1.9**

A value indicating the set of Classes of Service that the Fx\_Port is capable of supporting.

**fcFxpPortCapIntermix 1.3.6.1.3.42.2.1.5.1.1.10**

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.

**Values** Possible values are:

- yes (1)
- no (2)

**fcFxpPortCapStackedConnMode 1.3.6.1.3.42.2.1.5.1.1.11**

A value indicating the mode of Stacked Connect request that the Fx\_Port is capable of supporting.

**fcFxpPortCapClass2SeqDeliv 1.3.6.1.3.42.2.1.5.1.1.12**

A flag indicating whether the Fx\_Port is capable of supporting Class 2 Sequential Delivery.

**Values** Possible values are:

- yes (1)
- no (2)

**fcFxpPortCapClass3SeqDeliv 1.3.6.1.3.42.2.1.5.1.1.13**

A flag indicating whether the Fx\_Port is capable of supporting Class 3 Sequential Delivery.

### 3 fcFxpPortCapHoldTimeMax 1.3.6.1.3.42.2.1.5.1.1.14

**Values** Possible values are:

- yes (1)
- no (2)

### fcFxpPortCapHoldTimeMax 1.3.6.1.3.42.2.1.5.1.1.14

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

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

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

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

---

## In this chapter

- Entity MIB overview ..... 117
- Textual conventions for Entity MIB ..... 120
- Entity MIB objects ..... 122
- Physical Entity group ..... 122
- Logical Entity group ..... 130
- Entity Mapping group ..... 132
- General group ..... 135
- Entity MIB trap ..... 136
- Entity MIB Conformance information ..... 136

## 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 v4.x, v5.x, v6.0, v6.1, v6.1.2\_CEE, v6.2.0, v6.3.0, and v6.4.0.

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 ..... 122
- Entity MIB trap ..... 136
- Entity MIB Conformance information ..... 136

## Entity MIB system organization of MIB objects

Figure 30 through Figure 37 depict the organization and structure of the Entity MIB file system.

```

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

FIGURE 30 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 31 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 32** 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 33** entityMapping hierarchy

```

- entityGeneral
  - entLastChangeTime 1.3.6.1.2.1.47.1.4.1

```

**FIGURE 34** 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 35** 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 36** entityConformance hierarchy

## Definitions for Entity MIB

Table 10 lists the objects or definitions that are imported into the Entity MIB and the modules from which they are imported.

**TABLE 10** Objects imported into the Entity MIB

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

## Textual conventions for Entity MIB

### PhysicalIndex

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

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

### PhysicalClass

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

**Syntax** Integer

Table 11 lists the possible values for PhysicalClass.

**TABLE 11** Possible values for PhysicalClass

Values	Description
other (1)	The physical entity class is known but does not match any of the supported values.
unknown (2)	The physical entity class is unknown to the agent.
chassis (3)	The physical entity class is an overall container for networking equipment. Any class of physical entity except a stack can be contained within a chassis, and a chassis might be contained only within a stack.
backplane (4)	The physical entity class is a device for aggregating and forwarding networking traffic, such as a shared backplane in a modular Ethernet switch. Note that an agent might model a backplane as a single physical entity, which is actually implemented as multiple discrete physical components (within a chassis or stack).
container (5)	The physical entity class is capable of containing one or more removable physical entities, possibly of different types (such as a chassis slot or daughter-card holder). For example, each (empty or full) slot in a chassis is modeled as a container. Note that all removable physical entities 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 [RFC2571]).

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

- 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)

## 4 Entity MIB objects

- 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](#) ..... 122
- [Logical Entity group](#) ..... 130
- [Entity Mapping group](#) ..... 132
- [General group](#) ..... 135

The following sections list the MIBs in each group.

## Physical Entity group

### entPhysicalTable 1.3.6.1.2.1.47.1.1.1

[Table 12](#) contains one row per physical entity ([Figure 37](#)). The table always contains at least one row for an “overall” physical entity.

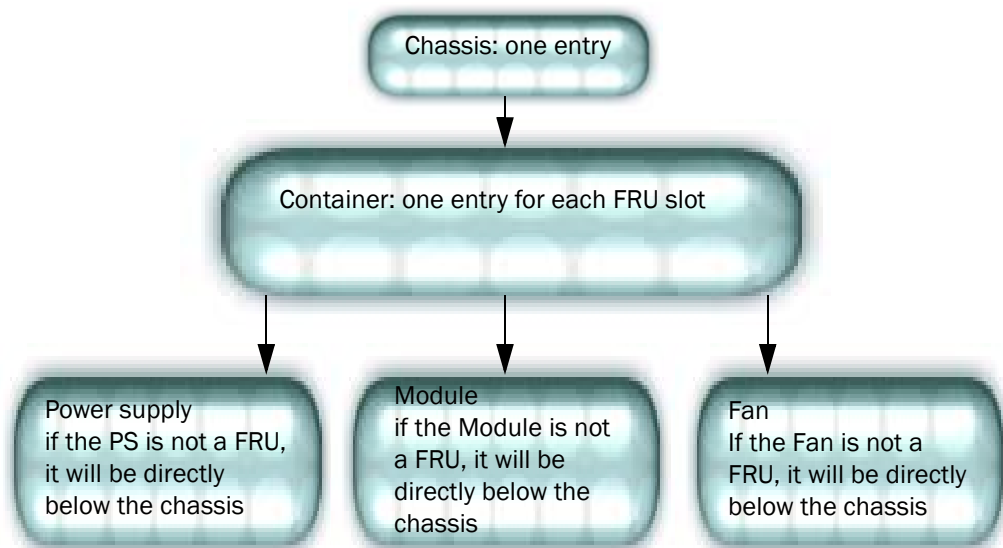
This object is implemented for Fabric OS v6.4.0. The “overall” physical entry for Brocade is the chassis, and in Fabric OS v6.4.0 it is marked as a FRU.

**TABLE 12** 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
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

**TABLE 12** entPhysicalTable entries for Brocade switches (Continued)

Platform	Blades	Fans	Power supply	WWN card
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	1 WWN unit
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	3 FRUs	2 PS	1 WWN unit
Brocade 7800 Extension Switch	1	2 fans	2 PS	1 WWN unit

**FIGURE 37** entPhysicalTable containment hierarchy (entPhysicalContainsTable)

## entPhysicalEntry 1.3.6.1.2.1.47.1.1.1.1

Information about a particular physical entity.

## 4 entPhysicalIndex 1.3.6.1.2.1.47.1.1.1.1.1

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

**Index** 1: entPhysicalIndex

### entPhysicalIndex 1.3.6.1.2.1.47.1.1.1.1.1

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

### entPhysicalDescr 1.3.6.1.2.1.47.1.1.1.1.2

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

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

### entPhysicalVendorType 1.3.6.1.2.1.47.1.1.1.1.3

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

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

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

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

### entPhysicalContainedIn 1.3.6.1.2.1.47.1.1.1.1.4

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

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

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

### entPhysicalClass 1.3.6.1.2.1.47.1.1.1.1.5

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

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

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

Brocade 300 switches can have the following hierarchy of physical objects:

- Chassis: One entry (one row)
- Container: One entry for each FRU slot (one blade, one power supply, three fans)
- Module: One entry for blades, one entry for power supply, and three entries for fans

Brocade 5100 switches can have the following hierarchy of physical objects:

- Chassis: One entry (one row)
- Container: One entry for each FRU slot (one blade, two power supplies, two fans)
- Module: One entry for blades, two entries for power supplies, and two entries for fans

Brocade 5300 switches can have the following hierarchy of physical objects:

- Chassis: One entry (one row)
- Container: One entry for each FRU slot (one blade, two power supplies, three fans)
- Module: One entry for blades, two entries for power supplies, and three entries for fans

Brocade DCX directors can have the following hierarchy of physical objects:

- Chassis: One entry (one row)
- Container: One entry for each FRU slot (eight port blades, two CPs, four power supplies, three fans)
- Module: Eight entries for port blades, two entries for CPs, four entries for power supplies, and three entries for fans

Brocade DCX-4S directors can have the following hierarchy of physical objects:

- Chassis: One entry (one row)
- Container: One entry for each FRU slot (four port blades, two CPs, two power supplies, two fans)
- Module: Eight entries for port blades, two entries for CPs, four entries for power supplies, and three entries for fans

Brocade 12000, 24000, and 48000 directors can have the following hierarchy of physical objects:

- Chassis: One entry (one row)
- Container: One entry for each FRU slot (eight port blades, two CPs, four power supplies, three fans)
- Module: Eight entries for port blades, two entries for CPs, four entries for power supplies, and three entries for fans

Brocade 3900 switches can have the following hierarchy of physical objects:

- Chassis: One entry (one row)
- Container: One entry for each FRU slot (one switch blade, two power supplies, six fans)
- Module: One entry for switch blade, up to two entries for power supplies, and up to six entries for fans

Brocade 4100 switches can have the following hierarchy of physical objects:

## 4 entPhysicalParentRelPos 1.3.6.1.2.1.47.1.1.1.1.6

- Chassis: One entry (one row)
- Container: One entry for each FRU slot (one switch blade, two power supplies, three fans)
- Module: One entry for switch blade, up to two entries for power supplies, and up to three entries for fans

Brocade 7500 and 7600 switches can have the following hierarchy of physical objects:

- Chassis: One entry (one row)
- Container: One entry for each FRU slot (one switch blade, two power supplies, three fans)
- Module: One entry for switch blade, up to two entries for power supplies, and up to three entries for fans

Brocade 8000 switch can have the following hierarchy of physical objects:

- Chassis: One entry (one row)
- Container: One entry for each FRU slot (one switch blade, two power supplies, three fans)
- Module: One entry for switch blade, up to two entries for power supplies, and up to three entries for fans

Brocade 7800 Extension Switch can have the following hierarchy of physical objects:

- Chassis: One entry (one row)
- Container: One entry for each FRU slot (one switch blade, two power supplies, two fans)
- Module: One entry for switch blade, up to two entries for power supplies, and up to two entries for fans

## entPhysicalParentRelPos 1.3.6.1.2.1.47.1.1.1.1.6

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

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

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

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

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

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



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

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

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

### **entPhysicalName 1.3.6.1.2.1.47.1.1.1.1.7**

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

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

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

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

### **entPhysicalHardwareRev 1.3.6.1.2.1.47.1.1.1.1.8**

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

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

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

Set to an empty string.

### **entPhysicalFirmwareRev 1.3.6.1.2.1.47.1.1.1.1.9**

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

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

## 4 entPhysicalSoftwareRev 1.3.6.1.2.1.47.1.1.1.1.10

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

Set to an empty string.

## entPhysicalSoftwareRev 1.3.6.1.2.1.47.1.1.1.1.10

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

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

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

Set to empty string.

## entPhysicalSerialNum 1.3.6.1.2.1.47.1.1.1.1.11

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

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

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

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

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

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

---

### NOTE

For the Brocade 4024 blade, entPhysicalSerialNum displays the vendor-specific serial number; for other switches it displays the factory serial number.

---

## entPhysicalMfgName 1.3.6.1.2.1.47.1.1.1.1.12

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

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

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

Set to empty string.

### **entPhysicalModelName 1.3.6.1.2.1.47.1.1.1.1.13**

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

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

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

### **entPhysicalAlias 1.3.6.1.2.1.47.1.1.1.1.14**

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

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

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

Set to empty string.

### **entPhysicalAssetID 1.3.6.1.2.1.47.1.1.1.1.15**

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

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

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

## 4 entPhysicalIsFRU 1.3.6.1.2.1.47.1.1.1.1.16

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

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

Set to empty string.

## entPhysicalIsFRU 1.3.6.1.2.1.47.1.1.1.1.16

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

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

## Logical Entity group

Not supported.

## entLogicalTable 1.3.6.1.2.1.47.1.2.1

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

## entLogicalEntry 1.3.6.1.2.1.47.1.2.1.1

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

**Index** entLogicalIndex

## entLogicalIndex 1.3.6.1.2.1.47.1.2.1.1.1

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

## entLogicalDescr 1.3.6.1.2.1.47.1.2.1.1.2

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

## entLogicalType 1.3.6.1.2.1.47.1.2.1.1.3

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

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

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

## entLogicalCommunity 1.3.6.1.2.1.47.1.2.1.1.4

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

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

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

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

For agents not accessible through SNMPv1 or SNMPv2C, the value of this object is the empty string. This object might also contain an empty string if a community string has not yet been assigned by the agent, or no community string with suitable access rights can be returned for a particular SNMP request.

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

## entLogicalTAddress 1.3.6.1.2.1.47.1.2.1.1.5

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

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

## entLogicalTDomain 1.3.6.1.2.1.47.1.2.1.1.6

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

## entLogicalContextEngineID 1.3.6.1.2.1.47.1.2.1.1.7

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

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

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

## entLogicalContextName 1.3.6.1.2.1.47.1.2.1.1.8

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

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

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

## Entity Mapping group

### entLPMappingTable 1.3.6.1.2.1.47.1.3.1

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

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

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

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

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

Not supported.

## entLPMappingEntry 1.3.6.1.2.1.47.1.3.1.1

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

Not supported.

**Index** entLogicalIndex  
entLPPhysicalIndex

## entLPPhysicalIndex 1.3.6.1.2.1.47.1.3.1.1.1

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

Not supported.

## entAliasMappingTable 1.3.6.1.2.1.47.1.3.2

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

Not supported.

## entAliasMappingEntry 1.3.6.1.2.1.47.1.3.2.1

Information about a particular physical equipment, logical entity to external identifier binding. Each logical entity/physical component pair might be associated with one alias mapping. The logical entity index might also be used as a wildcard (Refer to [“entAliasLogicalIndexOrZero 1.3.6.1.2.1.47.1.3.2.1.1”](#) on page 134 for details.)

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

## 4 entAliasLogicalIndexOrZero 1.3.6.1.2.1.47.1.3.2.1.1

**Index** entPhysicalIndex  
entAliasLogicalIndexOrZero  
Not supported.

### entAliasLogicalIndexOrZero 1.3.6.1.2.1.47.1.3.2.1.1

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

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

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

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

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

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

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

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

Not supported.

### entAliasMappingIdentifier 1.3.6.1.2.1.47.1.3.2.1.2

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

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

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

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

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



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

Not supported.

## entPhysicalContainsTable 1.3.6.1.2.1.47.1.3.3

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

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

Supported.

## entPhysicalContainsEntry 1.3.6.1.2.1.47.1.3.3.1

A single container / containee relationship.

**Indexes** 1: entPhysicalIndex  
2: entPhysicalChildIndex  
Not supported.

## entPhysicalChildIndex 1.3.6.1.2.1.47.1.3.3.1.1

The value of entPhysicalIndex for the contained physical entity.

Not supported.

## General group

Not supported.

## entLastChangeTime 1.3.6.1.2.1.47.1.4.1

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

- entPhysicalTable
- entLogicalTable
- entLPMappingTable
- entAliasMappingTable
- entPhysicalContainsTable

## Entity MIB trap

Not supported.

This section lists the entityMIBTrap objects.

### entConfigChange 1.3.6.1.2.1.47.2.0.1

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

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

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

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

## Entity MIB Conformance information

This section lists the entityConformance MIBs. [Figure 36](#) on page 119 shows the structure of the entityConformance group.

### entityCompliance 1.3.6.1.2.1.47.3.1.1

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

<b>Status</b>	Deprecated
<b>Mandatory groups</b>	1: entityPhysicalGroup 2: entityLogicalGroup 3: entityMappingGroup 4: entityGeneralGroup 5: entityNotificationsGroup

### entity2Compliance 1.3.6.1.2.1.47.3.1.2

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

<b>Mandatory groups</b>	1: entityPhysicalGroup 2: entityPhysical2Group
-------------------------	---

- 3: entityGeneralGroup
- 4: entityNotificationsGroup

**Components**

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

**entityPhysicalGroup 1.3.6.1.2.1.47.3.2.1**

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

**Objects**

- 1: entPhysicalDescr
- 2: entPhysicalVendorType
- 3: entPhysicalContainedIn
- 4: entPhysicalClass
- 5: entPhysicalParentRelPos
- 6: entPhysicalName

**entityLogicalGroup 1.3.6.1.2.1.47.3.2.2**

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

**Objects**

- 1: entLogicalDescr
- 2: entLogicalType
- 3: entLogicalCommunity
- 4: entLogicalTAddress

## 4 entityMappingGroup 1.3.6.1.2.1.47.3.2.3

5: entLogicalTDomain

**Status**    Deprecated

### entityMappingGroup 1.3.6.1.2.1.47.3.2.3

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

**Objects**    1: entLPPhysicalIndex  
              2: entAliasMappingIdentifier  
              3: entPhysicalChildIndex

### entityGeneralGroup 1.3.6.1.2.1.47.3.2.4

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

**Objects**    1: entLastChangeTime

### entityNotificationsGroup 1.3.6.1.2.1.47.3.2.5

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

**Notifications**    1: entConfigChange

### entityPhysical2Group 1.3.6.1.2.1.47.3.2.6

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

**Objects**    1: entPhysicalHardwareRev  
              2: entPhysicalFirmwareRev  
              3: entPhysicalSoftwareRev  
              4: entPhysicalSerialNum  
              5: entPhysicalMfgName  
              6: entPhysicalModelName  
              7: entPhysicalAlias  
              8: entPhysicalAssetID  
              9: entPhysicalsFRU

## entityLogical2Group 1.3.6.1.2.1.47.3.2.7

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

- Objects**
- 1: entLogicalDescr
  - 2: entLogicalType
  - 3: entLogicalTAddress
  - 4: entLogicalTDomain
  - 5: entLogicalContextEngineID
  - 6: entLogicalContextName

## 4 entityLogical2Group 1.3.6.1.2.1.47.3.2.7

# SW-MIB Objects

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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.

## SW-MIB system organization of MIB objects

Figure 38 through Figure 54 depict the organization and structure of SW-MIB.

```

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

```

FIGURE 38 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

```

FIGURE 39 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

```

**FIGURE 40** 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

```

**FIGURE 41** swFabric hierarchy

```

- swModule (1.3.6.1.4.1.1588.2.1.1.1.3)

```

**FIGURE 42** 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 43** 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
      - swFCPortRxCasts 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
      - swFCPortBracdType 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.39

```

**FIGURE 44** swFCport hierarchy

## 5 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 45** 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 46** 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
    - swFwDefaultExceededActs 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
    - EportUtil and EportPctl are the mib defines used for VE ports for
    Legacy FCIP (FR4-18i router blade/Brocade 7500) While VEPortUtil and
    VEPortPctlLoss are used for VE ports for Brocade 7800 Extension Switch/FX8-24
    DCX Extension Blade.
    - 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

```

FIGURE 47 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 48 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 49 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 50 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 51** 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 52** 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 53** 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

FIGURE 54 swConnUnitPortStatExtentionTable hierarchy

## Textual conventions for SW-MIB

Table 13 lists the textual conventions used for SW-MIB.

TABLE 13 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.
SwNblIndex	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 13 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 13 SW-MIB textual conventions (Continued)

Type definition	Value	Description
SwFwClassesAreas	Integer	<p>Index of Fabric Watch classes and areas where thresholds can be monitored:</p> <p>Environment class:            1 swFwEnvTemp            2 swFwEnvFan (Not supported)            3 swFwEnvPS (Not supported)</p> <p>SFP class:            4 swFwTransceiverTemp            5 swFwTransceiverRxp            6 swFwTransceiverTxp            7 swFwTransceiverCurrent            57 swFwTransceiverVoltage</p> <p>Port class:            8 swFwPortLink            9 swFwPortSync            10 swFwPortSignal            11 swFwPortPe            12 swFwPortWords            13 swFwPortCrcs            14 swFwPortRXPerf            15 swFwPortTXPerf            16 swFwPortState            86 swFwPortLr            90 swFwPortC3Discard</p> <p>Fabric class:            17 swFwFabricEd            18 swFwFabricFr            19 swFwFabricDi            20 swFwFabricSc            21 swFwFabricZc            23 swFwFabricFl            24 swFwFabricGs</p> <p>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</p>
		<p>EE Performance Monitor class:            54 swFwPerfEToERxCnt            55 swFwPerfEToETxCnt</p> <p>Filter Performance Monitor class:            56 swFwPerffitCusDef</p> <p>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 swFwSecInvaldTS (not supported)            71 swFwSecInvalidSign (not supported)            72 swFwSecInvalidCert            73 swFwSecSlapFail            74 swFwSecSlapBadPkt (not supported)            75 swFwSecTSOutSync            76 swFwSecNoFcs            77 swFwSecIncompDB            78 swFwSecIllegalCmd</p> <p>E_Port class:            25 swFwEPortLink            26 swFwEPortSync            27 swFwEPortSignal            28 swFwEPortPe            29 swFwEPortWords            30 swFwEPortCrcs            31 swFwEPortRXPerf            32 swFwEPortTXPerf            33 swFwEPortState            84 swFwEPortUtil            87 swFwEPortLr            91 swFwEPortC3Discard            97 swFwEPortTrunkUtil            94 swFwVEPortStateChange            95 swFwVEPortUtil            96 swFwVEPortPktLoss</p> <p>Resource class:            83 swFwResourceFlash</p>

TABLE 13 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
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 v6.2.0, the sw Traps will have an extra binding associated to indicate the Virtual Fabric (VF).

The following traps will have Virtual Fabric ID (VFID) associated with them.

- [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](#)

## 5 sw Traps

- [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](#)

Refer to [Table 14](#) for the eleven traps defined in the SW-MIB, when it occurs, and how to configure the trap, if possible.

**TABLE 14** SW-MIB traps

Name	Specific	When	Configure
<a href="#">"swFault 1.3.6.1.4.1.1588.2.1.1.1.0.1"</a> on page 155 (not supported)	1	Obsolete	N.A.
<a href="#">"swSensorScn 1.3.6.1.4.1.1588.2.1.1.1.0.2"</a> on page 156	2	Obsolete	N.A.
<a href="#">"swFCPortScn 1.3.6.1.4.1.1588.2.1.1.1.0.3"</a> on page 156	3	Port changes state	Always on
<a href="#">"swEventTrap 1.3.6.1.4.1.1588.2.1.1.1.0.4"</a> on page 157	4	Switch event	Refer to the <i>Fabric OS Command Reference</i> and the <b>snmpConfig</b> command for more information.
<a href="#">"swFabricWatchTrap 1.3.6.1.4.1.1588.2.1.1.1.0.5"</a> on page 157	5	Threshold reached	Fabric OS Command: <b>fwConfigure portthconfig, thconfig, sysmonitor -config</b>
<a href="#">"swTrackChangesTrap 1.3.6.1.4.1.1588.2.1.1.1.0.6"</a> on page 158	6	Log in/log out	Fabric OS Command: <b>trackChangesSet</b> and <b>trackChangesShow</b>
<a href="#">"swIPv6ChangeTrap 1.3.6.1.4.1.1588.2.1.1.1.0.7"</a> on page 159	7	This trap is generated when an IPv6 address status change event occurs. It is generated only when IPv6 stateless state to deprecation state and not for just address change notification.	Refer to the <i>Fabric OS Command Reference</i> and the <b>snmpConfig</b> command for more information.
<a href="#">"swPmgrEventTrap 1.3.6.1.4.1.1588.2.1.1.1.0.8"</a> on page 159	8	This trap is generated when: <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>• Any logical switch is changed to base switch.</li> <li>• VF is enabled or disabled.</li> </ul>	Refer to the <i>Fabric OS Command Reference</i> and the <b>snmpConfig</b> command for more information.
<a href="#">"swFabricReconfigTrap 1.3.6.1.4.1.1588.2.1.1.1.0.9"</a> on page 159	9	The trap to be sent for tracking fabric reconfiguration.	Refer to the <i>Fabric OS Command Reference</i> and the <b>snmpConfig</b> command for more information.

TABLE 14 SW-MIB traps (Continued)

Name	Specific	When	Configure
<a href="#">"swFabricSegmentTrap 1.3.6.1.4.1.1588.2.1.1.1.0.10"</a> on page 160	10	The trap to be sent for tracking segmentation.	Refer to the <i>Fabric OS Command Reference</i> and the <b>snmpConfig</b> command for more information.
<a href="#">"swExtTrap 1.3.6.1.4.1.1588.2.1.1.1.0.11"</a> on page 160	11	The trap adds the SSN binding to the traps if it is enabled.	Refer to the <i>Fabric OS Command Reference</i> and the <b>snmpConfig</b> command for more information.

Refer to the *Fabric OS Command Reference* and the **snmpMibCapSet** command on how to enable or disable the sending of traps from the various MIBs.

The swSsn variable is optional in trap messages.

The swGroupName, swGroupType, and swGroupMemPos variables are optional trap messages in v2.6.x. The swGroupName, swGroupType, and swGroupMemPos variables are not supported in Fabric OS v4.x and above.

Because Fabric OS releases prior to v5.2.0 used to show the Enterprise Field in the swTraps from the sysObjectID (set using config variable "snmp.sysObjectID"), the Enterprise field will not always be resolved to "sw". If the sysObjectID is changed by user the Enterprise field in the trap will show some unresolved value.

To resolve this issue, beginning with the v5.2.0 release the SNMP configuration variable **snmp.trapEnterpriseFlag** lets you define the way that the Enterprise field displays.

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.).

## swFault 1.3.6.1.4.1.1588.2.1.1.1.0.1

This trap is no longer generated.

**Enterprise** sw

**Variables** ["swDiagResult 1.3.6.1.4.1.1588.2.1.1.1.1.20"](#)  
["swSsn 1.3.6.1.4.1.1588.2.1.1.1.1.10"](#)

A swFault is generated whenever the diagnostics detect a fault with the switch.

```
#TYPE          Switch is faulty.
#SUMMARY       Faulty reason: %d and SSN is #%s
#ARGUMENTS    0, 1
#SEVERITY     Critical
#TIMEINDEX    1
#STATE        Nonoperational
```

**swSensorScn 1.3.6.1.4.1.1588.2.1.1.1.0.2**

(Obsoleted by swFabricWatchTrap)

**Enterprise** sw

**Variables** “swSensorStatus 1.3.6.1.4.1.1588.2.1.1.1.22.1.3”  
 “swSensorIndex 1.3.6.1.4.1.1588.2.1.1.1.22.1.1”  
 “swSensorType 1.3.6.1.4.1.1588.2.1.1.1.22.1.2”  
 “swSensorValue 1.3.6.1.4.1.1588.2.1.1.1.22.1.4”  
 “swSensorInfo 1.3.6.1.4.1.1588.2.1.1.1.22.1.5”  
 “swSsn 1.3.6.1.4.1.1588.2.1.1.1.10”

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.

#TYPE	A sensor (temperature, fan, or other) changed its operational state.
#SUMMARY	%s: is currently in state %d and SSN is #%
#ARGUMENTS	4, 0, 5
#SEVERITY	Informational
#TIMEINDEX	1
#STATE	Operational

**swFCPortScn 1.3.6.1.4.1.1588.2.1.1.1.0.3****Enterprise** sw

**Variables** “swFCPortOpStatus 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.4”  
 “swFCPortIndex 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.1”  
 “swFCPortName 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.36”  
 “swSsn 1.3.6.1.4.1.1588.2.1.1.1.10”  
 “swFCPortFlag 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.38”  
 “swVfid 1.3.6.1.4.1.1588.2.1.1.1.2.15”

A swFCPortScn (3) is generated whenever an FC port changes its operational state: for instance, the FC port goes from online to offline. The VarBind in the Trap Data Unit contain the corresponding instance of the FC port's operational status, index, swFCPortName, and swSsn. swFCPortName and swSsn are optional.

#TYPE	A Fibre Channel Port changed its operational state.
#SUMMARY	Port Index %d changed state to %d. Port Name: %s and SSN is #%
#ARGUMENTS	1, 0, 2, 3
#SEVERITY	Informational
#TIMEINDEX	1
#STATE	Operational

## swEventTrap 1.3.6.1.4.1.1588.2.1.1.1.0.4

**Enterprise** sw

**Variables** ["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"](#)  
["swSsn 1.3.6.1.4.1.1588.2.1.1.1.10"](#)  
["swVfld 1.3.6.1.4.1.1588.2.1.1.1.2.15"](#)

This trap is generated when an event occurs with a level that is at or below ["swEventTrapLevel 1.3.6.1.4.1.1588.2.1.1.1.8.1"](#).

#TYPE	A firmware event has been logged.
#SUMMARY	Event %d: %s (severity level %d) - %s SSN is #%
#ARGUMENTS	0, 1, 2, 4, 5
#SEVERITY	Informational
#TIMEINDEX	1
#STATE	Operational

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. From Fabric OS v4.4.0 this trap is only generated for external RASLog messages.

To get more details on any particular event, refer to the *Fabric OS Message Reference*.

## swFabricWatchTrap 1.3.6.1.4.1.1588.2.1.1.1.0.5

**Enterprise** sw

**Variables** ["swFwClassAreaIndex 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.1"](#)  
["swFwThresholdIndex 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.1"](#)  
["swFwName 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.3"](#)

## 5 swTrackChangesTrap 1.3.6.1.4.1.1588.2.1.1.1.0.6

“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.”

“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”

“swSsn 1.3.6.1.4.1.1588.2.1.1.1.1.10”

“swFwLastSeverityLevel 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.12”

“swVfld 1.3.6.1.4.1.1588.2.1.1.1.2.15”

Trap to be sent by Fabric Watch to notify of an event.

#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

Refer to the *Fabric Watch Administrator's Guide* for information on setting thresholds in Fabric Watch.

## swTrackChangesTrap 1.3.6.1.4.1.1588.2.1.1.1.0.6

**Enterprise** sw

**Variables** “swTrackChangesInfo 1.3.6.1.4.1.1588.2.1.1.1.1.23”

“swSsn 1.3.6.1.4.1.1588.2.1.1.1.1.10”

“swVfld 1.3.6.1.4.1.1588.2.1.1.1.2.15”

Trap to be sent for tracking log in/log out/configuration changes.

#TYPE	Track changes has generated a trap.
#SUMMARY	%s and SSN is # %s
#ARGUMENTS	0, 1
#SEVERITY	Informational
#TIMEINDEX	1
#STATE	Operational

Some of the triggers that will generate this trap are:

- Log out
- Unsuccessful log in



- Successful log in
- Switch configuration changes
- Track changes on and off

This trap gets sent when track-changes is set to ENABLED and is configured to send SNMP traps on track events. Use the **trackchangeset** command to enable the track changes feature and SNMP trap mode.

## swIPv6ChangeTrap 1.3.6.1.4.1.1588.2.1.1.1.0.7

**Enterprise** sw

**Variables** “swIPv6Address 1.3.6.1.4.1.1588.2.1.1.1.1.29”  
 “swSsn 1.3.6.1.4.1.1588.2.1.1.1.1.10”  
 “swVfId 1.3.6.1.4.1.1588.2.1.1.1.2.15”  
 “swIPv6Status 1.3.6.1.4.1.1588.2.1.1.1.1.30”

This trap is generated when an IPv6 address status change event occurs. It is generated only when IPv6 stateless state to deprecation state and not for just address change notification.

## swPmgrEventTrap 1.3.6.1.4.1.1588.2.1.1.1.0.8

**Enterprise** sw

**Variables** “swSsn 1.3.6.1.4.1.1588.2.1.1.1.1.10”  
 “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”

This trap is generated when any partition manager change happens. This trap is generated when:

- Logical switch is created or deleted.
- Port is moved between logical switches.
- Switch FID changes.
- When any logical switch is changed to base switch.
- VF is enabled or disabled.

## swFabricReconfigTrap 1.3.6.1.4.1.1588.2.1.1.1.0.9

**Enterprise** sw

**Variables** “swDomainID 1.3.6.1.4.1.1588.2.1.1.1.2.1”

The trap to be sent for tracking fabric reconfiguration. This trap is generated under the following circumstances:

## 5 swFabricSegmentTrap 1.3.6.1.4.1.1588.2.1.1.1.0.10

- Two switches with the same domain ID have connected to one another.
- Two fabrics have joined.
- An E\_Port has gone offline.
- A principal link has segmented from the fabric.
- Zone conflicts.
- Domain conflicts.
- Segmentation of the principal link between two switches.
- Incompatible link parameters. During E\_Port initialization, ports exchange link parameters. Rarely, incompatible parameters result in segmentation.

### swFabricSegmentTrap 1.3.6.1.4.1.1588.2.1.1.1.0.10

**Enterprise** sw

**Variables** “swFCPortIndex 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.1”  
“swFCPortName 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.36”  
“swSsn 1.3.6.1.4.1.1588.2.1.1.1.1.10”  
“swFCPortFlag 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.38”  
“swVfld 1.3.6.1.4.1.1588.2.1.1.1.2.15”

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.

## swSystem group

### swCurrentDate 1.3.6.1.4.1.1588.2.1.1.1.1.1

The current date and time.

The return string displays using the following format:

```
ddd MMM DD hh:mm:ss yyyy
```

Where:

```
ddd = day  
MMM = month  
DD = date  
hh = hour  
mm = minute  
ss = seconds  
yyyy = year
```

For example:

```
Thu Aug 17 15:16:09 2000
```

## swBootDate 1.3.6.1.4.1.1588.2.1.1.1.1.2

The date and time when the system last booted.

The return string displays using the following format:

```
ddd MMM DD hh:mm:ss yyyy
```

Where:

```
ddd = day  
MMM = month  
DD = date  
hh = hour  
mm = minute  
ss = seconds  
yyyy = year
```

For example:

```
Thu Aug 17 15:16:09 2000
```

## swFWLastUpdated 1.3.6.1.4.1.1588.2.1.1.1.1.3

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
```

Where:

```
ddd = day  
MMM = month  
DD = date  
hh = hour  
mm = minute  
ss = seconds  
yyyy = year
```

For example:

```
Thu Aug 17 15:16:09 2000
```

## swFlashLastUpdated 1.3.6.1.4.1.1588.2.1.1.1.1.4

The date and time when the firmware was last downloaded or the configuration file was last changed.

The return string displays using the following format:

```
ddd MMM DD hh:mm:ss yyyy
```

Where:

```
ddd = day  
MMM = month  
DD = date  
hh = hour  
mm = minute  
ss = seconds  
yyyy = year
```

For example:

## 5 swBootPromLastUpdated 1.3.6.1.4.1.1588.2.1.1.1.1.5

```
Thu Aug 17 15:16:09 2000
```

### swBootPromLastUpdated 1.3.6.1.4.1.1588.2.1.1.1.1.5

The date and time when the BootPROM was last updated.

The return string displays using the following format:

```
ddd MMM DD hh:mm:ss yyyy
```

Where:

```
ddd = day  
MMM = month  
DD = date  
hh = hour  
mm = minute  
ss = seconds  
yyyy = year
```

For example:

```
Thu Aug 17 15:16:09 2000
```

### swFirmwareVersion 1.3.6.1.4.1.1588.2.1.1.1.1.6

The current version of the firmware.

The return value is displayed using the following format:

```
vM.m.f
```

Where:

```
v = deployment indicator  
M = major version  
m = minor version  
f = software maintenance version
```

For example, v6.1.0\_main\_bld36 described 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. An example might be v6.1.0 indicates Fabric OS version 6.0.0.

### swOperStatus 1.3.6.1.4.1.1588.2.1.1.1.1.7

The current operational status of the switch.

#### Values

Possible values are:

- online (1) The switch is accessible by an external Fibre Channel port.
- offline (2) The switch is not accessible.
- testing (3) The switch is in a built-in test mode and is not accessible by an external Fibre Channel port.
- faulty (4) The switch is not operational.

## swAdmStatus 1.3.6.1.4.1.1588.2.1.1.1.1.8

The desired administrative status of the switch. A management station might place the switch in a desired state by setting this object accordingly.

**Values** Possible values are:

- online (1) Set the switch to be accessible by an external FC port.
- offline (2) Set the switch to be inaccessible.
- testing (3) Set the switch to run the built-in test.
- faulty (4) Set the switch to a “soft” faulty condition.
- reboot (5) Set the chassis to reboot in 1 second.
- fastboot (6) Set the chassis to fastboot in 1 second. Fastboot causes the chassis to boot but omit the POST.

When the switch is in faulty state, only two states can be set: faulty and reboot/fastboot

For the Brocade 3250, 3850, 3900, 8000, 24000, 48000 and DCX director the testing (3) and faulty (4) values are not applicable.

The possible values for Brocade 300, 5100 and 5300 are either online (1) or offline (2).

## swTelnetShellAdmStatus 1.3.6.1.4.1.1588.2.1.1.1.1.9

The desired administrative status of the telnet shell.

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.

This OID is supported in Fabric OS v2.x through v3.x.

This OID is not supported in Fabric OS v4.0 through v4.2.

It is supported in Fabric OS version 4.3 and above.

**Values** Possible values are:

- unknown (0) The status of the current telnet shell task is unknown.
- terminated (1) The current telnet shell task is deleted.

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.

## swSsn 1.3.6.1.4.1.1588.2.1.1.1.1.10

The soft serial number of the switch.

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.

## Flash administration

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.

### swFlashDLOperStatus 1.3.6.1.4.1.1588.2.1.1.1.1.11

The operational status of the flash. This OID cannot be used for either Firmwaredownload or Configdownload (cannot be set and isread-only). The value displayed is always "swCurrent (1)".

### swFlashDLAdmStatus 1.3.6.1.4.1.1588.2.1.1.1.1.12

The desired state of the flash.

The host is specified in swFlashDLHost.0. In addition, the user name is specified in swFlashDLUser.0 and the file name specified in swFlashDLFile.0.

**Values** Possible values are:

- swCurrent (1) The flash contains the current firmware image or configuration file.
- swCfUpload (3) The switch configuration file is to be uploaded to the host specified.
- swCfDownload (4) The switch configuration file is to be downloaded from the host specified.
- swFwCorrupted (5) The firmware in the flash is corrupted. This value is for informational purposes only; however, setting swFlashDLAdmStatus to this value is not allowed.

For more information about the **firmwareDownload**, **configDownload** and **configUpload** commands, refer to the *Fabric OS Command Reference*.

### swFlashDLHost 1.3.6.1.4.1.1588.2.1.1.1.1.13

The name or IP address (in dot notation) of the host to download or upload a relevant file to the flash.

This OID cannot be used for either **firmwareDownload** or **configDownload** (cannot be set and is read-only) for Fabric OS v4.4 and above. The value displayed is always NULL (zero-length).This is not supported in v6.0.0 and higher versions.

### swFlashDLUser 1.3.6.1.4.1.1588.2.1.1.1.1.14

The user name is used on the host for downloading or uploading a relevant file, to or from the flash.

This OID cannot be used for either **firmwareDownload** or **configDownload** (cannot be set and is read-only) for Fabric OS v4.4 and above. The value displayed is always NULL (zero-length).This is not supported in v6.0.0 and higher versions.

### swFlashDLFile 1.3.6.1.4.1.1588.2.1.1.1.1.15

The name of the file to be downloaded or uploaded.

This OID cannot be used for either **firmwareDownload** or **configDownload** (cannot be set and is read-only) for Fabric OS v4.4 and above. The value displayed is always NULL (zero-length). This is not supported in v6.0.0 and higher versions.

### swFlashDLPassword 1.3.6.1.4.1.1588.2.1.1.1.1.16

The password to be used for FTP transfer of files in the download or upload operation.

This OID cannot be used for either **firmwareDownload** or **configDownload** (cannot be set and is read-only) for Fabric OS v4.4 and above. The value displayed is always NULL (zero-length). This is not supported in v6.0.0 and higher versions.

### swBeaconOperStatus 1.3.6.1.4.1.1588.2.1.1.1.1.18

The current operational status of the switch beacon.

**Values** Possible values are:

- on (1) The LEDs on the front panel of the switch run alternately from left to right and right to left. The color is yellow.
- off (2) Each LED is in its regular status, indicating color and state.

### swBeaconAdmStatus 1.3.6.1.4.1.1588.2.1.1.1.1.19

The desired status of the switch beacon.

**Values** Possible values are:

- on (1) The LEDs on the front panel of the switch run alternately from left to right and right to left. Set the color to yellow.
- off (2) Set each LED to its regular status, indicating color and state.

### swDiagResult 1.3.6.1.4.1.1588.2.1.1.1.1.20

The result of the power-on startup test (POST) diagnostics.

**Values** Possible values are:

- sw-ok (1) The switch is okay.
- sw-faulty (2) The switch has experienced an unknown fault.
- sw-embedded-port-fault (3) The switch has experienced an embedded port fault.

### swNumSensors 1.3.6.1.4.1.1588.2.1.1.1.1.21

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

Table of sensor entries.

Table 15 lists the sensors on the Brocade switches.

**TABLE 15** 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
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 VA-40FC	4 sensor	2 FRUs	2PS	8
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



**TABLE 15** Sensors on the various Brocade switches (Continued)

Platform	Temp	Fans	Power supply	swNumSensors / connUnitNumSensors
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 8500	3 sensors	2 fans	2 PS	7

The sensors on the switches vary based on the blades. So for the exact count, refer to the [Table 16](#).

**TABLE 16** Blade table

Model	Temp
FC10-6	1
FR4-18i	5
FA4-18 18	5
FC4-16IP	5
FS8-18	5
FX8-24	3
FCOE10-24	5
FC8-16	5
FC8-32	7
FC8-48	7
FC8-64	8
CP8	4
Core8	4
CR4S-8	4

## swSensorEntry 1.3.6.1.4.1.1588.2.1.1.1.1.22.1

An entry of the sensor information.

**Index** swSensorIndex

## swSensorIndex 1.3.6.1.4.1.1588.2.1.1.1.1.22.1.1

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

The type of sensor.

## swSensorStatus 1.3.6.1.4.1.1588.2.1.1.1.1.22.1.3

The current status of the sensor.

**Values** Possible values are:

- 1: unknown (1)
- 2: faulty (2)
- 3: below-min (3) The sensor value is below the minimal threshold.
- 4: nominal (4)
- 5: above-max (5) The sensor value is above the maximum threshold.
- 6: absent (6) The sensor is missing.

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).

## swSensorValue 1.3.6.1.4.1.1588.2.1.1.1.1.22.1.4

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

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

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:

- Successful log in
- Unsuccessful log in
- Logout
- Configuration file change from task [*name of task*]
- Track-changes on
- Track-changes off

### **swID 1.3.6.1.4.1.1588.2.1.1.1.1.24**

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**

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**

The IP mask of the Ethernet interface of this switch.

### **swFCIPAddress 1.3.6.1.4.1.1588.2.1.1.1.1.27**

The IP address of the FC interface of this switch.

### **swFCIPMask 1.3.6.1.4.1.1588.2.1.1.1.1.28**

The IP mask of the FC interface of this switch.

### **swIPv6Address 1.3.6.1.4.1.1588.2.1.1.1.1.29**

The IPv6 address. This object is not accessible.

### **swIPv6Status 1.3.6.1.4.1.1588.2.1.1.1.1.30**

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**

Indicates whether the switch is 7500 or 7500E.

## 5 swTestString 1.3.6.1.4.1.1588.2.1.1.1.1.32

### swTestString 1.3.6.1.4.1.1588.2.1.1.1.1.32

Presence of this string represents test trap.

## swFabric group

### swDomainID 1.3.6.1.4.1.1588.2.1.1.1.2.1

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

Indicates whether the switch is the principal switch.

**Values** Possible values are:

- yes (1)
- no (2)

### swNumNbs 1.3.6.1.4.1.1588.2.1.1.1.2.8

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

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

An entry containing each neighbor ISL parameters.

**Index** swNbIndex

### swNbIndex 1.3.6.1.4.1.1588.2.1.1.1.2.9.1.1

The index for neighborhood entry.

### swNbMyPort 1.3.6.1.4.1.1588.2.1.1.1.2.9.1.2

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 *maximum number of ports +1*.

### swNbRemDomain 1.3.6.1.4.1.1588.2.1.1.1.2.9.1.3

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.

### swNbRemPort 1.3.6.1.4.1.1588.2.1.1.1.2.9.1.4

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 *maximum number of ports +1*.

### swNbBaudRate 1.3.6.1.4.1.1588.2.1.1.1.2.9.1.5

The baud rate of the ISL. It is always unknown (0).

**Values** Possible values are:

- other (1) None of the following.
- oneEighth (2) 155 Mbaud.
- quarter (4) 266 Mbaud.
- half (8) 532 Mbaud.
- full (16) 1 Gbaud.
- double (32) 2 Gbaud.
- quadruple (64) 4 Gbaud.
- octuple (128) 8 Gbaud.
- decuple (256) 10 Gbaud.

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

The current state of the ISL. The possible values are as follows.

0 - ISL is down.

1 - ISL is initiating and not yet operational.

2, 3, 4, - Used for notification of internal states.

5 - ISL is active.

### swNbIsICost 1.3.6.1.4.1.1588.2.1.1.1.2.9.1.7

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

The WWN of the remote port.

## swFabricMemTable 1.3.6.1.4.1.1588.2.1.1.1.2.10

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

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

This indicates partition manager event type. This OID identifies the following events:

- create(0)
- delete(1)
- moveport(2)
- fidchange(3)
- basechange(4)
- vfstatechange(5)

## swPmgrEventTime 1.3.6.1.4.1.1588.2.1.1.1.2.13

This object identifies the date and time when any events mentioned in swPmgrEventType occurs, in textual format.

## swPmgrEventDescr 1.3.6.1.4.1.1588.2.1.1.1.2.14

This object identifies the textual description of the events mentioned in swPmgrEventType.

## swVfld 1.3.6.1.4.1.1588.2.1.1.1.2.15

The VFID of the switch.

## SW Agent Configuration group

### swAgtCmtyTable 1.3.6.1.4.1.1588.2.1.1.1.4.11

A table that contains, one entry for each community, the access control and parameters of the community.

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.

### swAgtCmtyEntry 1.3.6.1.4.1.1588.2.1.1.1.4.11.1

An entry containing the community parameters.

**Index** swAgtCmtyIdx

### swAgtCmtyIdx 1.3.6.1.4.1.1588.2.1.1.1.4.11.1.1

The SNMPv1 community entry.

The return value for this entry is 1 through 6.

### swAgtCmtyStr 1.3.6.1.4.1.1588.2.1.1.1.4.11.1.2

This is a community string supported by the agent. If a new value is set successfully, it takes effect immediately.

Default values for communities are as follows:

- 1 (Secret Code)
- 2 (OrigEquipMfr)
- 3 (private)
- 4 (public)
- 5 (common)
- 6 (FibreChannel)

Community strings 1-3 are read-write and strings 4-6 are read-only.

You can change the community setting using the **snmpconfig** command.

### swAgtTrapRcp 1.3.6.1.4.1.1588.2.1.1.1.4.11.1.3

This is the trap recipient associated with the community. If a new value is set successfully, it takes effect immediately.

## 5 swAgtTrapSeverityLevel 1.3.6.1.4.1.1588.2.1.1.1.4.11.1.4

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 *Fabric OS Command Reference* and the **snmpConfig** command for more information).

### swAgtTrapSeverityLevel 1.3.6.1.4.1.1588.2.1.1.1.4.11.1.4

This is the trap severity level associated with [swAgtTrapRcp 1.3.6.1.4.1.1588.2.1.1.1.4.11.1.3](#). The trap severity level, 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 1.3.6.1.4.1.1588.2.1.1.1.8.1](#).

## 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.

### swFCPortCapacity 1.3.6.1.4.1.1588.2.1.1.1.6.1

The maximum number of Fibre Channel ports on this switch. It includes U\_Port, F\_Port, FL\_Port, and any other types of Fibre Channel port.

<b>Values</b>	The valid values are as follows:	
	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	576 ports
Brocade DCX-4S	288 ports
Brocade 48000	384 ports

## swFCPortTable 1.3.6.1.4.1.1588.2.1.1.1.6.2

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

An entry containing the configuration and service parameters of the switch port.

**Index** swFCPortIndex

### swFCPortIndex 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.1

The switch port index.

**Values** The physical port number of the switch, plus 1.

The valid values for the Brocade 12000, 24000, and 48000 directors are 0 through *maximum number of ports*.

### swFCPortType 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.2

The type of ASIC for the switch port.

**Values** Possible values are:

- stitch (1)
- flannel (2)
- loom (3) (Brocade 2000 series)
- bloom (4) (Valid value for Brocade 3250, 3850, 3900, 12000, 24000)
- rdbloom (5)
- wormhole (6)
- other (7) (Valid value for Brocade 200E, 4012, 4100, 4900, 7500, 7600, 48000, 300, 5100 and 5300)
- unknown (8)

### swFCPortPhyState 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.3

The physical state of the port.

## 5 swFCPortOpStatus 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.4

- Values** Possible values are:
- noCard (1) No card is present in this switch slot.
  - noTransceiver (2) No Transceiver module in this port (Transceiver is the generic name for GBIC, SFP, and so on).
  - laserFault (3) The module is signaling a laser fault (defective GBIC).
  - noLight (4) The module is not receiving light.
  - noSync (5) The module is receiving light but is out of sync.
  - inSync (6) The module is receiving light and is in sync.
  - portFault (7) The port is marked faulty (defective GBIC, cable, or device).
  - diagFault (8) The port failed diagnostics (defective G\_Port or FL\_Port card or motherboard).
  - lockRef (9) Port is locking to the reference signal.
  - validating (10) The module is being validated.
  - invalidModule (11) The module is invalid.
  - unknown(255) The module is unknown.

### swFCPortOpStatus 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.4

The operational status of the port.

- Values** Possible values are:
- unknown (0) The port module is physically absent.
  - online (1) User frames can be passed.
  - offline (2) No user frames can be passed.
  - testing (3) No user frames can be passed.
  - faulty (4) The port module is physically faulty.

### swFCPortAdmStatus 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.5

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:

- Online – When queried port is online.
- Offline – When queried port is offline.
- Faulty – When port is in faulty state.

This OID is settable, the following values can be used to set:

- Online – To change port's state to Online.
- Offline – To change port's state to Offline.

## swFCPortLinkState 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.6

Indicates the link state of the port. When the port's link state changes, its operational status (swFCPortOpStatus) is affected.

- Values** Possible values are:
- enabled (1) The port is allowed to participate in the FC-PH protocol with its attached port (or ports if it is in an FC-AL loop).
  - disabled (2) The port is not allowed to participate in the FC-PH protocol with its attached ports.
  - loopback (3) The port might transmit frames through an internal path to verify the health of the transmitter and receiver path.

## swFCPortTxType 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.7

Indicates the media transmitter type of the port.

- Values** Possible values are:
- unknown (1) Cannot determine the port driver.
  - lw (2) Long wave laser.
  - sw (3) Short wave laser.
  - ld (4) Long wave LED.
  - cu (5) Copper (electrical).

## swFCPortTxWords 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.11

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

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

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

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**

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**

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**

Counts the number of link control frames that the port has received.

**swFCPortRxCasts 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.18**

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**

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**

Counts the number of times that the transmit credit has reached 0.

**swFCPortRxEcnInFrs 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.21**

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**

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**

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**

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**

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**

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**

Counts the number of invalid ordered sets received.

**swFCPortC3Discards 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.28**

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**

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**

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**

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**

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**

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**

The WWN of the Fibre Channel port. The contents of an instance are in IEEE extended format, as specified in FC-PH.

**swFCPortSpeed 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.35**

The desired baud rate for the port.

**Values** 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.

## swFCPortName 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.36

Supported in Fabric OS v4.1.x and later. A string that indicates the name of the addressed port.

---

### NOTE

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

This string indicates the physical port number of the addressed port. This string can be entered as argument on CLI commands such as **portShow** 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

This string is a bit map of the port status flags, including the port type.

- physical (0)
- virtual (1)

## swFCPortBrcdType 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.39

This string indicates the Brocade port type.

- Values**
- unknown(1)
  - other(2)
  - fl-port(3)
  - f-port(4)
  - e-port(5)
  - g-port(6)
  - ex-port(7)

## Name Server Database group

### swNsLocalNumEntry 1.3.6.1.4.1.1588.2.1.1.1.7.1

The number of local Name Server entries.

### swNsLocalTable 1.3.6.1.4.1.1588.2.1.1.1.7.2

The table of local Name Server entries.

### swNsLocalEntry 1.3.6.1.4.1.1588.2.1.1.1.7.2.1

An entry from the local Name Server database.

**Index** swNsEntryIndex

### swNsEntryIndex 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.1

The index of the Name Server database entry.

### swNsPortID 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.2

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

The type of port for this entry.

**Values** Possible values, as defined in FC-GS-2, are:

- nPort (1)
- nIPort (2)

### swNsPortName 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.4

The Fibre Channel WWN of the port entry.

### swNsPortSymb 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.5

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

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

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

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

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

The class of services supported by the port. This value is a hard-coded bitmap and indicates the supported services as follows:

- Class F (1)
- Class 1 (2)
- Class F-1 (3)
- Class 2 (4)
- Class F-2 (5)
- Class 1-2 (6)
- Class F-1-2 (7)
- Class 3 (8)
- Class F-3 (9)
- Class 1-3 (10)
- Class F-1-3 (11)
- Class 2-3 (12)
- Class F-2-3 (13)
- Class 1-2-3 (14)
- Class F-1-2-3 (15)



**swNsFc4 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.11**

The FC-4s supported by the port, as defined in FC-GS-2.

**swNslpNxPort 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.12**

The object identifies IpAddress of the Nx\_Port for the entry.

**swNsWwn 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.13**

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**

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.

**swEventTrapLevel 1.3.6.1.4.1.1588.2.1.1.1.8.1**

Deprecated.

[swAgtTrapSeverityLevel 1.3.6.1.4.1.1588.2.1.1.1.4.11.1.4](#), 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 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.12](#) and [swAgtTrapSeverityLevel 1.3.6.1.4.1.1588.2.1.1.1.4.11.1.4](#).

**swEventNumEntries 1.3.6.1.4.1.1588.2.1.1.1.8.4**

The number of entries in the event table.

**Values** (v6.0 and above) The value ranges from 0 to 1024

**swEventTable 1.3.6.1.4.1.1588.2.1.1.1.8.5**

The table of event entries. The events will be received from the CHASSIS and the created logical switches.

## 5 swEventEntry 1.3.6.1.4.1.1588.2.1.1.1.8.5.1

Only external RASlog messages are supported. These external messages are documented in the *Fabric OS Message Reference*.

### swEventEntry 1.3.6.1.4.1.1588.2.1.1.1.8.5.1

An entry of the event table.

**Index** swEventIndex

### swEventIndex 1.3.6.1.4.1.1588.2.1.1.1.8.5.1.1

Every RASLOG message is identified with a unique number which is swEventIndex.

### swEventTimeInfo 1.3.6.1.4.1.1588.2.1.1.1.8.5.1.2

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

The severity level of this event entry.

**Values** Possible values are:

- critical (1)
- error (2)
- warning (3)
- informational (4)
- debug(5)

### swEventRepeatCount 1.3.6.1.4.1.1588.2.1.1.1.8.5.1.4

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**

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 *Fabric OS Message Reference*.

**swEventVfid 1.3.6.1.4.1.1588.2.1.1.1.8.5.1.6**

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 1.3.6.1.4.1.1588.2.1.1.1.10.2](#)", 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 1.3.6.1.4.1.1588.2.1.1.1.10.3](#)", contains individual threshold information such as name, label, last event, and so forth. The thresholds are contained in `SwFwThresholdEntry`.

**swFwFabricWatchLicense 1.3.6.1.4.1.1588.2.1.1.1.10.1**

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**

The table of classes and areas.

**swFwClassAreaEntry 1.3.6.1.4.1.1588.2.1.1.1.10.2.1**

An entry of the classes and areas.

**Index**     `swFwClassAreaIndex`

**swFwClassAreaIndex 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.1**

This index represents the Fabric Watch classArea combination.

## swFwWriteThVals 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.2

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:

- swFwCustUnit
- swFwCustTimebase
- swFwCustLow
- swFwCustHigh
- swFwCustBufSize

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

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

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

A default low threshold value.

## swFwDefaultHigh 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.6

A default high threshold value.

## swFwDefaultBufSize 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.7

A default buffer size value.

## swFwCustUnit 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.8

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).

### **swFwCustTimebase 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.9**

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**

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**

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**

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**

swFwThLevel 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:

- swFwDefaultUnit
- swFwDefaultTimebase
- swFwDefaultLow
- swFwDefaultHigh
- swFwDefaultBufSize

If the write operation sets the variable to 3 (swFwCustom), the following custom configuration variables are used for the Fabric Watch classArea combination:

- swFwCustUnit
- swFwCustTimebase
- swFwCustLow
- swFwCustHigh
- swFwCustBufSize

## **swFwWriteActVals 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.14**

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:

swFwCustChangedActs

swFwCustExceededActs

swFwCustBelowActs

swFwCustAboveActs

swFwCustInBetweenActs

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**

Default action matrix for changed event.

## **swFwDefaultExceededActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.16**

Default action matrix for an exceeded event. The exceeded value might be either above the high threshold or below the low threshold.

## **swFwDefaultBelowActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.17**

Default action matrix for below event.

## **swFwDefaultAboveActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.18**

Default action matrix for above event.

## **swFwDefaultInBetweenActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.19**

Default action matrix for in-between event.

## **swFwCustChangedActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.20**

Custom action matrix for changed event.

**swFwCustExceededActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.21**

Custom action matrix for an exceeded event.

**swFwCustBelowActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.22**

Custom action matrix for below event.

**swFwCustAboveActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.23**

Custom action matrix for above event.

**swFwCustInBetweenActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.24**

Custom action matrix for in-between event.

**swFwValidActs 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.25**

Matrix of valid acts for a classArea.

**swFwActLevel 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.26**

Pointer 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 action matrix variables are used for the Fabric Watch classArea combination:

- swFwDefaultChangedActs
- swFwDefaultExceededActs
- swFwDefaultBelowActs
- swFwDefaultAboveActs
- swFwDefaultInBetweenActs

If the write operation sets the variable to 3 (swFwCustom), the following custom action matrix variables are used for the Fabric Watch classArea combination:

- swFwCustChangedActs
- swFwCustExceededActs
- swFwCustBelowActs
- swFwCustAboveActs
- swFwCustInBetweenActs

## swFwThresholdTable 1.3.6.1.4.1.1588.2.1.1.1.10.3

The table of individual thresholds.

### swFwThresholdEntry 1.3.6.1.4.1.1588.2.1.1.1.10.3.1

An entry of an individual threshold.

**Index** swFwClassAreaIndex, swFwThresholdIndex

### swFwThresholdIndex 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.1

Represents the element index of a threshold.

For environment class, the indexes are from 2 through (number of environment sensors+1).  
For example, the indexes for environment class temperature area are:

- envTemp001: index of 2
- envTemp002: index of 3
- envTemp003: index of 4
- envTemp004: index of 5
- envTemp005: index of 6

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:

- eportLink000: index of 1
- eportLink001: index of 2
- eportLink002: index of 3
- eportLink003: index of 4
- eportLink004: index of 5
- eportLink005: index of 6
- eportLink006: index of 7
- eportLink007: index of 8
- eportLink008: index of 9
- eportLink009: index of 10
- eportLink010: index of 11
- eportLink011: index of 12
- eportLink012: index of 13
- eportLink013: index of 14
- eportLink014: index of 15
- eportLink015: index of 16



**swFwStatus 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.2**

Indicates whether a threshold is enabled or disabled.

**swFwName 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.3**

Name of the threshold.

For examples of swFwName objects and object types, refer to [Table 17](#).

**TABLE 17 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
sfpRXP001	GBIC RX power 1
sfpTXP001	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
eportProtoErr007	E Port Protocol Errors 7
eportRXPerf007	E Port RX Performance 7
eportSignal007	E Port Loss of Signal 7 (Not supported)
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
eportTrunkUtil007	E Port Trunk Util 7
eportc3DiscardTo007	E Port C3 Discard 7
eportPktl007	E Port Packet Loss 7
fabricDI000	Fabric Domain ID
fabricED000	Fabric E-port down
fabricFL000	Fabric Fabric login
fabricFQ000	Fabric Fabric<->QL (Not supported)
fabricFR000	Fabric Reconfigure

**TABLE 17 swFwName objects and object types (Continued)**

swFwName objects (swFwName)	Object types (Threshold names) (Continued)
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 (Not supported)
portState000	Port State Changes 0
portSync000	Port Loss of Sync 0
portTXPerf000	Port TX Performance 0
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 (Not supported)
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

**TABLE 17** swFwName objects and object types (Continued)

swFwName objects (swFwName)	Object types (Threshold names) (Continued)
secHTTP000	Security HTTP Violations 0
secAPI000	Security API Violations 0
secRSNMP000	Security RSNMP Violations 0
secWSNMP000	Security WSNMP Violations 0
secSES000	Security SES Violations 0
secMS000	Security MS Violations 0
secSerial000	Security Serial Violations 0
secPanel000	Security Front Panel Violations 0
secSCC000	Security SCC Violations 0
secDCC000	Security DCC Violations 0
secLogin000	Security Login Violations 0
secInvTS000	Security Invalid Timestamps 0
secInvSign000	Security Invalid Signatures 0
secInvCert000	Security Invalid Certificates 0
secSlapFail000	Security SLAP Failures 0
secSlapBP000	Security SLAP Bad Packets 0
secTSSync000	Security TS Out of Sync 0
secNoFCS000	Security No-FCS 0
secIncDB000	Incompatible Security DB 0
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**

FCU port is supported in the following platforms only:

- Brocade 13016
- 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

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### swFwLabel 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.4

Label of the threshold.

Refer to "[swFwName 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.3](#)" on page 191.

### swFwCurVal 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.5

Current counter of the threshold.

### swFwLastEvent 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.6

Last event type of the threshold.

### swFwLastEventVal 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.7

Last event value of the threshold.

### swFwLastEventTime 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.8

Last event time of the threshold. This value is in the same format as in swCurrentDate.

### swFwLastState 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.9

This is the last state.

### swFwBehaviorType 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.10

A behavior of which the thresholds generate event.

### swFwBehaviorInt 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.11

An integer of which the thresholds generate continuous event. This is non persistent.

### swFwLastSeverityLevel 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.12

This object is a last event severity level of the threshold. This object obsoletes [swEventTrapLevel 1.3.6.1.4.1.1588.2.1.1.1.8.1](#).

## End Device group

### **swEndDeviceRIsTable 1.3.6.1.4.1.1588.2.1.1.1.21.1**

The table of RLS for individual end devices.

### **swEndDeviceRIsEntry 1.3.6.1.4.1.1588.2.1.1.1.21.1.1**

An entry of an individual end devices' RLS.

**Index** swEndDevicePort, swEndDeviceAlpa

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**

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**

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**

The Fibre Channel port address ID of the entry.

### **swEndDeviceLinkFailure 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.4**

Link failure count for the end device.

### **swEndDeviceSyncLoss 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.5**

Sync loss count for the end device.

### **swEndDeviceSigLoss 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.6**

Sig loss count for the end device.

**5** swEndDeviceProtoErr 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.7

**swEndDeviceProtoErr 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.7**

Protocol error count for the end device.

**swEndDeviceInvalidWord 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.8**

Invalid word count for the end device.

**swEndDeviceInvalidCRC 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.9**

Invalid CRC count for the end device.

## Switch group

Not supported.

**swGroupTable 1.3.6.1.4.1.1588.2.1.1.1.22.1**

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**

An entry of table of groups.

**Index** swGroupIndex

**swGroupIndex 1.3.6.1.4.1.1588.2.1.1.1.22.1.1.1**

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**

This object identifies the name of the group.

**swGroupType 1.3.6.1.4.1.1588.2.1.1.1.22.1.1.3**

This object identifies the type of the group.

**swGroupMemTable 1.3.6.1.4.1.1588.2.1.1.1.22.2**

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**

An entry for a member of a group.

**Index** swGroupID, swGroupMemWwn

**swGroupID 1.3.6.1.4.1.1588.2.1.1.1.22.2.1.1**

This object identifies the Group ID of the member switch.

**swGroupMemWwn 1.3.6.1.4.1.1588.2.1.1.1.22.2.1.2**

This object identifies the WWN of the member switch.

**swGroupMemPos 1.3.6.1.4.1.1588.2.1.1.1.22.2.1.**

This object identifies the position of the member switch in the group, based on the order that the switches were added in the group.

## ASIC Performance Monitoring group

**swBlmPerfALPAMntTable 1.3.6.1.4.1.1588.2.1.1.1.23.1**

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**

AL\_PA monitoring counter for given AL\_PA.

**Index** swEndDevicePort, swEndDeviceAlpa

**swBlmPerfAlpaPort 1.3.6.1.4.1.1588.2.1.1.1.23.1.1.1**

This object identifies the port index of the switch.

**swBlmPerfAlpaIndx 1.3.6.1.4.1.1588.2.1.1.1.23.1.1.2**

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

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

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

End-to-end monitoring counter table.

### swBlmPerfEEMntEntry 1.3.6.1.4.1.1588.2.1.1.1.23.2.1

End-to-end monitoring counter for given port.

**Index** swBlmPerfEEPort, swBlmPerfEERefKey

### swBlmPerfEEPort 1.3.6.1.4.1.1588.2.1.1.1.23.2.1.1

This object identifies the port number of the switch.

### swBlmPerfEERefKey 1.3.6.1.4.1.1588.2.1.1.1.23.2.1.2

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

End-to-end CRC error for the frames that matched the SID-DID pair.

### swBlmPerfEEFCWRx 1.3.6.1.4.1.1588.2.1.1.1.23.2.1.4

Get end-to-end count of Fibre Channel words (FCW) received by the port that matched the SID-DID pair.



**swBlmPerfEEFCWTx 1.3.6.1.4.1.1588.2.1.1.1.23.2.1.5**

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**

Gets DID information by reference number.

**swBlmPerfEEDid 1.3.6.1.4.1.1588.2.1.1.1.23.2.1.7**

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.

**swBlmPerfFitMntTable 1.3.6.1.4.1.1588.2.1.1.1.23.3**

Filter-based monitoring counter.

**swBlmPerfFitMntEntry 1.3.6.1.4.1.1588.2.1.1.1.23.3.1**

Filter-based monitoring counter for given port.

**Index** swBlmPerfFitPort, swBlmPerfFitRefkey

**swBlmPerfFitPort 1.3.6.1.4.1.1588.2.1.1.1.23.3.1.1**

This object identifies the port number of the switch.

**swBlmPerfFitRefkey 1.3.6.1.4.1.1588.2.1.1.1.23.3.1.2**

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.

**swBlmPerfFitCnt 1.3.6.1.4.1.1588.2.1.1.1.23.3.1.3**

Get statistics of filter-based monitor. Filter-based monitoring provides information about a filter hit count, such as:

- Read command
- SCSI or IP traffic
- SCSI Read/Write

## swBlmPerfFitAlias 1.3.6.1.4.1.1588.2.1.1.1.23.3.1.4

Alias name for the filter.

## Trunking group

### swSwitchTrunkable 1.3.6.1.4.1.1588.2.1.1.1.24.1

Whether the switch supports the trunking feature or not: no (0) or yes (8).

### swTrunkTable 1.3.6.1.4.1.1588.2.1.1.1.24.2

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

Entry for the trunking table.

Index swTrunkPortIndex

### swTrunkPortIndex 1.3.6.1.4.1.1588.2.1.1.1.24.2.1.1

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 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.34](#) in the Fibre Channel Port Group).

### swTrunkGroupNumber 1.3.6.1.4.1.1588.2.1.1.1.24.2.1.2

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

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

The active trunk status of the member port. Values are enabled (1) or disabled (0).

**swTrunkGrpTable 1.3.6.1.4.1.1588.2.1.1.1.24.3**

Displays trunking performance information for the switch.

**swTrunkGrpEntry 1.3.6.1.4.1.1588.2.1.1.1.24.3.1**

Entry for the trunking group table.

**Index** swTrunkGrpNumber

**swTrunkGrpNumber 1.3.6.1.4.1.1588.2.1.1.1.24.3.1.1**

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**

This object gives the master port ID for the trunk group.

**swTrunkGrpTx 1.3.6.1.4.1.1588.2.1.1.1.24.3.1.3**

Gives the aggregate value of the transmitted words from this trunk group.

**NOTE**

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 **portStatsShow** 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**

Gives the aggregate value of the received words by this trunk group.

**NOTE**

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 **portStatsShow** command (stat\_wrx value) for the corresponding trunk ports.

**Toptalker group****swTopTalkerMntMode 1.3.6.1.4.1.1588.2.1.1.1.25.1**

This object gives the mode in which toptalker is installed. Fabricmode (1) and fportmode (2) are the possible modes.

## 5 swTopTalkerMntNumEntries 1.3.6.1.4.1.1588.2.1.1.1.25.2

### swTopTalkerMntNumEntries 1.3.6.1.4.1.1588.2.1.1.1.25.2

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

Table to display toptalking flows.

### swTopTalkerMntEntry 1.3.6.1.4.1.1588.2.1.1.1.25.3.1

Entry for the toptalking flows.

### swTopTalkerMntIndex 1.3.6.1.4.1.1588.2.1.1.1.25.3.1.1

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

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

This object identifies the SID of the host.

### swTopTalkerMntDpid 1.3.6.1.4.1.1588.2.1.1.1.25.3.1.4

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

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

This object identifies the SID of the host in WWN format.

### swTopTalkerMntDwwn 1.3.6.1.4.1.1588.2.1.1.1.25.3.1.7

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.

### **swCpuUsage 1.3.6.1.4.1.1588.2.1.1.1.26.1**

The system's CPU usage.

### **swCpuNoOfRetries 1.3.6.1.4.1.1588.2.1.1.1.26.2**

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**

The CPU usage limit.

### **swCpuPollingInterval 1.3.6.1.4.1.1588.2.1.1.1.26.4**

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**

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**

The system's memory usage.

### **swMemNoOfRetries 1.3.6.1.4.1.1588.2.1.1.1.26.7**

The number of times the system should take a memory usage sample before sending the Fabric Watch trap that indicates the current memory usage.

### **swMemUsageLimit 1.3.6.1.4.1.1588.2.1.1.1.26.8**

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**

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**

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**

This OID specifies the low threshold value.

## **swMemUsageLimit3 1.3.6.1.4.1.1588.2.1.1.1.26.12**

This OID specifies the high threshold value.

## **swConnUnitPortStatExtentionTable**

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

## **swConnUnitPortStatEntry 1.3.6.1.4.1.1588.2.1.1.1.27.1**

This represents the connectivity unit port statistics.

## **swConnUnitCRCWithBadEOF 1.3.6.1.4.1.1588.2.1.1.1.27.1.1**

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**

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**

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**

This counter is incremented when the NL\_port acquires the loop.

## **swConnUnitStopTenancyStarVation 1.3.6.1.4.1.1588.2.1.1.1.27.1.5**

This counter is incremented when the FL\_port cannot transmit a frame because of lack of credit.

**swConnUnitOpen 1.3.6.1.4.1.1588.2.1.1.1.27.1.6**

The number of times FC port entered OPENED state.

**swConnUnitTransferConnection 1.3.6.1.4.1.1588.2.1.1.1.27.1.7**

The number of times FC port entered TRANSFER state.

**swConnUnitOpen 1.3.6.1.4.1.1588.2.1.1.1.27.1.8**

The number of times FC port entered OPEN state.

**swConnUnitInvalidARB 1.3.6.1.4.1.1588.2.1.1.1.27.1.9**

The number of times FC port received invalid ARB.

**swConnUnitFTB1Miss 1.3.6.1.4.1.1588.2.1.1.1.27.1.10**

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**

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**

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**

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**

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.

**5** swConnUnitBadEOF 1.3.6.1.4.1.1588.2.1.1.1.27.1.15

**swConnUnitBadEOF 1.3.6.1.4.1.1588.2.1.1.1.27.1.15**

The number of frames with bad EOF.

**swConnUnitLCRX 1.3.6.1.4.1.1588.2.1.1.1.27.1.16**

The number of link control frames received.

**swConnUnitRDYPriority 1.3.6.1.4.1.1588.2.1.1.1.27.1.17**

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**

The number of low level interrupts generated by the physical and link layer.



# High-Availability MIB Objects

---

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• FRU History Table .....	211
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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 55 and Figure 56 depict the organization and structure of the HA-MIB file system.

```

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

```

FIGURE 55 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 56 haMIB and haMIBTraps hierarchy

Table 18 lists the objects or definitions that are imported into the HA-MIB and the modules from which they are imported.

TABLE 18 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 18** 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.

### haStatus 1.3.6.1.4.1.1588.2.1.2.1.1

Indicates whether the system is redundant.

**Values** Possible values are:

- redundant (0) Dual CP with standby CP ready to take over.
- nonredundant (1) Single or Dual CP system where the standby CP is not available to take over operation of the switch.

## FRU Table

### fruTable 1.3.6.1.4.1.1588.2.1.2.1.5

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.

[Table 19](#) includes information on all FRUs except the chassis.

**TABLE 19** 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

## 6 fruEntry 1.3.6.1.4.1.1588.2.1.2.1.5.1

**TABLE 19** Valid FRU counts for the various Brocade switches (Continued)

Platform	Blades	Fans	Power supply	WWN card
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
Brocade DCX	8 port blades 2 CP blades	3 fans	4 PS	2 WWN
Brocade DCX-4S	4 port blades 2 CP blades	2 fans	4 PS	2 WWN
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 VA-40FC	NA	2 FRUs	2 PS	NA

### fruEntry 1.3.6.1.4.1.1588.2.1.2.1.5.1

An entry for FRU slot in the fruTable.

**Index** entPhysicalIndex

### fruClass 1.3.6.1.4.1.1588.2.1.2.1.5.1.1

The type of the FRU object that this slot can hold.

**Values** Possible values are:

- other (1)
- unknown (2)
- chassis (3)
- cp (4)
- other-CP (5)
- switchblade (6)
- wwn (7)
- powerSupply (8)
- fan (9)
- CoreBlade (10)
- ApplicationBlade (11)

**fruStatus 1.3.6.1.4.1.1588.2.1.2.1.5.1.2**

The current status of the FRU object in the slot.

**Values** Possible values are:

- other (1)
- unknown (2)
- on (3)
- off (4)
- faulty (5)

**fruObjectNum 1.3.6.1.4.1.1588.2.1.2.1.5.1.3**

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**

The supplier ID.

**fruSupplierPartNum 1.3.6.1.4.1.1588.2.1.2.1.5.1.5**

The supplier part number.

**fruSupplierSerialNum 1.3.6.1.4.1.1588.2.1.2.1.5.1.6**

The supplier serial number.

**fruSupplierRevCode 1.3.6.1.4.1.1588.2.1.2.1.5.1.7**

The supplier revision code.

**FRU History Table****fruHistoryTable 1.3.6.1.4.1.1588.2.1.2.1.6**

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**

An entry in this table represents a particular FRU event.

**Index** fruHistoryIndex

### fruHistoryIndex 1.3.6.1.4.1.1588.2.1.2.1.6.1.1

Index of the FRU event in the history table.

### fruHistoryClass 1.3.6.1.4.1.1588.2.1.2.1.6.1.2

The type of the FRU object related to the event.

- Values** Possible values are:
- other (1)
  - unknown (2)
  - chassis (3)
  - cp (4)
  - other-CP (5)
  - switchblade (6)
  - wwn (7)
  - powerSupply (8)
  - fan (9)
  - CoreBlade (10)
  - ApplicationBlade (11)

### fruHistoryObjectNum 1.3.6.1.4.1.1588.2.1.2.1.6.1.3

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

The type of the FRU event.

- Values** Possible values are:
- added (1)
  - removed (2)
  - invalid (3)

### fruHistoryTime 1.3.6.1.4.1.1588.2.1.2.1.6.1.5

The time at which this event happened.

### fruHistoryFactoryPartNum 1.3.6.1.4.1.1588.2.1.2.1.6.1.6

The Brocade part number of the FRU object.

**fruHistoryFactorySerialNum 1.3.6.1.4.1.1588.2.1.2.1.6.1.7**

The Brocade serial number of the FRU object.

**CP Table****cpTable 1.3.6.1.4.1.1588.2.1.2.1.7**

This table lists all the CPs in the system.

**cpEntry 1.3.6.1.4.1.1588.2.1.2.1.7.1**

An entry represents a single CP in the system.

**Index** entPhysicalIndex

**cpStatus 1.3.6.1.4.1.1588.2.1.2.1.7.1.1**

The current status of the CP.

**Values** Possible values are:

- other (1)
- unknown (2)
- active (3)
- standby (4)
- failed (5)

**cpIpAddress 1.3.6.1.4.1.1588.2.1.2.1.7.1.2**

The IP address of the Ethernet interface of this CP.

**cpIpMask 1.3.6.1.4.1.1588.2.1.2.1.7.1.3**

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**

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**

The last event related to this CP.

## 6 HA-MIB traps

<b>Values</b>	Possible values are: <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.

#### **fruStatusChanged 1.3.6.1.4.1.1588.2.1.2.2.0.1**

**Objects** 1: entPhysicalName  
2: fruStatus

**Status** Current

This trap will be generated under the following events:

- When FRU is added, removed, or failed
- When FRU is powered on or off

#### **cpStatusChanged 1.3.6.1.4.1.1588.2.1.2.2.0.2**

**Objects** 1: cpStatus  
2: cpLastEvent  
3: swID  
4: swSsn

**Status** Current

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:



- Reboot
- firmwareDownload
- fastboot
- HA failover

## fruHistoryTrap 1.3.6.1.4.1.1588.2.1.2.2.0.3

**Objects**

- 1: fruHistoryClass
- 2: fruHistoryObjectNum
- 3: fruHistoryEvent
- 4: fruHistoryTime
- 5: fruHistoryFactoryPartNum
- 6: fruHistoryFactorySerialNum

**Status** Current

This trap is generated when a FRU is added, removed, or failed.

## HA-MIB traps and sample triggers

[Table 20](#) lists the HA-MIB traps and sample events that will trigger them.

**TABLE 20** HA-MIB traps and sample triggers

HA-MIB traps	Trigger
fruStatusChanged	Example events that will trigger this trap: switch reboot When FRU is added, removed, or failed When FRU is powered on or off
cpStatusChanged	Example events that will trigger this trap: Reboot firmwareDownload fastboot HA failover
fruHistoryTrap	Example events that will trigger this trap: Add or remove a FRU component

## 6 fruHistoryTrap 1.3.6.1.4.1.1588.2.1.2.2.0.3

# FICON MIB Objects

---

## In this chapter

- FICON MIB overview ..... 217
- ficonRNID group. .... 221
- ficonLIRR group ..... 224
- ficonRLIR group ..... 225
- linkIncidentMIBTraps group ..... 226

## 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 57](#) through [Figure 59](#) depict the organization and structure of the FICON MIB file system.

```

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

```

FIGURE 57 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
- LIRRRegType 1.3.6.1.4.1.1588.2.1.1.50.3.2.1.4
- LIRRRProtocol 1.3.6.1.4.1.1588.2.1.1.50.3.2.1.5
- LIRRRPortType 1.3.6.1.4.1.1588.2.1.1.50.3.2.1.6
- LIRRRFormat 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 58 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 59 linkIncidentMIBTraps hierarchy

## Textual conventions

Table 21 lists the textual conventions for the FICON MIB.

TABLE 21 FICON MIB textual conventions

Name	Status	Description	Syntax
LIRRRProtocol	Current	Represents the LIRR 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 21 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) }
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))

## ficonRNID group

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

### nodeRNIDTableNumEntries 1.3.6.1.4.1.1588.2.1.1.50.2.1

The number of entries in Request Node Identification Data (RNID) table.

Refer to the *Fabric OS Command Reference* and the **ficonShow** command for additional information on FICON MIB tables.

### nodeRNIDTable 1.3.6.1.4.1.1588.2.1.1.50.2.2

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

A entry containing the RNID information for a FICON node.

**Index**    nodeRNIDIndex

### nodeRNIDIndex 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.1

Index into the nodeRNIDTable.

### nodeRNIDIncidentPortWWN 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.2

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

PID for an Incident port.

### nodeRNIDFlags 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.4

RNID flags for an Incident port. Bits 0–2 of the flag describe the validity of bits 3–7 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 4–7 of the flag are reserved.

### nodeRNIDType 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.5

Number associated with a node.

**nodeRNIDModel 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.6**

Model number of the RNID node.

**nodeRNIDManufacturer 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.7**

Identifies the manufacturer of the node.

**nodeRNIDManufacturerPlant 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.8**

Identifies the manufacturer plant of the node.

**nodeRNIDSequenceNumber 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.9**

Identifies the sequence number of the node.

**nodeRNIDConnectedPortWWN 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.10**

WWN of the connected port.

**nodeRNIDPortType 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.11**

Port type (N, NL, or virtual port) of the connected port.

**nodeRNIDFormat 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.12**

Node identification data format of the connected port.

**nodeRNIDTag 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.13**

Node identification tag of the connected port.

**nodeRNIDParams 1.3.6.1.4.1.1588.2.1.1.50.2.2.1.14**

Node parameters of the connected port.

**switchRNIDTableNumEntries 1.3.6.1.4.1.1588.2.1.1.50.2.3**

The number of entries in an RNID table that corresponds to the switch.

Refer to the *Fabric OS Command Reference* and the **ficonShow** command for additional information on FICON MIB tables.



**switchRNIDTable 1.3.6.1.4.1.1588.2.1.1.50.2.4**

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**

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**

Index into switchRNIDTable.

**switchRNIDSwitchWWN 1.3.6.1.4.1.1588.2.1.1.50.2.4.1.2**

WWN of the switch.

**switchRNIDFlags 1.3.6.1.4.1.1588.2.1.1.50.2.4.1.3**

RNID flags for the switch.

**switchRNIDType 1.3.6.1.4.1.1588.2.1.1.50.2.4.1.4**

Type Number associated with the switch.

**switchRNIDModel 1.3.6.1.4.1.1588.2.1.1.50.2.4.1.5**

Model number of the RNID switch.

**switchRNIDManufacturer 1.3.6.1.4.1.1588.2.1.1.50.2.4.1.6**

Identifies the manufacturer of the switch.

**switchRNIDManufacturerPlant 1.3.6.1.4.1.1588.2.1.1.50.2.4.1.7**

Identifies the manufacturer plant of the switch.

**switchRNIDSequenceNumber 1.3.6.1.4.1.1588.2.1.1.50.2.4.1.8**

Identifies the sequence number of the switch.

**switchRNIDTag 1.3.6.1.4.1.1588.2.1.1.50.2.4.1.9**

Identification tag of the switch.

## switchRNIDParams 1.3.6.1.4.1.1588.2.1.1.50.2.4.1.10

Identifies the parameters of the switch.

## nodeVfId 1.3.6.1.4.1.1588.2.1.1.50.2.5

The Virtual Fabric ID of the switch. For VF-unaware switches, this value will be 0.

## ficonLIRR group

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

## LIRRTblNumEntries 1.3.6.1.4.1.1588.2.1.1.50.3.1

The number of entries in an LIRR table.

Refer to the *Fabric OS Command Reference* and the **ficonShow** command for additional information on FICON MIB tables.

## LIRRTbl 1.3.6.1.4.1.1588.2.1.1.50.3.2

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

An entry containing LIRR information.

## LIRRIndex 1.3.6.1.4.1.1588.2.1.1.50.3.2.1.1

Index into the LIRR table.

## LIRRLstnrPortWWN 1.3.6.1.4.1.1588.2.1.1.50.3.2.1.2

WWN of the Listener port.

## LIRRLstnrPID 1.3.6.1.4.1.1588.2.1.1.50.3.2.1.3

PID for the Listener port.

## LIRRRegType 1.3.6.1.4.1.1588.2.1.1.50.3.2.1.4

Registration type: conditional or unconditional.

**LIRProtocol 1.3.6.1.4.1.1588.2.1.1.50.3.2.1.5**

Protocol type supported.

**LIRPortType 1.3.6.1.4.1.1588.2.1.1.50.3.2.1.6**

Attached port type.

**LIRFormat 1.3.6.1.4.1.1588.2.1.1.50.3.2.1.7**

Registration type: conditional or unconditional.

**ficonRLIR group**

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

**rLIRTableNumEntries 1.3.6.1.4.1.1588.2.1.1.50.4.1**

The number of entries in a switch RLIR table.

Refer to the *Fabric OS Command Reference* and the **ficonShow** command for additional information on FICON MIB tables.

**rLIRTable 1.3.6.1.4.1.1588.2.1.1.50.4.2**

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**

An entry containing RLIR information.

**rLIRIndex 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.1**

Index into the RLIR table.

**rLIRIncidentPortWwn 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.2**

Port WWN for RLIR Incident port.

**rLIRIncidentNodeWwn 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.3**

Incident node WWN.

**7** rLIRIncidentPortType 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.5

**rLIRIncidentPortType 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.5**

RLIR Incident port type.

**rLIRIncidentPID 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.6**

RLIR Incident PID.

**rLIRIncidentPortNumber 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.7**

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**

RLIR Connected port WWN.

**rLIRConnectedNodeWwn 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.9**

RLIR Connected node WWN.

**rLIRFabricWwn 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.10**

RLIR Fabric WWN.

**rLIRLinkFailureType 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.11**

RLIR Link failure type.

**rLIRTimeStamp 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.12**

RLIR time stamp.

**rLIRFormat 1.3.6.1.4.1.1588.2.1.1.50.4.2.1.13**

RLIR Format.

## **linkIncidentMIBTraps group**

**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

A device registered with the switch.

- Objects**
- 1: nodeRNIDIndex
  - 2: nodeRNIDIncidentPortWWN
  - 3: nodeRNIDConnectedPortWWN

## linkRNIDDeviceDeRegistration 1.3.6.1.4.1.1588.2.1.1.50.21.0.2

A device deregistered with the switch.

- Objects**
- 1: nodeRNIDIndex
  - 2: nodeRNIDIncidentPortWWN
  - 3: nodeRNIDConnectedPortWWN

## linkLIRListenerAdded 1.3.6.1.4.1.1588.2.1.1.50.21.0.3

A listener for link failure incident is added.

- Objects**
- 1: IIRListenerPortWWN
  - 2: IIRListenerPID
  - 3: IIRIndex

## linkLIRListenerRemoved 1.3.6.1.4.1.1588.2.1.1.50.21.0.4

A listener for link failure incident was removed.

- Objects**
- 1: IIRListenerPortWWN
  - 2: IIRListenerPID
  - 3: IIRIndex

## linkRLIRFailureIncident 1.3.6.1.4.1.1588.2.1.1.50.21.0.5

A link failure incident has occurred. The value of IIRIndex will be -2147483647 and IIRListenerPID will be 0 if there is no listener for incident.

- Objects**
- 1: nodeRNIDIndex
  - 2: IIRIndex
  - 3: rLIRIncidentPortWwn
  - 4: rLIRConnectedPortWwn
  - 5: rLIRIndex

## 7 linkRLIRFailureIncident 1.3.6.1.4.1.1588.2.1.1.50.21.0.5

6: rLIRLinkFailureType

7: IIRListenerPID

# 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

### FCMGMT-MIB system organization of MIB objects

[Figure 60](#) through [Figure 70](#) 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 60 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 61 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 62 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 63 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 64** 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 65** 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 66** 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 67** 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 68 ConnUnitPortStatTable hierarchy

```

- connUnitServiceSet
  - connUnitServiceScalars
    - connUnitSnsMaxEntry 1.3.6.1.3.94.5.1.1

```

FIGURE 69 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 70 ConnUnitSnsTable hierarchy

## Definitions for FCMGMT-MIB

Table 22 lists the definitions used for FCMGMT-MIB.

TABLE 22 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 22 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.

## ConnSet group

Implementation of the Connectivity group is mandatory for all systems.

### uNumber 1.3.6.1.3.94.1.1

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 1.

### systemURL 1.3.6.1.3.94.1.2

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.0 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

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

A connectivity unit entry containing objects for a particular unit.

**Index** connUnitId

#### connUnitId 1.3.6.1.3.94.1.6.1.1

The unique identification for this connectivity unit among those within this proxy domain. The value must be unique within the proxy domain because it is the index variable for connUnitTable. The value assigned to a given connectivity unit should be persistent across agent and unit resets. It should be the same as connUnitGlobalId if connUnitGlobalId is known and stable.

The Brocade implementation maps the switch WWN to the top 8 octets of this variable and sets the remaining lower 8 octets to 0.

To specify a particular instance of any columnar variable in the connUnitEntry (such as connUnitType), specify the instance identifier as a 16-octet value.

```
connUnitType.10.0.0.60.69.4.11.19.0.0.0.0.0.0.0
```

where the object instance identifier consists of 16 octets, each representing the byte value from high-byte order to low-byte order of this 128-bit integer.

#### connUnitGlobalId 1.3.6.1.3.94.1.6.1.2

An optional global-scope identifier for this connectivity unit. It must be a WWN for this connectivity unit or 16 octets of value 0.

The following characteristics are required.

- WWN formats requiring fewer than 16 octets must be extended to 16 octets with trailing 0 octets.
- If a WWN is used for connUnitId, the same WWN must be used for connUnitGlobalId.

When a non-zero value is provided, the following characteristics are strongly recommended.

- It should be persistent across agent and unit resets.
- It should be globally unique.
- It should be one of these FC-PH/PH3 formats:
  - IEEE (NAA=1)
  - IEEE Extended (NAA=2)
  - IEEE Registered (NAA=5)
  - IEEE Registered extended (NAA=6)

Use of the IEEE formats allows any IEEE-registered vendor to assure global uniqueness independently. The following are some references on IEEE WWN formats:

<http://standards.ieee.org/regauth/oui/tutorials/fibreformat.html>  
[http://standards.ieee.org/regauth/oui/tutorials/fibrecomp\\_id.html](http://standards.ieee.org/regauth/oui/tutorials/fibrecomp_id.html)

If one or more WWNs are associated with the connUnit through other management methods, one of them should be used for connUnitGlobalId.

If a WWN is not assigned specifically to the connUnit, there is some merit to using a WWN assigned to (one of) its permanently attached FC/LAN interfaces. This cannot risk uniqueness, though.

As a counterexample, if your agent runs in a host and the host has an HBA, it is quite possible that agent, host, and HBA are all distinct connUnits, so the host and agent cannot use the WWN of the HBA.

If your hub has a built-in Ethernet port, it might be reasonable for the hub to use its LAN address (prefixed with the appropriate NAA) as its connUnitId. But if the Ethernet is a replaceable PCCard, the hub should have an independent ID.

The Brocade implementation maps the switch WWN to the top 8 octets of this variable and sets the remaining lower 8 octets to 0.

Example:

If Brocade's switch WWN is 10:0:0:60:69:10:02:18, then use the SNMP GET command on connUnitGlobalId.10.0.0.60.69.10.02.18.0.0.0.0.0.0.0 returns:

```
10 00 00 60 69 10 02 18 00 00 00 00 00 00 00 00
```

### connUnitType 1.3.6.1.3.94.1.6.1.3

The type of this connectivity unit.

Set to 4 for Fibre Channel switches or to 14 for Brocade Access Gateway.

### connUnitNumports 1.3.6.1.3.94.1.6.1.4

Number of physical ports (between 0 and the *maximum number of system supported ports*) in the connectivity unit (external).

To determine the *maximum number of system supported ports*, use the SNMP GET command on swFcPortCapacity.

The Brocade switches support 0 to *maximum number of system supported ports*.



**NOTE**

The ConnUnitNumports will not count the GE ports present on FC4-16IP blade.

The maximum number of supported ports are as follows.

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	576 ports
Brocade DCX-4S	288 ports
Brocade 48000	384 ports

## connUnitState 1.3.6.1.3.94.1.6.1.5

Overall state of the connectivity unit.

**Values** Possible values are:

- unknown (1)
- online (2) Set the state to online.
- offline (3) Set the state to offline.

Mapped as follows:

```
switchState(ONLINE) 2 (online)
switchState(not ONLINE) 3 (offline, testing, faulty)
```

## connUnitStatus 1.3.6.1.3.94.1.6.1.6

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. **switchStatusPolicyShow** command displays the policy parameters that determines the overall switch status.

**Values** Possible values are:

- unknown (1) - Unknown
- unused (2) - Unmonitored

## 8 connUnitProduct 1.3.6.1.3.94.1.6.1.7

- ok (3) - Healthy/ok
- warning (4) - Marginal/Warning
- failed (5) - Down/Failed

### connUnitProduct 1.3.6.1.3.94.1.6.1.7

The connectivity unit vendor's product model name.

This is the same as for sysDescr (set for as many as 79 bytes).

If the switch is in Access Gateway mode, the default value is Access Gateway.

### connUnitSn 1.3.6.1.3.94.1.6.1.8

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

The number of centiseconds since the last unit initialization.

### connUnitUrl 1.3.6.1.3.94.1.6.1.10

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

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 1.

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

A value of “yes” means this is the proxy master unit for a set of managed units.

**Values** Possible values are:

- unknown (1)
- no (2)
- yes (3)

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

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).

**Values** Possible values are:

- unknown (1)
- no (2)
- yes (3)

## connUnitNumSensors 1.3.6.1.3.94.1.6.1.14

Number of sensors (between 0 and *maximum number of sensors*) in the connUnitSensorTable.

Refer to [Table 15](#) on page 166 for specific sensor counts on the various switches.

## connUnitStatusChangeTime 1.3.6.1.3.94.1.6.1.15

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.

Not supported.

## connUnitConfigurationChangeTime 1.3.6.1.3.94.1.6.1.16

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

Not supported.

### connUnitNumRevs 1.3.6.1.3.94.1.6.1.17

The number of revisions in connUnitRevsTable.  
Set to 2.

### connUnitNumZones 1.3.6.1.3.94.1.6.1.18

Number of zones defined in connUnitZoneTable.  
Not supported.

### connUnitModuleId 1.3.6.1.3.94.1.6.1.19

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

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

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.”

### connUnitControl 1.3.6.1.3.94.1.6.1.22

Controls the addressed connUnit. Each implementation might choose not to allow any or all of these values on a SET.  
Cold start and warm start are as defined in MIB-II and are not meant to be a factory reset.  
This is similar to swAdmStatus:  
resetConnunitColdStart = reboot  
resetConnunitWarmStart = fastboot  
offlineConnUnit = disable switch

onlineConnUnit = enable switch

default after reboot = unknown

The declaration 1 (unknown) maps to the default value upon rebooting, and 2 (invalid) is not applicable.

Declarations 3 and 4 perform the same operation—a cold boot of the switch.

**Values** Possible values are:

- unknown (1)
- invalid (2)
- resetConnUnitColdStart (3): Reboot. Performs a switch reboot.
- resetConnUnitWarmStart (4): Fastboot. The addressed unit performs a Warm Start reset.
- 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.
- 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.

### connUnitContact 1.3.6.1.3.94.1.6.1.23

Contact information for this connectivity unit.

Displays the same value as sysContact. Changing the value in this variable causes the value in sysContact to also be changed.

### connUnitLocation 1.3.6.1.3.94.1.6.1.24

Location information for this connectivity unit.

Displays the same value as sysLocation.

### connUnitEventFilter 1.3.6.1.3.94.1.6.1.25

Defines the event severity logged by this connectivity unit. All events of severity less than or equal to connUnitEventFilter are logged in connUnitEventTable.

**Return** Always returns value 9 (debug).

### connUnitNumEvents 1.3.6.1.3.94.1.6.1.26

Number of events currently in connUnitEventTable.

**Values** For Fabric OS v3.0 this value ranges from 0 to 64.  
For Fabric OS v4.0 this value ranges from 0 to 255.  
For Fabric OS v4.2 this value ranges from 0 to 2048.

## 8 connUnitMaxEvents 1.3.6.1.3.94.1.6.1.27

For Fabric OS v4.4, and later releases, this value ranges from 0 to 1024.

### connUnitMaxEvents 1.3.6.1.3.94.1.6.1.27

Maximum number of events that can be defined in connUnitEventTable.

**Values** This value ranges from 0 to 1024.

### connUnitEventCurrID 1.3.6.1.3.94.1.6.1.28

The last-used event ID (connUnitEventId). Every RASLOG message has RASLOG number and this represents the RASLOG number.

Maximum is 2147483647 ( $2^{31}-1$ ).

### connUnitRevsTable 1.3.6.1.3.94.1.7

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

Table of the revisions supported by connectivity units managed by this agent.

**Index** connUnitRevsUnitId  
connUnitRevsIndex

#### connUnitRevsUnitId 1.3.6.1.3.94.1.7.1.1

The connUnitId value for the connectivity unit that contains this revision table.

#### connUnitRevsIndex 1.3.6.1.3.94.1.7.1.2

A unique value among all connUnitRevsEntries 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

A vendor-specific string identifying a revision of a component of the connUnit indexed by connUnitRevsUnitId.

Index 1 returns the switchType from **switchShow**. Index 2 returns the Fabric OS version from telnet command **version**: for example, v2.6.

## connUnitRevsDescription 1.3.6.1.3.94.1.7.1.4

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

Table of the sensors supported by each connectivity unit managed by this agent.

Refer to [Table 15](#) on page 166 for specific sensor counts on the various switches.

## connUnitSensorEntry 1.3.6.1.3.94.1.8.1

Each entry contains the information for a specific sensor.

<b>Index</b>	connUnitSensorUnitId connUnitSensorIndex
--------------	---

### connUnitSensorUnitId 1.3.6.1.3.94.1.8.1.1

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

A unique value among all connUnitSensorEntry's 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

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

The status indicated by the sensor.

<b>Values</b>	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> </ul>
---------------	--

- Warning (4) The sensor indicates a warning.
- failed (5) The sensor indicates failure.
- Nominal = 3 (ok).

### connUnitSensorInfo 1.3.6.1.3.94.1.8.1.5

Miscellaneous static information about the sensor, such as its serial number.  
Each contains textual information about the sensor.

**Return** 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

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

The type of component being monitored by this sensor.

**Values** Possible values are:

- unknown (1)
- other (2)
- battery (3)
- fan (4)
- power-supply (5)
- transmitter (6)
- enclosure (7)
- board (8)
- receiver (9)

The following mapping is for each individual sensor, where applicable.

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

The characteristics being monitored by this sensor.

The following mapping is for each individual sensor, where applicable:



swSensorType	connUnitSensorCharacteristic
1 (temperature)	3 (temperature)
2 (fan)	7 (airflow)
3 (power supply)	9 (power)

<b>Values</b>	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>
---------------	--

## connUnitPortTable 1.3.6.1.3.94.1.10

Generic information on ports for a specific connUnit

---

### NOTE

Information about the GbE ports on a Brocade 7500 or FR4-18i blade is not supported.

---

## connUnitPortEntry 1.3.6.1.3.94.1.10.1

Each entry contains the information for a specific port.

<b>Index</b>	connUnitPortUnitId connUnitPortIndex
--------------	---

## connUnitPortUnitId 1.3.6.1.3.94.1.10.1.1

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

Number of physical ports between 0 and *maximum number of system supported ports* in the connectivity unit (internal/embedded, external).

To determine the *maximum number of system supported ports*, use the SNMP GET command on swFcPortCapacity.

The Brocade switches support 0 to *maximum number of system supported ports*. The maximum number of supported ports are as follows:

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	576 ports
Brocade DCX-4S	288 ports
Brocade 48000	384 ports

### connUnitPortType 1.3.6.1.3.94.1.10.1.3

The port type.

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.

<b>Values</b>	Possible values are:
	<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> </ul>

- wan (16)
- ac (17) AC power line. (Not supported in Fabric OS v2.6.1.)
- dc (18) DC power line. (Not supported in Fabric OS v2.6.1.)
- ssa (19) Serial storage architecture. (Not supported in Fabric OS v2.6.1.)

### connUnitPortFCClassCap 1.3.6.1.3.94.1.10.1.4

Bit mask that specifies the classes of service capability of this port. If this is not applicable, return all bits set to 0.

The bits have the following definition:

- unknown 0
- class-f 1
- class-one 2
- class-two 4
- class-three 8
- class-four 16
- class-five 32
- class-six 64

For an F\_Port or FL\_Port, this value is 0x000C. For a G\_Port or E\_Port, this value is 0x000D.

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.

connUnitPortFCClassCap attribute is dependent on the state of the port i.e, 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..)

### connUnitPortFCClassOp 1.3.6.1.3.94.1.10.1.5

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.

For an F\_Port or FL\_Port, this value is 0x000C. For a G\_Port or E\_Port, this value is 0x000D.

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.

connUnitPortFCClassOp is independent of the state of the port (online or offline). Its value is only dependent on the port type.

### connUnitPortState 1.3.6.1.3.94.1.10.1.6

The state of the port hardware.

**Values** Possible values are:

- unavailable (1) Do not use.
- online (2) Available for meaningful work.
- offline (3) Not available for meaningful work.
- bypassed (4) No longer used.
- diagnostics (5) Map to your testing. (Not supported in Fabric OS v2.6.1.)

For an E, F, or FL\_Port, the value is online. For a U\_Port, the value is offline (disabled, testing, faulted).

## connUnitPortStatus 1.3.6.1.3.94.1.10.1.7

An overall protocol status for the port. For a U\_Port, the status should be ols (9).

**Values** Possible values are:

- unknown (1)
- unused (2) Device cannot report this status.
- ready (3) FCAL Loop or FCPH Link reset protocol initialization has completed.
- warning (4) Do not use.
- failure (5) Port is faulty.
- notparticipating (6) Loop not participating and does not have a loop address. Do not use.
- initializing (7) Protocol is proceeding. Do not use.
- bypass (8) Do not use.
- ols (9) FCP offline status. (Not supported in Fabric OS v2.6.1.)

---

### NOTE

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.

In Fabric OS v3.x and above, 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).

---

## connUnitPortTransmitterType 1.3.6.1.3.94.1.10.1.8

The technology of the port transceiver.

**Values** Possible values are:

- unknown (1)
- other (2)
- unused (3)
- shortwave (4)
- longwave (5)
- copper (6)
- scsi (7)

- longwaveNoOFC (8)
- shortwaveNoOFC (9)
- longwaveLED (10)
- ssa (11) (Not supported in Fabric OS v2.6.1.)

For an external FC port, this value should be 9 (shortwaveNoOFC), 8 (longwaveNoOFC), or 6 (copper).

## connUnitPortModuleType 1.3.6.1.3.94.1.10.1.9

The module type of the port connector.

**Values** Possible values are:

- unknown (1)
- other (2)
- gbic (3)
- embedded (4) Fixed (oneXnine)
- glm (5)
- gbicSerialId (6)
- gbicNoSerialId (7)
- gbicNotInstalled (8)
- smallFormFactor (9)

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).

## connUnitPortWwn 1.3.6.1.3.94.1.10.1.10

The World Wide Name of the port, if applicable; otherwise, an empty string.

This is in IEEE Extended format, and the extension contains the internal port number of each port.

---

### NOTE

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.

---

## connUnitPortFCId 1.3.6.1.3.94.1.10.1.11

This is the assigned Fibre Channel ID of this port. This value is expected to be a Big Endian value of 24 bits. If this is a loop, then it is the AL\_PA that is connected. If this is an E\_Port, then it contains the domain ID and area, left justified, 0 filled. If this port does not have a Fibre Channel address, return all bits set to 1.

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.

The FC ID is formatted “DD AA PP” (e.g., “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” (e.g., “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.

### connUnitPortSn 1.3.6.1.3.94.1.10.1.12

The serial number of the unit (for example, for a GBIC). If this is not applicable, return an empty string.

If the GBIC has a serial ID, the return value is the GBIC part number; otherwise, the return value is Null.

### connUnitPortRevision 1.3.6.1.3.94.1.10.1.13

The port revision (for example, GBIC).

**Return** If the GBIC has a serial ID, this returns the GBIC revision number; otherwise, it returns a Null value.

### connUnitPortVendor 1.3.6.1.3.94.1.10.1.14

The port vendor (for example, for a GBIC).

**Return** If the GBIC has a serial ID, this returns the GBIC vendor name; otherwise, it returns a Null value.

### connUnitPortSpeed 1.3.6.1.3.94.1.10.1.15

The speed of the port, in kilobytes per second.

For example, the valid values for Brocade 12000, 24000, and 48000 directors: 125,000 KBps, 250,000 KBps, or 500,000 KBps depending on the configuration.

### connUnitPortControl 1.3.6.1.3.94.1.10.1.16

Controls the addressed connUnit’s port.

Valid commands are:

- resetConnUnitPort

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:

- The Link Reset protocol.
- The Loop Initialization protocol.
- Resynchronization occurring between the transceiver in the addressed port to the transceiver to which the port is connected.

- `bypassConnUnitPort`

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:

- Transitioning from online to offline.
- A request (NON-PARTICIPATING) command to the loop port state machine.
- Removal of the port from an arbitrated loop by a hub.

- `unbypassConnUnitPort`

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

- The Link Failure protocol.
- A request (PARTICIPATING) command to the loop port state machine.
- Addition of the port to an arbitrated loop by a hub.

- `offlineConnUnitPort`

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:

- Disabling a port's transceiver.
- The Link Failure protocol.
- Request (NON-PARTICIPATING) command to the loop port state machine removal of the port from an arbitrated loop by a hub.

- `onlineConnUnitPort`

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:

- Enabling a port's transceiver.
- The Link Failure protocol, request (PARTICIPATING) command to the loop port state machine.
- Addition of the port from an arbitrated loop by a hub.

Each implementation might choose not to allow any or all of these values on a SET.

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.

- Disabling the FC port that is connected to the management station
- Disabling the embedded port

- Return values are:
  - resetConnUnitPort portDisable (F or E\_Port, loop for U\_Port)
  - bypassConnUnitPort portDisable (FL\_Port)
  - unbypassConnUnitPort portEnable (FL\_Port)
  - offlineConnUnitPort portDisable (E, F, FL\_Port)
  - onlineConnUnitPort portEnable (U)
  - resetConnUnitPortCounters clear the port statistics counter. When rebooted, this defaults to 1 (unknown).

### connUnitPortName 1.3.6.1.3.94.1.10.1.17

A string describing the addressed port.

This object is read-only for Brocade switches.

### connUnitPortPhysicalNumber 1.3.6.1.3.94.1.10.1.18

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.

The internal port numbers for Brocade switch. The Brocade switches support 0 through *maximum number of ports*.

The maximum number of supported ports are as follows.

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	576 ports
Brocade DCX-4S	288 ports
Brocade 48000	384 ports



## connUnitPortStatObject 1.3.6.1.3.94.1.10.1.19

This OID is deprecated.

This contains the OID of the first object of the table that contains the statistics for this particular port. If this has a value of 0, then there are no statistics available for this port. The port type information helps identify the statistics objects found in the table. From this point, use the `getnext` command to get the next statistics object. When the first part of the OID changes, the end of table is reached.

Mapped to `connUnitPortStatFabricUnitId`.

## connUnitPortProtocolCap 1.3.6.1.3.94.1.10.1.20

This is the bit mask that specifies the driver-level protocol capability of this port.

If this is not applicable, return all bits set to 0.

Return value = 07F

The bits have the following definition.

- 0 = unknown
- 1 = Loop
- 2 = Fabric
- 4 = SCSI
- 8 = TCP/IP
- 16 = VI
- 32 = FICON

## connUnitPortProtocolOp 1.3.6.1.3.94.1.10.1.21

This is the bit mask that specifies the driver level protocols that are currently operational.

Return value = 07F

If this is not applicable, return all bits set to zero. The bits have the following definition:

- 0 = unknown
- 1 = Loop
- 2 = Fabric
- 4 = SCSI
- 8 = TCP/IP
- 16 = VI
- 32 = FICON

## connUnitPortNodeWwn 1.3.6.1.3.94.1.10.1.22

The node World Wide Name of the port, if applicable; otherwise, an empty string.

All related ports in within a group should have the same node WWN value. The container is defined as the largest physical entity.

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.

This is in IEEE Extended format and the extension contains the internal port number of each port.

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.

The N\_Ports on a Brocade Access Gateway are the WWN of the switch (i.e., 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).

## connUnitPortHWState 1.3.6.1.3.94.1.10.1.23

Not supported in Fabric OS v2.6.1.

The state of the port as detected by the hardware.

### Values

Possible values are:

- unknown (1)
- failed (2) Port failed diagnostics (port\_flt\_state).
- bypassed (3) FCAL bypass, loop only (not used).
- active (4) Connected to a device (light and sync are present).
- loopback (5) Port in ext loopback (loopback state).
- txfault (6) Transmitter fault (bad GBIC).
- noMedia (7) Media not installed (GBIC removed).
- linkDown (8) Waiting for activity—rx sync (light with no sync).

## connUnitEventTable 1.3.6.1.3.94.1.11

The table of connectivity unit events. Errors, warnings, and information should be reported in this table.

- (v3.0 only) This table contains the 64 most-recent event log entries.
- (v6.0 only) 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 *Fabric OS Message Reference*.

## connUnitEventEntry 1.3.6.1.3.94.1.11.1

Each entry contains information on a specific event for the given connectivity unit.

Index    connUnitEventUnitId  
           connUnitEventIndex

### connUnitEventUnitId 1.3.6.1.3.94.1.11.1.1

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

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

The internal event ID. Incriminated 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.

Same function as connUnitEventIndex.

### connUnitREventTime 1.3.6.1.3.94.1.11.1.4

This is the real time when the event occurred. It has the following format.

DDMMYYYY HHMMSS

Where:

DD = day number

## 8 connUnitSEventTime 1.3.6.1.3.94.1.11.1.5

MM = month number

YYYY = year

HH = hours

MM = minutes

SS = seconds

If not applicable, returns a null string.

### connUnitSEventTime 1.3.6.1.3.94.1.11.1.5

This is the sysuptime time stamp when the event occurred.

### connUnitEventSeverity 1.3.6.1.3.94.1.11.1.6

The event severity level. The mapping between error log severity level and this variable is:

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)

Refer to FcEventSeverity in [Table 22](#) on page 235 for more information about severity.

### connUnitEventType 1.3.6.1.3.94.1.11.1.7

The type of this event.

**Values** Possible values are:

- unknown (1)
- other (2)
- status (3)
- configuration (4)
- topology (5)

Always set to 2 (other).

### connUnitEventObject 1.3.6.1.3.94.1.11.1.8

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[...].

**Values** Always set to null.

## connUnitEventDescr 1.3.6.1.3.94.1.11.1.9

The description of the event.

Same as the string displayed in the system error log. The system error log can be viewed using the **errShow** or **errDump** commands.

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 *Fabric OS Message Reference*.

## connUnitLinkTable 1.3.6.1.3.94.1.12

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.

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.

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.

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 `connUnitNodeId`—or a nonzero `connUnitPortWwn`—for each end of the link.

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.

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.

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.

For an entry to be considered valid, both the X (local) and the Y (remote) values need to have one valid value.

## 8 connUnitLinkEntry 1.3.6.1.3.94.1.12.1

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.

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.
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.
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.

### connUnitLinkEntry 1.3.6.1.3.94.1.12.1

An entry describing a particular link to another.

<b>Index</b>	connUnitLinkUnitId connUnitLinkIndex
--------------	---

### connUnitLinkUnitId 1.3.6.1.3.94.1.12.1.1

The connUnitId of the connectivity unit that contains this link table.

<b>Values</b>	Set to WWN of the local switch.
---------------	---------------------------------

### connUnitLinkIndex 1.3.6.1.3.94.1.12.1.2

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

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

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

The port WWN of the unit specified by connUnitLinkNodeldX, if known; otherwise, 16 octets of binary 0.

This is the WWN of the port to which the device is connected.

### connUnitLinkNodeldY 1.3.6.1.3.94.1.12.1.6

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

The port number on the unit specified by connUnitLinkNodeldY, 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

The port WWN on the unit specified by connUnitLinkNodeldY, 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

The address of an FCMGMT MIB agent for the node identified by connUnitLinkNodeldY, 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

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

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).

### connUnitLinkUnitTypeY 1.3.6.1.3.94.1.12.1.12

Type of the FC connectivity unit, as defined in connUnitType.

- ISL- Switch device.
- End devices- End device types based on an FCP Inquiry.

Brocade does not support Hubs.

Table 23 display the types of the connectivity unit.

**TABLE 23** 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			

### connUnitLinkConnIdY 1.3.6.1.3.94.1.12.1.13

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

The last-used link index.

## Statistics group

Not supported in Fabric OS v2.6.1.

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.

## connUnitPortStatTable 1.3.6.1.3.94.4.5

A list of statistics for the fabric port types.

### connUnitPortStatEntry 1.3.6.1.3.94.4.5.1

An entry describing port statistics.

<b>Index</b>	connUnitPortStatUnitId connUnitPortStatIndex
--------------	---

#### connUnitPortStatUnitId 1.3.6.1.3.94.4.5.1.1

The connUnitId of the connectivity unit that contains this port statistics table.

#### connUnitPortStatIndex 1.3.6.1.3.94.4.5.1.2

This object represents the port index.

#### connUnitPortStatCountError 1.3.6.1.3.94.4.5.1.3

A count of the errors that have occurred on this port.

#### connUnitPortStatCountTxObjects 1.3.6.1.3.94.4.5.1.4

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

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**

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**

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**

The number of transitions in or out of BB credit zero state.

### **connUnitPortStatCountInputBuffersFull 1.3.6.1.3.94.4.5.1.9**

Not supported.

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.

### **connUnitPortStatCountFBSYFrames 1.3.6.1.3.94.4.5.1.10**

Not supported.

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.

### **connUnitPortStatCountPBSYFrames 1.3.6.1.3.94.4.5.1.11**

Not supported.

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.

**connUnitPortStatCountFRJTFrames 1.3.6.1.3.94.4.5.1.12**

Not supported.

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.

**connUnitPortStatCountPRJTFrames 1.3.6.1.3.94.4.5.1.13**

Not supported.

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.

**connUnitPortStatCountClass1RxFrames 1.3.6.1.3.94.4.5.1.14**

Not supported.

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

**connUnitPortStatCountClass1TxFrames 1.3.6.1.3.94.4.5.1.15**

Not supported.

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

**connUnitPortStatCountClass1FBSYFrames 1.3.6.1.3.94.4.5.1.16**

Not supported.

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

**connUnitPortStatCountClass1PBSYFrames 1.3.6.1.3.94.4.5.1.17**

Not supported.

## 8 connUnitPortStatCountClass1FRJTFrames 1.3.6.1.3.94.4.5.1.18

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

## connUnitPortStatCountClass1FRJTFrames 1.3.6.1.3.94.4.5.1.18

Not supported.

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

## connUnitPortStatCountClass1PRJTFrames 1.3.6.1.3.94.4.5.1.19

Not supported.

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

## connUnitPortStatCountClass2RxFrames 1.3.6.1.3.94.4.5.1.20

The number of Class 2 Frames received at this port.

---

**NOTE**

This is a Fibre Channel only statistic.

---

## connUnitPortStatCountClass2TxFrames 1.3.6.1.3.94.4.5.1.21

Not supported.

The number of Class 2 Frames transmitted out this port.

This is a Fibre Channel only statistic.

Return value- 800000000

## connUnitPortStatCountClass2FBSYFrames 1.3.6.1.3.94.4.5.1.22

Not supported.

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).

**NOTE**

This is a Fibre Channel only statistic.

Return value- 800000000

## connUnitPortStatCountClass2PBSYFrames 1.3.6.1.3.94.4.5.1.23

Not supported

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).

**NOTE**

This is a Fibre Channel only statistic.

Return value- 800000000

## connUnitPortStatCountClass2FRJTFrames 1.3.6.1.3.94.4.5.1.24

Not supported.

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.

**NOTE**

This is a Fibre Channel only statistic.

Return value- 800000000

## connUnitPortStatCountClass2PRJTFrames 1.3.6.1.3.94.4.5.1.25

Not supported.

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.

**NOTE**

This is a Fibre Channel only statistic.

Return value- 800000000

## connUnitPortStatCountClass3RxFrames 1.3.6.1.3.94.4.5.1.26

The number of Class 3 Frames received at this port.

---

**NOTE**

This is a Fibre Channel only statistic.

---

### **connUnitPortStatCountClass3TxFrames 1.3.6.1.3.94.4.5.1.27**

Not supported.

The number of Class 3 Frames transmitted out this port.

Return value- 800000000

---

**NOTE**

This is a Fibre Channel only statistic.

---

### **connUnitPortStatCountClass3Discards 1.3.6.1.3.94.4.5.1.28**

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.

---

**NOTE**

This is a Fibre Channel only statistic.

---

### **connUnitPortStatCountRxMulticastObjects 1.3.6.1.3.94.4.5.1.29**

The number of multicast frames or packets received at this port.

### **connUnitPortStatCountTxMulticastObjects 1.3.6.1.3.94.4.5.1.30**

The number of multicast frames or packets transmitted out this port.

### **connUnitPortStatCountRxBroadcastObjects 1.3.6.1.3.94.4.5.1.31**

Not supported.

The number of broadcast frames or packets received at this port.

Return value- 800000000

### **connUnitPortStatCountTxBroadcastObjects 1.3.6.1.3.94.4.5.1.32**

Not supported.

The number of broadcast frames or packets transmitted out this port. On a Fibre Channel loop, count only OPNr frames generated.

Return value- 800000000

**connUnitPortStatCountRxLinkResets 1.3.6.1.3.94.4.5.1.33**

The number of link resets received.

**NOTE**

This is a Fibre Channel only statistic.

**connUnitPortStatCountTxLinkResets 1.3.6.1.3.94.4.5.1.34**

The number of link resets transmitted.

**NOTE**

This is a Fibre Channel only statistic.

**connUnitPortStatCountNumberLinkResets 1.3.6.1.3.94.4.5.1.35**

Not supported.

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

**connUnitPortStatCountRxOfflineSequences 1.3.6.1.3.94.4.5.1.36**

The number of offline primitive OLS received at this port.

**NOTE**

This is a Fibre Channel only statistic.

**connUnitPortStatCountTxOfflineSequences 1.3.6.1.3.94.4.5.1.37**

The number of offline primitive OLS transmitted from this port.

**NOTE**

This is a Fibre Channel only statistic.

**connUnitPortStatCountNumberOfflineSequences 1.3.6.1.3.94.4.5.1.38**

Not supported.

The number of offline primitive sequence received at this port.

This is a Fibre Channel only statistic.

Return Value- 800000000

### connUnitPortStatCountLinkFailures 1.3.6.1.3.94.4.5.1.39

The number of link failures. This count is part of the Link Error Status Block (LESB). (FC-PH 29.8)

---

**NOTE**

This is a Fibre Channel only statistic.

---

### connUnitPortStatCountInvalidCRC 1.3.6.1.3.94.4.5.1.40

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.

---

**NOTE**

This is a Fibre Channel only statistic.

---

### connUnitPortStatCountInvalidTxWords 1.3.6.1.3.94.4.5.1.41

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)

---

**NOTE**

This is a Fibre Channel only statistic. This is the sum of encoding in and encoding out error.

---

### connUnitPortStatCountPrimitiveSequenceProtocolErrors 1.3.6.1.3.94.4.5.1.42

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)

---

**NOTE**

This is a Fibre Channel only statistic.

---

### connUnitPortStatCountLossofSignal 1.3.6.1.3.94.4.5.1.43

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)

---

**NOTE**

This is a Fibre Channel only statistic.

---

### connUnitPortStatCountLossofSynchronization 1.3.6.1.3.94.4.5.1.44

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)

---

**NOTE**

This is a Fibre Channel only statistic.

---



### connUnitPortStatCountInvalidOrderedSets 1.3.6.1.3.94.4.5.1.45

The number of invalid ordered sets received at port. This count is part of the Link Error Status Block (LESB). (FC-PH 29.8).

---

**NOTE**

This is a Fibre Channel only statistic.

---

### connUnitPortStatCountFramesTooLong 1.3.6.1.3.94.4.5.1.46

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.

---

**NOTE**

This is a Fibre Channel only statistic.

---

### connUnitPortStatCountFramesTruncated 1.3.6.1.3.94.4.5.1.47

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

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.

---

**NOTE**

This is a Fibre Channel only statistic.

---

### connUnitPortStatCountDelimiterErrors 1.3.6.1.3.94.4.5.1.49

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

The number of encoding errors inside of frames.

## Service group

Not supported in Fabric OS v2.6.1.

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 Scalars group is mandatory for all systems.

### connUnitSnsMaxEntry 1.3.6.1.3.94.5.1.1

The maximum number of entries in the table.

### connUnitSnsTable 1.3.6.1.3.94.5.2.1

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

The simple name server (SNS) table for the port represented by connUnitSnsPortIndex.

<b>Index</b>	connUnitSnsId connUnitSnsPortIndex connUnitSnsPortIdentifier
--------------	--

### connUnitSnsId 1.3.6.1.3.94.5.2.1.1.1

The connUnitId of the connectivity unit that contains this name server table.

### connUnitSnsPortIndex 1.3.6.1.3.94.5.2.1.1.2

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

The port identifier for this entry in the SNS table.

### connUnitSnsPortName 1.3.6.1.3.94.5.2.1.1.4

The port name for this entry in the SNS table.

**connUnitSnsNodeName 1.3.6.1.3.94.5.2.1.1.5**

The node name for this entry in the SNS table.

**connUnitSnsClassOfSvc 1.3.6.1.3.94.5.2.1.1.6**

The Classes of Service offered by this entry in the SNS table.

**connUnitSnsNodeIPAddress 1.3.6.1.3.94.5.2.1.1.7**

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**

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**

The FC-4 types supported by this entry in the SNS table.

**connUnitSnsPortType 1.3.6.1.3.94.5.2.1.1.10**

The port type of this entry in the SNS table.

**connUnitSnsPortIPAddress 1.3.6.1.3.94.5.2.1.1.11**

The IPv6 formatted address of this entry in the SNS table.

**connUnitSnsFabricPortName 1.3.6.1.3.94.5.2.1.1.12**

The fabric port name of this entry in the SNS table.

**connUnitSnsHardAddress 1.3.6.1.3.94.5.2.1.1.13**

The hard address of this entry in the SNS table.

**connUnitSnsSymbolicPortName 1.3.6.1.3.94.5.2.1.1.14**

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

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

### trapMaxClients 1.3.6.1.3.94.2.1

The maximum number of SNMP trap recipients supported by the connectivity unit.  
Set to 6.

### trapClientCount 1.3.6.1.3.94.2.2

The current number of rows in the trap table.

### trapRegTable 1.3.6.1.3.94.2.3

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

IP/port pair for a specific client.

<b>Index</b>	trapRegIpAddress trapRegPort
--------------	---------------------------------

### trapRegIpAddress 1.3.6.1.3.94.2.3.1.1

The IP address of a client registered for traps.

### trapRegPort 1.3.6.1.3.94.2.3.1.2

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

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 [Table 24](#):

**TABLE 24** trapRegFilter for errorlog severity level

System Error Log errshow 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)

This severity applies to all entries. Refer to FcEventSeverity in [Table 22](#) on page 235.

The values 1, 3, 7, and 10 are not valid for SET operations.

## trapRegRowState 1.3.6.1.3.94.2.3.1.4

Specifies the state of the row. This entry always returns rowActive and allows for read-only.

**TABLE 25** TrapRegRowState for Read/Write

State	Description (Read)	Description (Write)
rowDestroy (1)	Read- Can never happen.	Write- Remove this row from the table.
rowInactive (2)	Read- Indicates that this row does exist but that traps are not enabled to be sent to the target.	Write- 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 existed, then traps are disabled from being sent to the target.
rowActive (3)	Read- Indicates that this row exists and that traps are enabled to be sent to the target.	Write- 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

### revisionNumber 1.3.6.1.3.94.3

This is the revision number for this MIB. The format of the revision value is as follows:

## 8 Unsupported tables

0 = High order major revision number  
1 = Low order major revision number  
2 = High order minor revision number  
3 = Low order minor revision number

The value is stored as an ASCII value. The following is the current value of this object.

0 = 0  
1 = 3  
2 = 0  
3 = 0

This defines a revision of 03.00.

Set to 0300.

## Unsupported tables

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

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

### connUnitStatusChange

**Enterprise** fcmgmt

**Variables** connUnitStatus, connUnitState

The overall status of the connectivity unit has changed.

Recommended severity level (for filtering)- alert.

Generated when connUnitStatus changes. Refer to "[connUnitStatus 1.3.6.1.3.94.1.6.1.6](#)" on page 239 for a description of how the value is calculated.

Sample trap output for Fabric OS v6.1.0.

```
connUnitStatus.16.0.0.96.105.144.109.136.0.0.0.0.0.0.0.0.1 = warning(4)
connUnitState.16.0.0.96.105.144.109.136.0.0.0.0.0.0.0.0.1 = offline(3)
```

Refer to the *Fabric Watch Administrator's Guide* on how the switch status is determined.

### connUnitDeletedTrap

**Enterprise** fcmgmt

**Variables** connUnitId  
 A connUnit has been deleted from this agent.  
 Recommended severity level (for filtering)- warning.  
 Not implemented.

## connUnitEventTrap

**Enterprise** fcmgmt

**Variables** connUnitEventId, connUnitEventType, connUnitEventObject, connUnitEventDescr  
 An event has been generated by the connectivity unit.  
 Recommended severity level (for filtering)- info.  
 Sample trap output for Fabric OS v6.1.0.

```
connUnitEventId.16.0.0.96.105.144.109.136.0.0.0.0.0.0.0.0.0.0.354 = 354
connUnitEventType.16.0.0.96.105.144.109.136.0.0.0.0.0.0.0.0.0.0.354 = other(2)
connUnitEventObject.16.0.0.96.105.144.109.136.0.0.0.0.0.0.0.0.0.0.354 = null
connUnitEventDescr.16.0.0.96.105.144.109.136.0.0.0.0.0.0.0.0.0.0.354 = FW-1425
Switch status changed from MARGINAL to HEALTHY.
```

Refer to the [“swEventTrap 1.3.6.1.4.1.1588.2.1.1.1.0.4”](#) for more details.

## connUnitSensorStatusChange

**Enterprise** fcmgmt

**Variables** connUnitSensorStatus  
 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.  
 Sample trap output for Fabric OS v6.1.0.

```
connUnitSensorStatus.16.0.0.96.105.144.109.136.0.0.0.0.0.0.0.0.0.0.7 = failed(5)
```

Refer to the *Fabric Watch Administrator's Guide* for information on configuring thresholds that generate these traps.

## connUnitPortStatusChange

**Enterprise** fcmgmt

**Variables** connUnitPortStatus, connUnitPortState  
 Overall status of the connectivity unit changed. Recommended severity level (for filtering)- alert.  
 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.

## 8 connUnitPortStatusChange

Sample trap output for Fabric OS v6.1.0.

```
connUnitPortStatus.16.0.0.96.105.144.109.136.0.0.0.0.0.0.0.0.29 = ready(3)
connUnitPortState.16.0.0.96.105.144.109.136.0.0.0.0.0.0.0.0.29 = online(2)
connUnitPortName.16.0.0.96.105.144.109.136.0.0.0.0.0.0.0.0.29 = test
```

Refer to the swFCportSCN for more information.



# FCIP MIB Objects

---

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## 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 71](#) through [Figure 76](#) depict the high level organization of the FCIP MIB relevant to the supported tables. Refer to RFC4044 for a description of the entire MIB.

```

- 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 71** 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 72** 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 73** 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 74** 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
  fcipExtendedLinkTcpDroppedPackets 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 75 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
  xfcipExtendedLinkCompressedBytes 1.3.6.1.4.1.1588.4.2.1.9

```

FIGURE 76 fcipConnStatsTable hierarchy

## fcipEntityInstanceTable

The fcipEntityInstancetable has an entry for each configured IP interface. The fcipEntryId is used to index the FCIP Extended link table, along with the fcipLinkIndex from the FCIP Link Table (fcipLinkTable).

### fcipEntityInstanceEntry 1.3.6.1.2.1.224.1.1.4.1

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. An fcipEntityInstanceEntry contains the following elements:

- fcipEntityId 1.3.6.1.2.1.224.1.1.4.1.1
- fcipEntityName 1.3.6.1.2.1.224.1.1.4.1.2
- 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

## 9 fcipEntityId 1.3.6.1.2.1.224.1.1.4.1.1

- [fcipEntityStatus 1.3.6.1.2.1.224.1.1.4.1.8](#)

### fcipEntityId 1.3.6.1.2.1.224.1.1.4.1.1

The FCIP entity identifier.

### fcipEntityName 1.3.6.1.2.1.224.1.1.4.1.2

An administratively assigned name for the FCIP entity.

Example for Brocade 7500 or FR4-18i router blade:

- ipif 0 in FCIP GbE port 0/ge0

Example for Brocade 7800 Extension Switch or FX8-24 DCX Extension Blade:

- Circuit 0 in FCIP VE port 12

### fcipEntityAddressType 1.3.6.1.2.1.224.1.1.4.1.3

The type of Internet address by which the entity is reachable. Only address types IPv4 and IPv6 are supported.

### fcipEntityAddress 1.3.6.1.2.1.224.1.1.4.1.4

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

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

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

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

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.

## fcipLinkTable

This table contains information about FCIP links that exist on this 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

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.

An fcipLinkEntry comprises the following elements:

- [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](#)

## fcipLinkIndex 1.3.6.1.2.1.224.1.1.5.1.1

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

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

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**

The mode of the local end of the FCIP link.

### **fcipLinkLocalFcipEntityType 1.3.6.1.2.1.224.1.1.5.1.5**

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**

The Internet address for the local end of this FCIP Link. The format of this object is determined by the value of the fcipLinkLocalFcipEntityType object.

### **fcipLinkRemFcipEntityWWN 1.3.6.1.2.1.224.1.1.5.1.7**

The World Wide Name of the remote FC Fabric Entity.

### **fcipLinkRemFcipEntityId 1.3.6.1.2.1.224.1.1.5.1.8**

The identifier for the remote FCIP entity.

### **fcipLinkRemFcipEntityType 1.3.6.1.2.1.224.1.1.5.1.9**

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**

The Internet address for the remote end of this FCIP Link. The format of this object is determined by the value of the fcipLinkRemFcipEntityType object.

### **fcipLinkStatus 1.3.6.1.2.1.224.1.1.5.1.11**

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**

The value of sysUpTime when this entry was last created.

## fcipTcpConnTable

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.

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

### fcipTcpConnLocalPort 1.3.6.1.2.1.224.1.1.6.1.1

The local port number for this TCP connection. This object is not accessible.

### fcipTcpConnRemPort 1.3.6.1.2.1.224.1.1.6.1.2

The remote port number for this TCP connection. This object is not accessible.

### fcipTcpConnRWSIZE 1.3.6.1.2.1.224.1.1.6.1.3

The default maximum TCP Receiver Window size for this TCP connection.

### fcipTcpConnMSS 1.3.6.1.2.1.224.1.1.6.1.4

The TCP Maximum Segment Size (MSS) for this TCP connection.

## fcipExtendedLinkTable

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 fcip tunnel** commands. The table contains the following:

- [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](#)

### **fcipExtendedLinkIfIndex 1.3.6.1.4.1.1588.4.1.1.1**

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**

A counter containing the number of retransmitted segments for an FC data transfer over an FCIP tunnel.

### **fcipExtendedLinkTcpDropped Packets 1.3.6.1.4.1.1588.4.1.1.3**

A counter containing the number of packets lost for FC control traffic and data transfer over an FCIP tunnel.

### **fcipExtendedLinkCompressionRatio 1.3.6.1.4.1.1588.4.1.1.4**

The ratio between compressed bytes and raw bytes over an FCIP tunnel.

### **fcipExtendedLinkTcpSmoothedRTT 1.3.6.1.4.1.1588.4.1.1.5**

The round trip time (latency) in milliseconds for a transfer over an FCIP tunnel.

### **fcipExtendedLinkRawBytes 1.3.6.1.4.1.1588.4.1.1.6**

The total number of raw bytes sent or received.

### **fcipExtendedLinkCompressedBytes 1.3.6.1.4.1.1588.4.1.1.7**

The total number of compressed bytes received over an FCIP tunnel.

### **fcipExtendedLinkConnectedCount 1.3.6.1.4.1.1588.4.1.1.8**

The total number of TCP session connection.

### **fcipExtendedLinkRtxRtxTO 1.3.6.1.4.1.1588.4.1.1.9**

A counter containing retransmit packets due to timeout.

### **fcipExtendedLinkRtxDupAck 1.3.6.1.4.1.1588.4.1.1.10**

A counter containing retransmit packets due to duplicate acknowledgement.



**fcipExtendedLinkDupAck 1.3.6.1.4.1.1588.4.1.1.11**

A counter containing duplicate acknowledgement packets.

**fcipExtendedLinkRtt 1.3.6.1.4.1.1588.4.1.1.12**

The round trip time in milliseconds.

**fcipExtendedLinkOoo 1.3.6.1.4.1.1588.4.1.1.13**

A counter containing TCP out-of-order.

**fcipExtendedLinkSlowStarts 1.3.6.1.4.1.1588.4.1.1.14**

A counter containing slow starts.

**fcipConnStatsTable**

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:

```
portshow fcipcircuit -t/-q -perf
```

**xfcipEntityId 1.3.6.1.4.1.1588.4.2.1.1**

The FCIP entity identifier.

**xfcipLinkIfIndex 1.3.6.1.4.1.1588.4.2.1.2**

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**

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**

The number of segments retransmitted.

**9** xfcipExtendedLinkTcpDroppedPackets 1.3.6.1.4.1.1588.4.2.1.5

**xfcipExtendedLinkTcpDroppedPackets 1.3.6.1.4.1.1588.4.2.1.5**

The number of TCP packets dropped.

**xfcipExtendedLinkCompressionRatio 1.3.6.1.4.1.1588.4.2.1.6**

The compression ratio.

**xfcipExtendedLinkTcpSmoothedRTT 1.3.6.1.4.1.1588.4.2.1.7**

The round trip time (latency) in milliseconds.

**xfcipExtendedLinkRawBytes 1.3.6.1.4.1.1588.4.2.1.8**

The total number of raw bytes sent or received.

**xfcipExtendedLinkCompressedBytes 1.3.6.1.4.1.1588.4.2.1.9**

The total number of compressed bytes sent or received.

# 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 77](#) through [Figure 82](#) depict the high level organization of the iSCSI MIB relevant to the supported tables. Refer to RFC4544 for a description of the entire MIB.

```

- 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 77 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 78 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 79** 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 80** 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 81** 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 82 iscsiConnectionAttributesTable hierarchy

## iscsiInstanceAttributesTable

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

### iscsiInstanceAttributesEntry

An iscsiInstanceAttributesEntry comprises the following attributes:

- 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

**iscsiInstIndex 1.3.6.1.2.1.142.1.1.1.1.1**

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**

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**

The minimum version number of the iSCSI specification supported by this iSCSI instance. This value is hard coded to 0 in this release.

**iscsiInstVersionMax 1.3.6.1.2.1.142.1.1.1.1.4**

The maximum version number of the iSCSI specification supported by this iSCSI instance. This value is hard coded to 0 in this implementation.

**iscsiInstVendorID 1.3.6.1.2.1.142.1.1.1.1.5**

A UTF-8 string describing the manufacturer of the implementation of this instance. Not supported.

**iscsiInstVendorVersion 1.3.6.1.2.1.142.1.1.1.1.6**

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.

**iscsiInstPortalNumber 1.3.6.1.2.1.142.1.1.1.1.7**

The number of rows in the iscsiPortalAttributesTable that are currently associated with this iSCSI instance. It is hard coded to 0.

**iscsiInstNodeNumber 1.3.6.1.2.1.142.1.1.1.1.8**

The number of rows in the iscsiNodeAttributesTable that are currently associated with this iSCSI instance.

## 10 iscsiInstSessionNumber 1.3.6.1.2.1.142.1.1.1.1.9

### iscsiInstSessionNumber 1.3.6.1.2.1.142.1.1.1.1.9

The number of rows in the iscsiSessionAttributesTable that are currently associated with this iSCSI instance.

### iscsiInstSsnFailures 1.3.6.1.2.1.142.1.1.1.1.10

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.

Not supported.

### iscsiInstLastSsnFailureType 1.3.6.1.2.1.142.1.1.1.1.11

Reason for failure taken from the iscsiInstSsnErrorStatsTable. A value of 0.0 is used if the reason is not found in the table.

Not supported.

### iscsiInstLastSsnRmtNodeName 1.3.6.1.2.1.142.1.1.1.1.12

The iSCSI name of the remote node from the failed session.

Not supported.

### iscsiInstDiscontinuityTime 1.3.6.1.2.1.142.1.1.1.1.13

The value of SysUpTime at the most recent occurrence of a discontinuity in one or more counters used by this instance.

Not supported.

## iscsiNodeAttributesTable

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

### iscsiNodesAttributesEntry

An iscsiNodesAttributesEntry comprises the following attributes:

- [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](#)

### **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.

### **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.

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.

Not supported.

## 10 iscsiNodeInitialR2T 1.3.6.1.2.1.142.1.1.5.1.1.6

### **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.

Not supported.

### **iscsiNodeImmediateData 1.3.6.1.2.1.142.1.1.5.1.1.7**

An object that indicates the ImmediateData preference for this node. When implemented, true=YES, but will accept NO, false=NO.

Not supported.

### **iscsiNodeMaxOutstandingR2T 1.3.6.1.2.1.142.1.1.5.1.1.8**

The maximum number of outstanding requests to transmit (R2Ts) allowed per iSCSI task.

Not supported.

### **iscsiNodeFirstBurstLength 1.3.6.1.2.1.142.1.1.5.1.1.9**

The maximum length in bytes supported for unsolicited data to or from this node.

Not supported.

### **iscsiNodeMaxBurstLength 1.3.6.1.2.1.142.1.1.5.1.1.10**

The maximum number of bytes that can be sent within a single sequence of data-in or data-out PDUs.

Not supported.

### **iscsiNodeMaxConnections 1.3.6.1.2.1.142.1.1.5.1.1.11**

The maximum number of connections allowed in each session to or from this node.

Supported. Hard coded to 2.

### **iscsiNodeDataSequenceInOrder 1.3.6.1.2.1.142.1.1.5.1.1.12**

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.

Not supported.

### **iscsiNodeDataPDUIInOrder 1.3.6.1.2.1.142.1.1.5.1.1.13**

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.

Not supported.

### **iscsiNodeDefaultTime2Wait 1.3.6.1.2.1.142.1.1.5.1.1.14**

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.

Not supported.

### **iscsiNodeDefaultTime2Retain 1.3.6.1.2.1.142.1.1.5.1.1.15**

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.

Not supported.

### **iscsiNodeErrorRecoveryLevel 1.3.6.1.2.1.142.1.1.5.1.1.16**

The Error Recovery Level preference of this node.

Not supported.

### **iscsiNodeDiscontinuityTime 1.3.6.1.2.1.142.1.1.5.1.1.17**

The value of SysUpTime at the most recent occurrence of a discontinuity in one or more counters used by this node.

Not supported.

### **iscsiNodeStorageType 1.3.6.1.2.1.142.1.1.5.1.1.18**

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.

The value of this variable is read-only for this release.

## **iscsiSessionAttributesTable**

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.

## iscsiSessionsAttributesEntry

An iscsiSessionsAttributesEntry comprises the following attributes:

- [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](#)

### iscsiSsnNodeIndex 1.3.6.1.2.1.142.1.1.10.1.1.1

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

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

Indicates the direction of the iSCSI session.

inboundSession	The session is established from an external initiator to a target within the iSCSI instance.
outboundSession	The session is established from an initiator within this iSCSI instance to an external target.

For this release, the value of iSCSISsnDirection is always inboundSession.

### iscsiSsnInitiatorName 1.3.6.1.2.1.142.1.1.10.1.1.4

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

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

The target-defined handle for this session.

### iscsiSsnISID 1.3.6.1.2.1.142.1.1.10.1.1.7

The initiator-defined portion of the iSCSI session ID.

### iscsiSsnInitiatorAlias 1.3.6.1.2.1.142.1.1.10.1.1.8

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

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.

## 10 iscsiSsnInitialR2T 1.3.6.1.2.1.142.1.1.10.1.1.10

### **iscsiSsnInitialR2T 1.3.6.1.2.1.142.1.1.10.1.1.10**

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**

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**

Type of iSCSI session:

- normalSession - Session is a normal iSCSI session.
- discoverySession - Session is being used only for discovery.

### **iscsiSsnMaxOutstandingR2T 1.3.6.1.2.1.142.1.1.10.1.1.13**

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**

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**

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**

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**

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

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.

## iscsiSsnDataPDUIInOrder 1.3.6.1.2.1.142.1.1.10.1.1.19

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

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

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.

Not supported.

## iscsiSessionStatsTable

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

## iscsiSessionsStatsEntry

An iscsiSessionsStatsEntry comprises the following attributes:

- [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](#)

## iscsiSsnCmdPDUs 1.3.6.1.2.1.142.1.1.10.2.1.1

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

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

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

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

## iscsiLCTxDataOctets 1.3.6.1.2.1.142.1.1.10.2.1.5

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.

Not supported.

## iscsiLCRxDataOctets 1.3.6.1.2.1.142.1.1.10.2.1.6

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.

Not supported.

## iscsiConnectionAttributesTable

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

## iscsiConnectionAttributesEntry

An iscsiConnectionAttributesEntry comprises the following attributes:

- [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](#)

### iscsiCxnIndex 1.3.6.1.2.1.142.1.1.11.1.1.1

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

The iSCSI connection ID for this connection.

### iscsiCxnState 1.3.6.1.2.1.142.1.1.11.1.1.3

The current state of this connection, from an iSCSI negotiation point of view. Here are the states:

- 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.
- full - A valid iSCSI login response with the final bit set has been sent or received.
- logout - A valid iSCSI logout command has been sent or received, but the transport protocol connection has not yet been closed.

iscsiCxnState is hard coded to value "full"

### iscsiCxnAddrType 1.3.6.1.2.1.142.1.1.11.1.1.4

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

The local Internet Network Address, of the type specified by iscsiCxnAddrType, used by this connection.

## 10 iscsiCxnProtocol 1.3.6.1.2.1.142.1.1.11.1.1.6

### iscsiCxnProtocol 1.3.6.1.2.1.142.1.1.11.1.1.6

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

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

The remote Internet Network Address, of the type specified by iscsiCxnAddrType, used by this connection.

Only IPv4 addresses are supported.

### iscsiCxnRemotePort 1.3.6.1.2.1.142.1.1.11.1.1.9

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

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

The maximum data payload size supported for command or data PDUs able to be sent on this connection. The value is  $\min(\text{iscsiCxnMaxRecvDataSegLength}, \text{iscsiSsnMaxBurstLength})$

### iscsiCxnHeaderIntegrity 1.3.6.1.2.1.142.1.1.11.1.1.12

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

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

This object identifies whether or not this connection is receiving markers in its incoming data stream.

Hard coded to false.

**iscsiCxnSendMarker 1.3.6.1.2.1.142.1.1.11.1.1.15**

This object identifies whether or not this connection is inserting markers in its outgoing data stream.

Hard coded to false.

**iscsiCxnVersionActive 1.3.6.1.2.1.142.1.1.11.1.1.16**

Active version number of the SCSI specification negotiated on this connection.

Hard coded to 0.

**10** iscsiCxnVersionActive 1.3.6.1.2.1.142.1.1.11.1.1.16

# USM MIB Objects

---

## In this chapter

- [USM MIB objects overview](#) ..... 307
- [usmMIBObjects group](#)..... 308
- [usmStats](#) ..... 308
- [usmUser](#)..... 309

## 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 83](#) and [Figure 84](#) depict the organization and structure of the usmMIBObjects MIB.

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

**FIGURE 83** usmMIBObjects overall tree structure

## 11 usmMIBObjects group

```
- 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 84 usmMIBObjects hierarchy

## usmMIBObjects group

This section describes the MIB objects in the usmMIBObjects group.

### usmStats

#### usmStatsUnsupportedSecLevels 1.3.6.1.6.3.15.1.1.1

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

#### usmStatsNotInTimeWindows 1.3.6.1.6.3.15.1.1.2

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

#### usmStatsUnknownUserNames 1.3.6.1.6.3.15.1.1.3

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

### **usmStatsUnknownEngineIDs 1.3.6.1.6.3.15.1.1.4**

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

### **usmStatsWrongDigests 1.3.6.1.6.3.15.1.1.5**

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

### **usmStatsDecryptionErrors 1.3.6.1.6.3.15.1.1.6**

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

## **usmUser**

### **usmUserSpinLock 1.3.6.1.6.3.15.1.2.1**

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

### **usmUserTable 1.3.6.1.6.3.15.1.2.2**

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

### **usmUserEntry 1.3.6.1.6.3.15.1.2.2.1**

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

### **usmUserEngineID 1.3.6.1.6.3.15.1.2.2.1.1**

An SNMP engine's administratively-unique identifier.

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

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

### **usmUserName 1.3.6.1.6.3.15.1.2.2.1.2**

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

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

## **11** usmUserSecurityName 1.3.6.1.6.3.15.1.2.2.1.3

### **usmUserSecurityName 1.3.6.1.6.3.15.1.2.2.1.3**

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

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

### **usmUserCloneFrom 1.3.6.1.6.3.15.1.2.2.1.4**

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

### **usmUserAuthProtocol 1.3.6.1.6.3.15.1.2.2.1.5**

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

### **usmUserAuthKeyChange 1.3.6.1.6.3.15.1.2.2.1.6**

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

### **usmUserOwnAuthKeyChange 1.3.6.1.6.3.15.1.2.2.1.7**

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

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

### **usmUserPrivProtocol 1.3.6.1.6.3.15.1.2.2.1.8**

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

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

### **usmUserPrivKeyChange 1.3.6.1.6.3.15.1.2.2.1.9**

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



## **usmUserOwnPrivKeyChange 1.3.6.1.6.3.15.1.2.2.1.10**

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

## **usmUserPublic 1.3.6.1.6.3.15.1.2.2.1.11**

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

## **usmUserStorageType 1.3.6.1.6.3.15.1.2.2.1.12**

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

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

## **usmUserStatus 1.3.6.1.6.3.15.1.2.2.1.13**

The status of this conceptual row.

# 11 usmUserStatus 1.3.6.1.6.3.15.1.2.2.1.13

## BD MIB

## In this chapter

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- [BD MIB group](#)..... 314
- [bdTraps](#)..... 314
- [bdConfig](#)..... 315
- [bdStats](#)..... 316

## 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.

[Figure 85](#) through [Figure 88](#) depict the organization and structure of the BD MIB.

```

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

```

**FIGURE 85** 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 86** 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 87** 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 88** bdStats hierarchy

## BD MIB group

This MIB module is for the Brocade Bottleneck Detection feature.

### bdTraps

The OID represents the BD traps.

#### bdTrap 1.3.6.1.4.1.1588.2.1.1.51.0.1

**Variables** “userPortNumber 1.3.6.1.4.1.1588.2.1.1.51.2.2.1.1”  
 “bdWinAvgTime 1.3.6.1.4.1.1588.2.1.1.51.1.5”  
 “nBdType 1.3.6.1.4.1.1588.2.1.1.51.1.7”  
 “bdThreshold 1.3.6.1.4.1.1588.2.1.1.51.1.6”  
 “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”  
 “swVfid 1.3.6.1.4.1.1588.2.1.1.1.2.15”  
 “bdAvgFrameSize 1.3.6.1.4.1.1588.2.1.1.51.2.5”

This trap is sent for both latency bottleneck and congestion bottleneck with nBDType accordingly. This trap is triggered when the threshold is exceeded.

## bdClearTrap 1.3.6.1.4.1.1588.2.1.1.51.0.2

**Variables**

- “userPortNumber 1.3.6.1.4.1.1588.2.1.1.51.2.2.1.1”
- “bdWinAvgTime 1.3.6.1.4.1.1588.2.1.1.51.1.5”
- “nBdType 1.3.6.1.4.1.1588.2.1.1.51.1.7”
- “bdThreshold 1.3.6.1.4.1.1588.2.1.1.51.1.6”
- “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”
- “swVfid 1.3.6.1.4.1.1588.2.1.1.1.2.15”
- “bdAvgFrameSize 1.3.6.1.4.1.1588.2.1.1.51.2.5”

This trap is sent after a latency or congestion bottleneck is cleared.

## bdConfig

The OID represents the Bottleneck configuration.

## bdStatus 1.3.6.1.4.1.1588.2.1.1.51.1.1

This object represents the status of bottleneck detection feature if enabled in the switch.

**Values**

- true(1)
- false(2)

## bdLThreshold 1.3.6.1.4.1.1588.2.1.1.51.1.2

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

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

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

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

This object represents the threshold for BD.

**Max Access** accessible-for-notify

This is accessible only for bdTrap and bdClearTrap.

## nBdType 1.3.6.1.4.1.1588.2.1.1.51.1.7

This object represents the BD type.

**Max Access** accessible-for-notify

This is accessible only for bdTrap and bdClearTrap.

## bdStats

This OID represents the BD statistics.

## bdNumOfEntries 1.3.6.1.4.1.1588.2.1.1.51.2.1

The number of entries in the statistics table.

## bdStatsTable 1.3.6.1.4.1.1588.2.1.1.51.2.2

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

An entry of BD statistics.

**userPortNumber 1.3.6.1.4.1.1588.2.1.1.51.2.2.1.1**

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**

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**

This object represents the bottleneck type.

- Values**
- congestion (1)
  - latency (2)

**bdStatsValue10SecsSample 1.3.6.1.4.1.1588.2.1.1.51.2.2.1.4**

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**

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**

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**

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.

- Max Access** accessible-for-notify
- This is accessible only for bdTrap and bdClearTrap.

**bdAbsoluteValue 1.3.6.1.4.1.1588.2.1.1.51.2.4**

This is the absolute value of bdAggrStats. It is the number of affected seconds.

- Max Access** accessible-for-notify
- This is accessible only for bdTrap and bdClearTrap.

## 12 bdAvgFrameSize 1.3.6.1.4.1.1588.2.1.1.51.2.5

### bdAvgFrameSize 1.3.6.1.4.1.1588.2.1.1.51.2.5

This object represents the average size in bytes of all frames that were transmitted on the ports during the averaging window.

**Max Access** accessible-for-notify

This is accessible only for bdTrap and bdClearTrap.



# MIB Object Groupings

---

## In this appendix

- [Switch variables](#) ..... 319
- [Sensor variables](#) ..... 319
- [Port variables](#) ..... 319
- [Event variables](#) ..... 320
- [ISL and end device variables](#) ..... 320
- [SNMP configuration variables](#) ..... 320
- [iSCSI instance information variables](#) ..... 321

## Switch variables

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

- [connUnitTable 1.3.6.1.3.94.1.6](#) ..... 237
- [connUnitRevsTable 1.3.6.1.3.94.1.7](#) ..... 244
- [FIBRE-CHANNEL-FE-MIB organization](#) ..... 73
- [FCFABRIC-ELEMENT-MIB organization](#) ..... 96
- [Flash administration](#) ..... 164

## 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 1.3.6.1.3.94.1.8](#) ..... 245
- [swNumSensors 1.3.6.1.4.1.1588.2.1.1.1.1.21](#) ..... 165

## Port variables

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

### Variables for state and status

- [ConnSet group](#) ..... 236

- fcFxPortTable 1.3.6.1.2.1.75.1.1.5 ..... 82
- Fx\_Port Configuration Table ..... 104
- fcFxPortStatusTable 1.3.6.1.2.1.75.1.2.1 ..... 84
- Fx\_Port Physical Level Table ..... 85
- fcFxPortCapTable 1.3.6.1.2.1.75.1.5.1 ..... 94
- Fibre Channel Port group ..... 174

### Variables for statistics and measurement

- Statistics group ..... 262
- fcFxPortErrorTable 1.3.6.1.2.1.75.1.3.1 ..... 88
- fcFxPortC2AccountingTable 1.3.6.1.2.1.75.1.4.2 ..... 92
- fcFeCapabilities group ..... 93

## Event variables

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

- connUnitEventTable 1.3.6.1.3.94.1.11 ..... 256
- Event group ..... 183

## 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 1.3.6.1.3.94.1.12 ..... 259
- swFabric group ..... 170

### End Device variables

- connUnitLinkTable 1.3.6.1.3.94.1.12 ..... 259
- fcFxloginTable 1.3.6.1.2.1.75.1.2.3 ..... 86
- swFCPortName 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.36 ..... 180

## SNMP configuration variables

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

- trapRegTable 1.3.6.1.3.94.2.3 ..... 274
- SW Agent Configuration group ..... 173

## iSCSI instance information variables

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

- [iscsiInstanceAttributesTable](#) . . . . . 292
- [iscsiNodeAttributesTable](#) . . . . . 294
- [iscsiSessionStatsTable](#) . . . . . 301

## A iSCSI instance information variables

# MIB OIDs and their Matching Object Names

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This appendix provides a listing of the MIB object names and the corresponding MIB Object ID (OID) associated with each.

## MIB OIDs

Table 26 allows you to identify a MIB object name according to its related OID.

**TABLE 26** MIB object name/OID matrix

MIB object name	OID	Page no.
iso	1	<a href="#">page 22</a>
org	1.3	<a href="#">page 22</a>
dod	1.3.6	<a href="#">page 22</a>
internet	1.3.6.1	<a href="#">page 22</a>
directory	1.3.6.1.1	<a href="#">page 22</a>
mgmt	1.3.6.1.2	<a href="#">page 22</a>
mib-2	1.3.6.1.2.1	<a href="#">page 22</a>
system	1.3.6.1.2.1.1	<a href="#">page 22</a>
sysDescr	1.3.6.1.2.1.1.1	<a href="#">page 30</a>
sysObjectID	1.3.6.1.2.1.1.2	<a href="#">page 30</a>
sysUpTime	1.3.6.1.2.1.1.3	<a href="#">page 30</a>
sysContact	1.3.6.1.2.1.1.4	<a href="#">page 30</a>
sysName	1.3.6.1.2.1.1.5	<a href="#">page 31</a>
sysLocation	1.3.6.1.2.1.1.6	<a href="#">page 31</a>
sysServices	1.3.6.1.2.1.1.7	<a href="#">page 31</a>
interfaces	1.3.6.1.2.1.2	<a href="#">page 22</a>
ifNumber	1.3.6.1.2.1.2.1	<a href="#">page 32</a>
ifTable	1.3.6.1.2.1.2.2	<a href="#">page 32</a>
ifEntry	1.3.6.1.2.1.2.2.1	<a href="#">page 32</a>
ifIndex	1.3.6.1.2.1.2.2.1.1	<a href="#">page 32</a>
ifDescr	1.3.6.1.2.1.2.2.1.2	<a href="#">page 32</a>
ifType	1.3.6.1.2.1.2.2.1.3	<a href="#">page 33</a>
ifMtu	1.3.6.1.2.1.2.2.1.4	<a href="#">page 33</a>
ifSpeed	1.3.6.1.2.1.2.2.1.5	<a href="#">page 33</a>

**TABLE 26** MIB object name/OID matrix (Continued)

MIB object name	OID	Page no.
ifPhysAddress	1.3.6.1.2.1.2.2.1.6	<a href="#">page 34</a>
ifAdminStatus	1.3.6.1.2.1.2.2.1.7	<a href="#">page 34</a>
ifOperStatus	1.3.6.1.2.1.2.2.1.8	<a href="#">page 34</a>
ifLastChange	1.3.6.1.2.1.2.2.1.9	<a href="#">page 35</a>
ifInOctets	1.3.6.1.2.1.2.2.1.10	<a href="#">page 35</a>
ifInUcastPkts	1.3.6.1.2.1.2.2.1.11	<a href="#">page 35</a>
ifInNUcastPkts	1.3.6.1.2.1.2.2.1.12	<a href="#">page 35</a>
ifInDiscards	1.3.6.1.2.1.2.2.1.13	<a href="#">page 35</a>
ifInErrors	1.3.6.1.2.1.2.2.1.14	<a href="#">page 35</a>
ifInUnknownProtos	1.3.6.1.2.1.2.2.1.15	<a href="#">page 35</a>
ifOutOctets	1.3.6.1.2.1.2.2.1.16	<a href="#">page 35</a>
ifOutUcastPkts	1.3.6.1.2.1.2.2.1.17	<a href="#">page 36</a>
ifOutNUcastPkts	1.3.6.1.2.1.2.2.1.18	<a href="#">page 36</a>
ifOutDiscards	1.3.6.1.2.1.2.2.1.19	<a href="#">page 36</a>
ifOutErrors	1.3.6.1.2.1.2.2.1.20	<a href="#">page 36</a>
ifOutQLen	1.3.6.1.2.1.2.2.1.21	<a href="#">page 36</a>
ifSpecific	1.3.6.1.2.1.2.2.1.22	<a href="#">page 36</a>
at	1.3.6.1.2.1.3	<a href="#">page 22</a>
atTable	1.3.6.1.2.1.3.1	<a href="#">page 37</a>
atEntry	1.3.6.1.2.1.3.1.1	<a href="#">page 37</a>
atIfIndex	1.3.6.1.2.1.3.1.1.1	<a href="#">page 37</a>
atPhysAddress	1.3.6.1.2.1.3.1.1.2	<a href="#">page 37</a>
atNetAddress	1.3.6.1.2.1.3.1.1.3	<a href="#">page 37</a>
ip	1.3.6.1.2.1.4	<a href="#">page 22</a>
ipForwarding	1.3.6.1.2.1.4.1	<a href="#">page 37</a>
ipDefaultTTL	1.3.6.1.2.1.4.2	<a href="#">page 38</a>
ipInReceives	1.3.6.1.2.1.4.3	<a href="#">page 38</a>
ipInHdrErrors	1.3.6.1.2.1.4.4	<a href="#">page 38</a>
ipInAddrErrors	1.3.6.1.2.1.4.5	<a href="#">page 38</a>
ipForwDatagrams	1.3.6.1.2.1.4.6	<a href="#">page 38</a>
ipInUnknownProtos	1.3.6.1.2.1.4.7	<a href="#">page 38</a>
ipInDiscards	1.3.6.1.2.1.4.8	<a href="#">page 38</a>
ipInDelivers	1.3.6.1.2.1.4.9	<a href="#">page 38</a>
ipOutRequests	1.3.6.1.2.1.4.10	<a href="#">page 39</a>
ipOutDiscards	1.3.6.1.2.1.4.11	<a href="#">page 39</a>
ipOutNoRoutes	1.3.6.1.2.1.4.12	<a href="#">page 39</a>

**TABLE 26** MIB object name/OID matrix (Continued)

MIB object name	OID	Page no.
ipReasmTimeout	1.3.6.1.2.1.4.13	<a href="#">page 39</a>
ipReasmReqds	1.3.6.1.2.1.4.14	<a href="#">page 39</a>
ipReasmOKs	1.3.6.1.2.1.4.15	<a href="#">page 39</a>
ipReasmFails	1.3.6.1.2.1.4.16	<a href="#">page 39</a>
ipFragOKs	1.3.6.1.2.1.4.17	<a href="#">page 40</a>
ipFragFails	1.3.6.1.2.1.4.18	<a href="#">page 40</a>
ipFragCreates	1.3.6.1.2.1.4.19	<a href="#">page 40</a>
ipAddrTable	1.3.6.1.2.1.4.20	<a href="#">page 40</a>
ipAddrEntry	1.3.6.1.2.1.4.20.1	<a href="#">page 40</a>
ipAdEntAddr	1.3.6.1.2.1.4.20.1.1	<a href="#">page 40</a>
ipAdEntIfIndex	1.3.6.1.2.1.4.20.1.2	<a href="#">page 40</a>
ipAdEntNetMask	1.3.6.1.2.1.4.20.1.3	<a href="#">page 40</a>
ipAdEntBcastAddr	1.3.6.1.2.1.4.20.1.4	<a href="#">page 41</a>
ipAdEntReasmMaxSize	1.3.6.1.2.1.4.20.1.5	<a href="#">page 41</a>
ipRouteTable	1.3.6.1.2.1.4.21	<a href="#">page 41</a>
ipRouteEntry	1.3.6.1.2.1.4.21.1	<a href="#">page 41</a>
ipRouteDest	1.3.6.1.2.1.4.21.1.1	<a href="#">page 41</a>
ipRouteIfIndex	1.3.6.1.2.1.4.21.1.2	<a href="#">page 41</a>
ipRouteMetric1	1.3.6.1.2.1.4.21.1.3	<a href="#">page 41</a>
ipRouteMetric2	1.3.6.1.2.1.4.21.1.4	<a href="#">page 42</a>
ipRouteMetric3	1.3.6.1.2.1.4.21.1.5	<a href="#">page 42</a>
ipRouteMetric4	1.3.6.1.2.1.4.21.1.6	<a href="#">page 42</a>
ipRouteNextHop	1.3.6.1.2.1.4.21.1.7	<a href="#">page 42</a>
ipRouteType	1.3.6.1.2.1.4.21.1.8	<a href="#">page 42</a>
ipRouteProto	1.3.6.1.2.1.4.21.1.9	<a href="#">page 42</a>
ipRouteAge	1.3.6.1.2.1.4.21.1.10	<a href="#">page 43</a>
ipRouteMask	1.3.6.1.2.1.4.21.1.11	<a href="#">page 43</a>
ipRouteMetric5	1.3.6.1.2.1.4.21.1.12	<a href="#">page 43</a>
ipRouteInfo	1.3.6.1.2.1.4.21.1.13	<a href="#">page 43</a>
ipNetToMediaTable	1.3.6.1.2.1.4.22	<a href="#">page 43</a>
ipNetToMediaEntry	1.3.6.1.2.1.4.22.1	<a href="#">page 44</a>
ipNetToMediaIfIndex	1.3.6.1.2.1.4.22.1.1	<a href="#">page 44</a>
ipNetToMediaPhysAddress	1.3.6.1.2.1.4.22.1.2	<a href="#">page 44</a>
ipNetToMediaNetAddress	1.3.6.1.2.1.4.22.1.3	<a href="#">page 44</a>
ipNetToMediaType	1.3.6.1.2.1.4.22.1.4	<a href="#">page 44</a>
ipRoutingDiscards	1.3.6.1.2.1.4.23	<a href="#">page 44</a>

**TABLE 26** MIB object name/OID matrix (Continued)

MIB object name	OID	Page no.
icmp	1.3.6.1.2.1.5	<a href="#">page 22</a>
icmpInMsgs	1.3.6.1.2.1.5.1	<a href="#">page 45</a>
icmpInErrors	1.3.6.1.2.1.5.2	<a href="#">page 45</a>
icmpInDestUnreachs	1.3.6.1.2.1.5.3	<a href="#">page 45</a>
icmpInTimeExcds	1.3.6.1.2.1.5.4	<a href="#">page 45</a>
icmpInParmProbs	1.3.6.1.2.1.5.5	<a href="#">page 45</a>
icmpInSrcQuenchs	1.3.6.1.2.1.5.6	<a href="#">page 45</a>
icmpInRedirects	1.3.6.1.2.1.5.7	<a href="#">page 45</a>
icmpInEchos	1.3.6.1.2.1.5.8	<a href="#">page 45</a>
icmpInEchoReps	1.3.6.1.2.1.5.9	<a href="#">page 45</a>
icmpInTimestamps	1.3.6.1.2.1.5.10	<a href="#">page 45</a>
icmpInTimestampReps	1.3.6.1.2.1.5.11	<a href="#">page 46</a>
icmpInAddrMasks	1.3.6.1.2.1.5.12	<a href="#">page 46</a>
icmpInAddrMaskReps	1.3.6.1.2.1.5.13	<a href="#">page 46</a>
icmpOutMsgs	1.3.6.1.2.1.5.14	<a href="#">page 46</a>
icmpOutErrors	1.3.6.1.2.1.5.15	<a href="#">page 46</a>
icmpOutDestUnreachs	1.3.6.1.2.1.5.16	<a href="#">page 46</a>
icmpOutTimeExcds	1.3.6.1.2.1.5.17	<a href="#">page 46</a>
icmpOutParmProbs	1.3.6.1.2.1.5.18	<a href="#">page 46</a>
icmpOutSrcQuenchs	1.3.6.1.2.1.5.19	<a href="#">page 46</a>
icmpOutRedirects	1.3.6.1.2.1.5.20	<a href="#">page 47</a>
icmpOutEchos	1.3.6.1.2.1.5.21	<a href="#">page 47</a>
icmpOutEchoReps	1.3.6.1.2.1.5.22	<a href="#">page 47</a>
icmpOutTimestamps	1.3.6.1.2.1.5.23	<a href="#">page 47</a>
icmpOutTimestampReps	1.3.6.1.2.1.5.24	<a href="#">page 47</a>
icmpOutAddrMasks	1.3.6.1.2.1.5.25	<a href="#">page 47</a>
icmpOutAddrMaskReps	1.3.6.1.2.1.5.26	<a href="#">page 47</a>
tcp	1.3.6.1.2.1.6	<a href="#">page 22</a>
tcpRtoAlgorithm	1.3.6.1.2.1.6.1	<a href="#">page 47</a>
tcpRtoMin	1.3.6.1.2.1.6.2	<a href="#">page 48</a>
tcpRtoMax	1.3.6.1.2.1.6.3	<a href="#">page 48</a>
tcpMaxConn	1.3.6.1.2.1.6.4	<a href="#">page 48</a>
tcpActiveOpens	1.3.6.1.2.1.6.5	<a href="#">page 48</a>
tcpPassiveOpens	1.3.6.1.2.1.6.6	<a href="#">page 48</a>
tcpAttemptFails	1.3.6.1.2.1.6.7	<a href="#">page 48</a>
tcpEstabResets	1.3.6.1.2.1.6.8	<a href="#">page 48</a>



**TABLE 26 MIB object name/OID matrix (Continued)**

MIB object name	OID	Page no.
tcpCurrEstab	1.3.6.1.2.1.6.9	<a href="#">page 49</a>
tcpInSegs	1.3.6.1.2.1.6.10	<a href="#">page 49</a>
tcpOutSegs	1.3.6.1.2.1.6.11	<a href="#">page 49</a>
tcpRetransSegs	1.3.6.1.2.1.6.12	<a href="#">page 49</a>
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tcpConnState	1.3.6.1.2.1.6.13.1.1	<a href="#">page 49</a>
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tcpConnLocalPort	1.3.6.1.2.1.6.13.1.3	<a href="#">page 50</a>
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udp	1.3.6.1.2.1.7	<a href="#">page 22</a>
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udpOutDatagrams	1.3.6.1.2.1.7.4	<a href="#">page 51</a>
udpTable	1.3.6.1.2.1.7.5	<a href="#">page 51</a>
udpEntry	1.3.6.1.2.1.7.5.1	<a href="#">page 51</a>
udpLocalAddress	1.3.6.1.2.1.7.5.1.1	<a href="#">page 51</a>
udpLocalPort	1.3.6.1.2.1.7.5.1.2	<a href="#">page 52</a>
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transmission	1.3.6.1.2.1.10	<a href="#">page 22</a>
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snmpInGetRequests	1.3.6.1.2.1.11.15	<a href="#">page 54</a>
snmpInGetNexts	1.3.6.1.2.1.11.16	<a href="#">page 54</a>
snmpInSetRequests	1.3.6.1.2.1.11.17	<a href="#">page 54</a>
snmpInGetResponses	1.3.6.1.2.1.11.18	<a href="#">page 54</a>
snmpInTraps	1.3.6.1.2.1.11.19	<a href="#">page 54</a>
snmpOutTooBig	1.3.6.1.2.1.11.20	<a href="#">page 54</a>
snmpOutNoSuchNames	1.3.6.1.2.1.11.21	<a href="#">page 54</a>
snmpOutBadValues	1.3.6.1.2.1.11.22	<a href="#">page 55</a>
snmpOutGenErrs	1.3.6.1.2.1.11.24	<a href="#">page 55</a>
snmpOutGetRequests	1.3.6.1.2.1.11.25	<a href="#">page 55</a>
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snmpOutSetRequests	1.3.6.1.2.1.11.27	<a href="#">page 55</a>
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etherStatsDataSource	1.3.6.1.2.1.16.1.1.1.2	<a href="#">page 57</a>
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etherStatsOctets	1.3.6.1.2.1.16.1.1.1.4	<a href="#">page 57</a>
etherStatsPkts	1.3.6.1.2.1.16.1.1.1.5	<a href="#">page 57</a>
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etherStatsCRCAlignErrors	1.3.6.1.2.1.16.1.1.1.8	<a href="#">page 58</a>
etherStatsUndersizePkts	1.3.6.1.2.1.16.1.1.1.9	<a href="#">page 58</a>
etherStatsOversizePkts	1.3.6.1.2.1.16.1.1.1.10	<a href="#">page 58</a>
etherStatsFragments	1.3.6.1.2.1.16.1.1.1.11	<a href="#">page 58</a>
etherStatsJabbers	1.3.6.1.2.1.16.1.1.1.12	<a href="#">page 58</a>
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etherStatsPkts65to127Octets	1.3.6.1.2.1.16.1.1.1.15	<a href="#">page 59</a>
etherStatsPkts128to255Octets	1.3.6.1.2.1.16.1.1.1.16	<a href="#">page 59</a>
etherStatsPkts256to511Octets	1.3.6.1.2.1.16.1.1.1.17	<a href="#">page 59</a>
etherStatsPkts512to1023Octets	1.3.6.1.2.1.16.1.1.1.18	<a href="#">page 59</a>
etherStatsPkts1024to1518Octets	1.3.6.1.2.1.16.1.1.1.19	<a href="#">page 59</a>
etherStatsOwner	1.3.6.1.2.1.16.1.1.1.20	<a href="#">page 59</a>
etherStatsStatus	1.3.6.1.2.1.16.1.1.1.21	<a href="#">page 59</a>
alarm	1.3.6.1.2.1.16.3	<a href="#">page 59</a>
alarmTable	1.3.6.1.2.1.16.3.1	<a href="#">page 59</a>
alarmEntry	1.3.6.1.2.1.16.3.1.1	<a href="#">page 60</a>
alarmIndex	1.3.6.1.2.1.16.3.1.1.1	<a href="#">page 60</a>
alarmInterval	1.3.6.1.2.1.16.3.1.1.2	<a href="#">page 60</a>
alarmVariable	1.3.6.1.2.1.16.3.1.1.3	<a href="#">page 60</a>
alarmSampleType	1.3.6.1.2.1.16.3.1.1.4	<a href="#">page 60</a>
alarmValue	1.3.6.1.2.1.16.3.1.1.5	<a href="#">page 60</a>
alarmStartupAlarm	1.3.6.1.2.1.16.3.1.1.6	<a href="#">page 60</a>
alarmRisingThreshold	1.3.6.1.2.1.16.3.1.1.7	<a href="#">page 60</a>
alarmFallingThreshold	1.3.6.1.2.1.16.3.1.1.8	<a href="#">page 61</a>
alarmRisingEventIndex	1.3.6.1.2.1.16.3.1.1.9	<a href="#">page 61</a>
alarmFallingEventIndex	1.3.6.1.2.1.16.3.1.1.10	<a href="#">page 61</a>
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eventCommunity	1.3.6.1.2.1.16.9.1.1.4	<a href="#">page 62</a>
eventLastTimeSent	1.3.6.1.2.1.16.9.1.1.5	<a href="#">page 62</a>
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logTable	1.3.6.1.2.1.16.9.2	<a href="#">page 62</a>
logEntry	1.3.6.1.2.1.16.9.2.1	<a href="#">page 62</a>
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logTime	1.3.6.1.2.1.16.9.2.1.3	<a href="#">page 63</a>
logDescription	1.3.6.1.2.1.16.9.2.1.4	<a href="#">page 63</a>
ifMIB	1.3.6.1.2.1.31	<a href="#">page 22</a>
ifXTable	1.3.6.1.2.1.31.1.1	<a href="#">page 63</a>
ifXentry	1.3.6.1.2.1.31.1.1.1	<a href="#">page 63</a>
ifName	1.3.6.1.2.1.31.1.1.1.1	<a href="#">page 63</a>
ifInMulticastPkts	1.3.6.1.2.1.31.1.1.1.2	<a href="#">page 64</a>
ifInBroadcastPkts	1.3.6.1.2.1.31.1.1.1.3	<a href="#">page 64</a>
ifOutMulticastPkts	1.3.6.1.2.1.31.1.1.1.4	<a href="#">page 64</a>
ifOutBroadcastPkts	1.3.6.1.2.1.31.1.1.1.5	<a href="#">page 64</a>
ifHCInOctets	1.3.6.1.2.1.31.1.1.1.6	<a href="#">page 64</a>
ifHCInUcastPkts	1.3.6.1.2.1.31.1.1.1.7	<a href="#">page 65</a>
ifHCInMulticastPkts	1.3.6.1.2.1.31.1.1.1.8	<a href="#">page 65</a>
ifHCInBroadcastPkts	1.3.6.1.2.1.31.1.1.1.9	<a href="#">page 65</a>
ifHCOctets	1.3.6.1.2.1.31.1.1.1.10	<a href="#">page 65</a>
ifHCOUcastPkts	1.3.6.1.2.1.31.1.1.1.11	<a href="#">page 65</a>
ifHCOmulticastPkts	1.3.6.1.2.1.31.1.1.1.12	<a href="#">page 66</a>
ifHCObroadcastPkts	1.3.6.1.2.1.31.1.1.1.13	<a href="#">page 66</a>
ifLinkUpDownTrapEnable	1.3.6.1.2.1.31.1.1.1.14	<a href="#">page 66</a>
ifHighSpeed	1.3.6.1.2.1.31.1.1.1.15	<a href="#">page 66</a>
ifPromiscuousMode	1.3.6.1.2.1.31.1.1.1.16	<a href="#">page 66</a>
ifConnectorPresent	1.3.6.1.2.1.31.1.1.1.17	<a href="#">page 66</a>
ifAlias	1.3.6.1.2.1.31.1.1.1.18	<a href="#">page 67</a>
ifCounterDiscontinuityTime	1.3.6.1.2.1.31.1.1.1.17	<a href="#">page 67</a>
entityMIB	1.3.6.1.2.1.47	<a href="#">page 118</a>
entityMIBObjects	1.3.6.1.2.1.47.1	<a href="#">page 118</a>
entityPhysical	1.3.6.1.2.1.47.1.1	<a href="#">page 118</a>
entPhysicalTable	1.3.6.1.2.1.47.1.1.1	<a href="#">page 122</a>
entPhysicalEntry	1.3.6.1.2.1.47.1.1.1.1	<a href="#">page 123</a>
entPhysicalIndex	1.3.6.1.2.1.47.1.1.1.1.1	<a href="#">page 124</a>
entPhysicalDescr	1.3.6.1.2.1.47.1.1.1.1.2	<a href="#">page 124</a>
entPhysicalVendorType	1.3.6.1.2.1.47.1.1.1.1.3	<a href="#">page 124</a>
entPhysicalContainedIn	1.3.6.1.2.1.47.1.1.1.1.4	<a href="#">page 124</a>
entPhysicalClass	1.3.6.1.2.1.47.1.1.1.1.5	<a href="#">page 124</a>
entPhysicalParentRelPos	1.3.6.1.2.1.47.1.1.1.1.6	<a href="#">page 126</a>

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entPhysicalHardwareRev	1.3.6.1.2.1.47.1.1.1.1.8	<a href="#">page 127</a>
entPhysicalFirmwareRev	1.3.6.1.2.1.47.1.1.1.1.9	<a href="#">page 127</a>
entPhysicalSoftwareRev	1.3.6.1.2.1.47.1.1.1.1.10	<a href="#">page 128</a>
entPhysicalSerialNum	1.3.6.1.2.1.47.1.1.1.1.11	<a href="#">page 128</a>
entPhysicalMfgName	1.3.6.1.2.1.47.1.1.1.1.12	<a href="#">page 128</a>
entPhysicalModelName	1.3.6.1.2.1.47.1.1.1.1.13	<a href="#">page 129</a>
entPhysicalAlias	1.3.6.1.2.1.47.1.1.1.1.14	<a href="#">page 129</a>
entPhysicalAssetID 1.3.6.1.2.1.47.1.1.1.1.15	1.3.6.1.2.1.47.1.1.1.1.15	<a href="#">page 129</a>
entPhysicalsFRU	1.3.6.1.2.1.47.1.1.1.1.16	<a href="#">page 130</a>
entityLogical	1.3.6.1.2.1.47.1.2	<a href="#">page 118</a>
entLogicalTable	1.3.6.1.2.1.47.1.2.1	<a href="#">page 130</a>
entLogicalEntry	1.3.6.1.2.1.47.1.2.1.1	<a href="#">page 130</a>
entLogicalIndex	1.3.6.1.2.1.47.1.2.1.1.1	<a href="#">page 130</a>
entLogicalDescr	1.3.6.1.2.1.47.1.2.1.1.2	<a href="#">page 130</a>
entLogicalType	1.3.6.1.2.1.47.1.2.1.1.3	<a href="#">page 131</a>
entLogicalCommunity	1.3.6.1.2.1.47.1.2.1.1.4	<a href="#">page 131</a>
entLogicalIPAddress	1.3.6.1.2.1.47.1.2.1.1.5	<a href="#">page 131</a>
entLogicalITDomain	1.3.6.1.2.1.47.1.2.1.1.6	<a href="#">page 132</a>
entLogicalContextEngineID	1.3.6.1.2.1.47.1.2.1.1.7	<a href="#">page 132</a>
entLogicalContextName	1.3.6.1.2.1.47.1.2.1.1.8	<a href="#">page 132</a>
entityMapping	1.3.6.1.2.1.47.1.3	<a href="#">page 118</a>
entLPMappingTable	1.3.6.1.2.1.47.1.3.1	<a href="#">page 132</a>
entLPMappingEntry	1.3.6.1.2.1.47.1.3.1.1	<a href="#">page 133</a>
entLPPhysicalIndex	1.3.6.1.2.1.47.1.3.1.1.1	<a href="#">page 133</a>
entAliasMappingTable	1.3.6.1.2.1.47.1.3.2	<a href="#">page 133</a>
entAliasMappingEntry	1.3.6.1.2.1.47.1.3.2.1	<a href="#">page 133</a>
entAliasLogicalIndexOrZero	1.3.6.1.2.1.47.1.3.2.1.1	<a href="#">page 134</a>
entAliasMappingIdentifier	1.3.6.1.2.1.47.1.3.2.1.2	<a href="#">page 134</a>
entPhysicalContainsTable	1.3.6.1.2.1.47.1.3.3	<a href="#">page 135</a>
entPhysicalContainsEntry	1.3.6.1.2.1.47.1.3.3.1	<a href="#">page 135</a>
entPhysicalChildIndex	1.3.6.1.2.1.47.1.3.3.1.1	<a href="#">page 135</a>
entLastChangeTime	1.3.6.1.2.1.47.1.4.1	<a href="#">page 135</a>
entityGeneral	1.3.6.1.2.1.47.1.4	<a href="#">page 118</a>
entityMIBTraps	1.3.6.1.2.1.47.2	<a href="#">page 118</a>

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entConfigChange	1.3.6.1.2.1.47.2.0.1	<a href="#">page 136</a>
entityConformance	1.3.6.1.2.1.47.3	<a href="#">page 118</a>
entityCompliances	1.3.6.1.2.1.47.3.1	<a href="#">page 118</a>
entityCompliance	1.3.6.1.2.1.47.3.1.1	<a href="#">page 136</a>
entity2Compliance	1.3.6.1.2.1.47.3.1.2	<a href="#">page 136</a>
entityGroups	1.3.6.1.2.1.47.3.2	<a href="#">page 118</a>
entityPhysicalGroup	1.3.6.1.2.1.47.3.2.1	<a href="#">page 137</a>
entityLogicalGroup	1.3.6.1.2.1.47.3.2.2	<a href="#">page 137</a>
entityMappingGroup	1.3.6.1.2.1.47.3.2.3	<a href="#">page 138</a>
entityGeneralGroup	1.3.6.1.2.1.47.3.2.4	<a href="#">page 138</a>
entityNotificationsGroup	1.3.6.1.2.1.47.3.2.5	<a href="#">page 138</a>
entityPhysical2Group	1.3.6.1.2.1.47.3.2.6	<a href="#">page 138</a>
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fcFeMIB	1.3.6.1.2.1.75	<a href="#">page 73</a>
fcFeMIBObjects	1.3.6.1.2.1.75.1	<a href="#">page 73</a>
fcFeConfig	1.3.6.1.2.1.75.1.1	<a href="#">page 73</a>
fcFeFabricName	1.3.6.1.2.1.75.1.1.1	<a href="#">page 79</a>
fcFeElementName	1.3.6.1.2.1.75.1.1.2	<a href="#">page 79</a>
fcFeModuleCapacity	1.3.6.1.2.1.75.1.1.3	<a href="#">page 80</a>
fcFeModuleTable	1.3.6.1.2.1.75.1.1.4	<a href="#">page 80</a>
fcFeModuleEntry	1.3.6.1.2.1.75.1.1.4.1	<a href="#">page 80</a>
fcFeModuleIndex	1.3.6.1.2.1.75.1.1.4.1.1	<a href="#">page 80</a>
fcFeModuleDescr	1.3.6.1.2.1.75.1.1.4.1.2	<a href="#">page 80</a>
fcFeModuleObjectID	1.3.6.1.2.1.75.1.1.4.1.3	<a href="#">page 80</a>
fcFeModuleOperStatus	1.3.6.1.2.1.75.1.1.4.1.4	<a href="#">page 80</a>
fcFeModuleLastChange	1.3.6.1.2.1.75.1.1.4.1.5	<a href="#">page 81</a>
fcFeModuleFxpPortCapacity	1.3.6.1.2.1.75.1.1.4.1.6	<a href="#">page 81</a>
fcFeModuleName	1.3.6.1.2.1.75.1.1.4.1.7	<a href="#">page 81</a>
fcFxpPortTable	1.3.6.1.2.1.75.1.1.5	<a href="#">page 82</a>
fcFxpPortEntry	1.3.6.1.2.1.75.1.1.5.1	<a href="#">page 82</a>
fcFxpPortIndex	1.3.6.1.2.1.75.1.1.5.1.1	<a href="#">page 82</a>
fcFxpPortName	1.3.6.1.2.1.75.1.1.5.1.2	<a href="#">page 82</a>
fcFxpPortFcphVersionHigh	1.3.6.1.2.1.75.1.1.5.1.3	<a href="#">page 82</a>
fcFxpPortFcphVersionLow	1.3.6.1.2.1.75.1.1.5.1.4	<a href="#">page 82</a>
fcFxpPortBbCredit	1.3.6.1.2.1.75.1.1.5.1.5	<a href="#">page 82</a>

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swEndDevicePort	1.3.6.1.4.1.1588.2.1.1.1.21.1.1.1	<a href="#">page 195</a>
swEndDeviceAlpa	1.3.6.1.4.1.1588.2.1.1.1.21.1.1.2	<a href="#">page 195</a>
swEndDevicePortID	1.3.6.1.4.1.1588.2.1.1.1.21.1.1.3	<a href="#">page 195</a>
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swBlmPerfAlpaPort	1.3.6.1.4.1.1588.2.1.1.1.23.1.1.1	<a href="#">page 197</a>
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swBlmPerfAlpaCRCCnt	1.3.6.1.4.1.1588.2.1.1.1.23.1.1.4	<a href="#">page 198</a>
swBlmPerfEEMntTable	1.3.6.1.4.1.1588.2.1.1.1.23.2	<a href="#">page 198</a>
swBlmPerfEEMntEntry	1.3.6.1.4.1.1588.2.1.1.1.23.2.1	<a href="#">page 198</a>
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swBlmPerfEEERC	1.3.6.1.4.1.1588.2.1.1.1.23.2.1.3	<a href="#">page 198</a>
swBlmPerfEEFCWRx	1.3.6.1.4.1.1588.2.1.1.1.23.2.1.4	<a href="#">page 198</a>
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swBlmPerfEESid	1.3.6.1.4.1.1588.2.1.1.1.23.2.1.6	<a href="#">page 199</a>
swBlmPerfEEDid	1.3.6.1.4.1.1588.2.1.1.1.23.2.1.7	<a href="#">page 199</a>
swBlmPerfFitMntTable	1.3.6.1.4.1.1588.2.1.1.1.23.3	<a href="#">page 199</a>
swBlmPerfFitMntEntry	1.3.6.1.4.1.1588.2.1.1.1.23.3.1	<a href="#">page 199</a>
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swBlmPerfFitRefkey	1.3.6.1.4.1.1588.2.1.1.1.23.3.1.2	<a href="#">page 199</a>
swBlmPerfFitCnt	1.3.6.1.4.1.1588.2.1.1.1.23.3.1.3	<a href="#">page 199</a>
swBlmPerfFitAlias	1.3.6.1.4.1.1588.2.1.1.1.23.3.1.4	<a href="#">page 200</a>
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swEtherIPAddress	1.3.6.1.1.1588.2.1.1.1.1.25	<a href="#">page 169</a>
swEtherIPMask	1.3.6.1.1.1588.2.1.1.1.1.26	<a href="#">page 169</a>
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swIPv6Status	1.3.6.1.4.1.1588.2.1.1.1.1.30	<a href="#">page 169</a>
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swFCPortName	1.3.6.1.4.1588.2.1.1.1.6.2.1.36	<a href="#">page 180</a>
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swTrunkGrpMaster	1.3.6.1.4.1.1588.2.1.1.1.24.3.1.2	<a href="#">page 201</a>
swTrunkGrpTx	1.3.6.1.4.1.1588.2.1.1.1.24.3.1.3	<a href="#">page 201</a>
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swTopTalkerMntEntry	1.3.6.1.4.1.1588.2.1.1.1.25.3.1	<a href="#">page 202</a>
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swTopTalkerMntPort	1.3.6.1.4.1.1588.2.1.1.1.25.3.1.2	<a href="#">page 202</a>
swTopTalkerMntSpid	1.3.6.1.4.1.1588.2.1.1.1.25.3.1.3	<a href="#">page 202</a>
swTopTalkerMntDpid	1.3.6.1.4.1.1588.2.1.1.1.25.3.1.4	<a href="#">page 202</a>
swTopTalkerMntflow	1.3.6.1.4.1.1588.2.1.1.1.25.3.1.5	<a href="#">page 202</a>
swTopTalkerMntSwwn	1.3.6.1.4.1.1588.2.1.1.1.25.3.1.6	<a href="#">page 202</a>
swTopTalkerMntDwwn	1.3.6.1.4.1.1588.2.1.1.1.25.3.1.7	<a href="#">page 202</a>
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swCpuUsageLimit	1.3.6.1.4.1.1588.2.1.1.1.26.3	<a href="#">page 203</a>
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swCpuAction	1.3.6.1.4.1.1588.2.1.1.1.26.5	<a href="#">page 203</a>
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**TABLE 26 MIB object name/OID matrix (Continued)**

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swConnUnitPortStatEntry	1.3.6.1.4.1.1588.2.1.1.1.27.1	<a href="#">page 204</a>
swConnUnitCRCWithBadEOF	1.3.6.1.4.1.1588.2.1.1.1.27.1.1	<a href="#">page 204</a>
swConnUnitZeroTenancy	1.3.6.1.4.1.1588.2.1.1.1.27.1.2	<a href="#">page 204</a>
swConnUnitFLNumOfTenancy	1.3.6.1.4.1.1588.2.1.1.1.27.1.3	<a href="#">page 204</a>
swConnUnitNLNumOfTenancy	1.3.6.1.4.1.1588.2.1.1.1.27.1.4	<a href="#">page 204</a>
swConnUnitStopTenancyStarVation	1.3.6.1.4.1.1588.2.1.1.1.27.1.5	<a href="#">page 204</a>
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swConnUnitTransferConnection	1.3.6.1.4.1.1588.2.1.1.1.27.1.7	<a href="#">page 205</a>
swConnUnitOpen	1.3.6.1.4.1.1588.2.1.1.1.27.1.8	<a href="#">page 205</a>
swConnUnitInvalidARB	1.3.6.1.4.1.1588.2.1.1.1.27.1.9	<a href="#">page 205</a>
swConnUnitFTB1Miss	1.3.6.1.4.1.1588.2.1.1.1.27.1.10	<a href="#">page 205</a>
swConnUnitFTB2Miss	1.3.6.1.4.1.1588.2.1.1.1.27.1.11	<a href="#">page 205</a>
swConnUnitFTB6Miss	1.3.6.1.4.1.1588.2.1.1.1.27.1.12	<a href="#">page 205</a>
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swConnUnitBadEOF	1.3.6.1.4.1.1588.2.1.1.1.27.1.15	<a href="#">page 206</a>
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nodeRNIDTable	1.3.6.1.4.1.1588.2.1.1.50.2.2	<a href="#">page 221</a>
nodeRNIDEntry	1.3.6.1.4.1.1588.2.1.1.50.2.2.1	<a href="#">page 221</a>
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nodeRNIDIncidentPortWWN	1.3.6.1.4.1.1588.2.1.1.50.2.2.1.2	<a href="#">page 221</a>
nodeRNIDPID	1.3.6.1.4.1.1588.2.1.1.50.2.2.1.3	<a href="#">page 221</a>
nodeRNIDFlags	1.3.6.1.4.1.1588.2.1.1.50.2.2.1.4	<a href="#">page 221</a>
nodeRNIDType	1.3.6.1.4.1.1588.2.1.1.50.2.2.1.5	<a href="#">page 221</a>
nodeRNIDModel	1.3.6.1.4.1.1588.2.1.1.50.2.2.1.6	<a href="#">page 222</a>
nodeRNIDManufacturer	1.3.6.1.4.1.1588.2.1.1.50.2.2.1.7	<a href="#">page 222</a>

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nodeRNIDConnectedPortWWN	1.3.6.1.4.1.1588.2.1.1.50.2.2.1.10	<a href="#">page 222</a>
nodeRNIDPortType	1.3.6.1.4.1.1588.2.1.1.50.2.2.1.11	<a href="#">page 222</a>
nodeRNIDFormat	1.3.6.1.4.1.1588.2.1.1.50.2.2.1.12	<a href="#">page 222</a>
nodeRNIDTag	1.3.6.1.4.1.1588.2.1.1.50.2.2.1.13	<a href="#">page 222</a>
nodeRNIDParams	1.3.6.1.4.1.1588.2.1.1.50.2.2.1.14	<a href="#">page 222</a>
switchRNIDTableNumEntries	1.3.6.1.4.1.1588.2.1.1.50.2.3	<a href="#">page 222</a>
switchRNIDTable	1.3.6.1.4.1.1588.2.1.1.50.2.4	<a href="#">page 223</a>
switchRNIDEntry	1.3.6.1.4.1.1588.2.1.1.50.2.4.1	<a href="#">page 223</a>
switchRNIDIndex	1.3.6.1.4.1.1588.2.1.1.50.2.4.1.1	<a href="#">page 223</a>
switchRNIDSwitchWWN	1.3.6.1.4.1.1588.2.1.1.50.2.4.1.2	<a href="#">page 223</a>
switchRNIDFlags	1.3.6.1.4.1.1588.2.1.1.50.2.4.1.3	<a href="#">page 223</a>
switchRNIDType	1.3.6.1.4.1.1588.2.1.1.50.2.4.1.4	<a href="#">page 223</a>
switchRNIDModel	1.3.6.1.4.1.1588.2.1.1.50.2.4.1.5	<a href="#">page 223</a>
switchRNIDManufacturer	1.3.6.1.4.1.1588.2.1.1.50.2.4.1.6	<a href="#">page 223</a>
switchRNIDManufacturerPlant	1.3.6.1.4.1.1588.2.1.1.50.2.4.1.7	<a href="#">page 223</a>
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switchRNIDTag	1.3.6.1.4.1.1588.2.1.1.50.2.4.1.9	<a href="#">page 223</a>
switchRNIDParams	1.3.6.1.4.1.1588.2.1.1.50.2.4.1.10	<a href="#">page 224</a>
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ficonLIRR	1.3.6.1.4.1.1588.2.1.1.50.3	<a href="#">page 218</a>
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LIRRListenerPortWWN	1.3.6.1.4.1.1588.2.1.1.50.3.2.1.2	<a href="#">page 224</a>
LIRRListenerPID	1.3.6.1.4.1.1588.2.1.1.50.3.2.1.3	<a href="#">page 224</a>
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LIRRPortType	1.3.6.1.4.1.1588.2.1.1.50.3.2.1.6	<a href="#">page 225</a>
LIRRFormat	1.3.6.1.4.1.1588.2.1.1.50.3.2.1.7	<a href="#">page 225</a>
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rLIRTable	1.3.6.1.4.1.1588.2.1.1.50.4.2	<a href="#">page 225</a>
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**TABLE 26** MIB object name/OID matrix (Continued)

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rLIRIncidentNodeWwn	1.3.6.1.4.1.1588.2.1.1.50.4.2.1.3	<a href="#">page 225</a>
rLIRIncidentPortType	1.3.6.1.4.1.1588.2.1.1.50.4.2.1.5	<a href="#">page 226</a>
rLIRIncidentPID	1.3.6.1.4.1.1588.2.1.1.50.4.2.1.6	<a href="#">page 226</a>
rLIRIncidentPortNumber	1.3.6.1.4.1.1588.2.1.1.50.4.2.1.7	<a href="#">page 226</a>
rLIRConnectedPortWwn	1.3.6.1.4.1.1588.2.1.1.50.4.2.1.8	<a href="#">page 226</a>
rLIRConnectedNodeWwn	1.3.6.1.4.1.1588.2.1.1.50.4.2.1.9	<a href="#">page 226</a>
rLIRFabricWwn	1.3.6.1.4.1.1588.2.1.1.50.4.2.1.10	<a href="#">page 226</a>
rLIRLinkFailureType	1.3.6.1.4.1.1588.2.1.1.50.4.2.1.11	<a href="#">page 226</a>
rLIRTimeStamp	1.3.6.1.4.1.1588.2.1.1.50.4.2.1.12	<a href="#">page 226</a>
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linkIncidentMIBTrapPrefix	1.3.6.1.4.1.1588.2.1.1.50.21.0	<a href="#">page 226</a>
linkRNIDDeviceRegistration	1.3.6.1.4.1.1588.2.1.1.50.21.0.1	<a href="#">page 227</a>
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linkLIRListenerRemoved	1.3.6.1.4.1.1588.2.1.1.50.21.0.4	<a href="#">page 227</a>
linkRLIRFailureIncident	1.3.6.1.4.1.1588.2.1.1.50.21.0.5	<a href="#">page 227</a>
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bdTraps	1.3.6.1.4.1.1588.2.1.1.51.0	<a href="#">page 313</a>
bdTrap	1.3.6.1.4.1.1588.2.1.1.51.0.1	<a href="#">page 314</a>
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