

# Brocade Fabric OS MIB Reference Manual, 8.2.1

Supporting Fabric OS 8.2.1

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# Introduction

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## About This Guide

This documents provides information on MIBs and MIB objects supported by Brocade Fabric OS.

## What's New in This Document for Fabric OS 8.2.1

### Changes Made for This Release

This document includes new and modified information for the Fabric OS 8.2.1 release of the Fabric OS MIB.

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

- Revised the publication number.
- Updated the document template.
- Added the "Revision History" chapter to the document.

## Supported Hardware and Software

Although many different software and hardware configurations are tested and supported by Brocade Communication Systems LLC for Fabric OS 8.2.1, documenting all possible configurations and scenarios is beyond the scope of this document.

The following hardware platforms are supported by Fabric OS 8.2.1.

### Brocade Gen 5 (16Gb/s) Fixed-Port Switches

- Brocade 6505 Switch
- Brocade 6510 Switch
- Brocade 6520 Switch
- Brocade 6505 blade server SAN I/O module
- Brocade 6543 blade server SAN I/O module
- Brocade 6545 blade server SAN I/O module
- Brocade 6546 blade server SAN I/O module
- Brocade 6547 blade server SAN I/O module

## Contacting Brocade Technical Support

- Brocade 6548 blade server SAN I/O module
- Brocade 7840 Extension Switch

## Brocade Gen 5 (16Gb/s) DCX Directors

### NOTE

For ease of reference, Brocade chassis-based storage systems are standardizing on the term "director". The legacy term "backbone" can be used interchangeably with the term "director".

- Brocade DCX 8510-4 Director
- Brocade DCX 8510-8 Director

## Brocade Gen 6 (32Gb/s) Fixed-Port Switches

- Brocade G610 Switch
- Brocade G620 Switch
- Brocade G630 Switch
- Brocade 7810 Extension Switch

## Brocade Gen 6 (32Gb/s) X6 Directors

- Brocade X6-4 Director
- Brocade X6-8 Director

## Contacting Brocade Technical Support

For product support information and the latest information on contacting the Technical Assistance Center, go to <https://www.brocade.com/support/fibre-channel-networking>. If you have purchased Brocade product support directly from Brocade, use one of the following methods to contact the Brocade Technical Assistance Center 24x7.

Online	Telephone
<p>For non-urgent issues, the preferred method is to go to MyBrocade (<a href="https://my.brocade.com">my.brocade.com</a>) and then go to one of the following sites:</p> <ul style="list-style-type: none"><li>• My Cases</li><li>• Software Downloads</li><li>• Licensing tools</li><li>• Knowledge Base</li></ul>	<p>Required for Severity 1-Critical and Severity 2-High issues:</p> <ul style="list-style-type: none"><li>• North America: 1-800-752-8061 (Toll-free)</li><li>• International: 1-669-234-1001 (Not toll-free)</li></ul> <p>Toll-free numbers are available in many countries and are listed at <a href="https://www.brocade.com/support/fibre-channel-networking/">https://www.brocade.com/support/fibre-channel-networking/</a>.</p>

If you purchased Brocade product support from a Brocade OEM/solution provider, contact your OEM/solution provider for all your product support needs.

- OEM/solution providers are trained and certified by Brocade to support Brocade products.
- Brocade provides backline support for issues that cannot be resolved by the OEM/solution provider.
- Brocade Supplemental Support augments your existing OEM support contract, providing direct access to Brocade expertise. For more information, contact Brocade or your OEM.
- For questions regarding service levels and response times, contact your OEM/solution provider.

## Document Feedback

Quality is our first concern. 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. Send your feedback to [documentation.pdl@broadcom.com](mailto:documentation.pdl@broadcom.com). Provide the publication title, publication number, topic heading, page number, and as much detail as possible.



# Understanding Brocade SNMP

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## Overview

Simple Network Management Protocol (SNMP) is a set of protocols for managing complex networks. SNMP protocols are application layer protocols. Using SNMP, devices within a network send messages, called protocol data units (PDUs), to different parts of a network. Network management using SNMP requires three components:

- SNMP manager
- SNMP agent
- Management information base (MIB)

## SNMP Manager

The SNMP manager can communicate with the devices in a network using the SNMP protocol. Typically, SNMP managers are network management systems (NMSs) that manage networks by monitoring network parameters and, optionally, by setting parameters in managed devices. Normally, the SNMP manager sends read requests to the devices that host the SNMP agent; to which the SNMP agent then responds with the requested data. In some cases, the managed devices can initiate the communication and send data to the SNMP manager using asynchronous events called traps.

## SNMP Agent

The SNMP agent is a software that resides in the managed devices in the network and collects data from these devices. Each device hosts an SNMP agent. The SNMP agent stores the data and sends these when requested by an SNMP manager. In addition, the agent can asynchronously alert the SNMP manager about events by using special PDUs called traps.

## Management Information Base

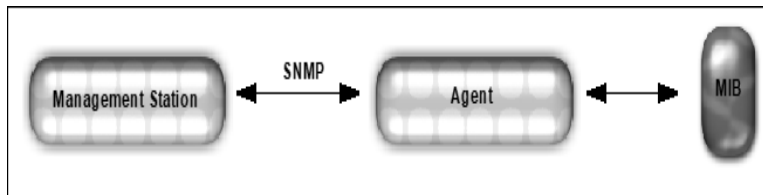
SNMP agents in managed devices store data about these devices in a database called management information base (MIB). The MIB is a hierarchical database that is structured on the standard specified in *RFC 2578* (structure of Management Information Version 2 (SMIv2)).

The MIB is a database of objects that can be used by a network management system to manage and monitor devices on the network. The MIB can be retrieved by a network management system that uses SNMP. The MIB structure determines the scope of management access allowed by a device. By using SNMP, a manager application can issue read or write operations within the scope of the MIB.

## Basic SNMP Operation

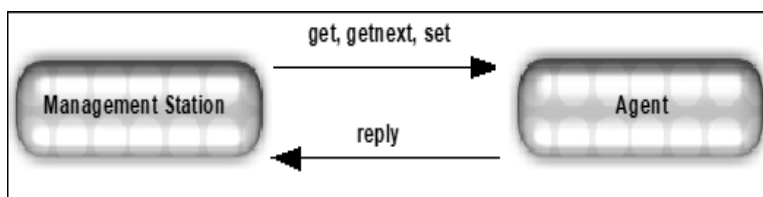
Every Brocade device carries an agent and management information base (MIB). The agent accesses information about a device and makes it available to an SNMP network management station.

FIGURE 1 SNMP Structure



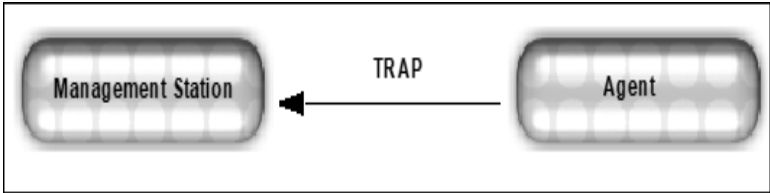
When active, the management station can get information or set information when it queries an agent. SNMP commands, such as `get`, `set`, `getNext`, and `getResponse`, are sent from the management station, and the agent replies once the value is obtained or modified. Agents use variables to report data such 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. For more information, refer to "Traps" on page 14.

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:

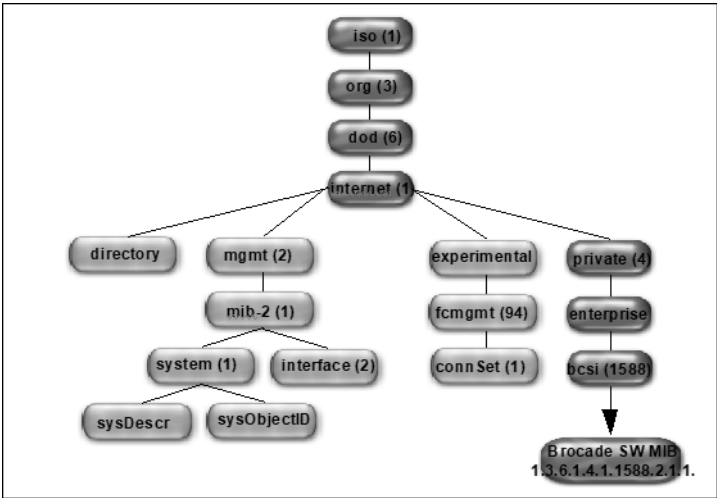
1.3.6.1.4.1.1588.2.1.1.1

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



## Access to MIB Variables

Use a MIB browser to access MIB variables. All MIB browsers perform queries and load MIBs.

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

- not accessible  
You cannot read or write to this variable.
- read create  
This access level 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.

## SNMP Support

In addition to the standard MIBs that Brocade devices support, these devices also support Brocade-specific 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 Fabric OS 4.4.0 and later releases.
- Fabric Element (FE) MIB: This MIB is accepted by the Internet Engineering Task Force (IETF).

Brocade supports `FE_RFC2837.mib` under the MIB-II branch in Fabric OS 6.0.0 and later releases. The latest version of the FE MIB references the `FRAMEWORK.MIB`, and, based on the MIB browser, it is necessary to load this MIB before the `FE.MIB`.

For more information, refer to "Loading Brocade MIBs" on page 17.

## 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. 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 messages.

### NOTE

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

There are two main MIB trap choices:

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

- Brocade-specific MIB trap: This MIB trap choice is 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 the following additional MIBs and their associated traps, HA-MIB, FICON-MIB, and SWEXTTRAP. In Fabric OS 7.4.0 and later, you can use the `snmpConfig` command to enable or disable all the MIBs.

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

## FA Traps

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

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

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

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

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

## HA Traps

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

- `fruStatusChanged`: This trap is generated by an FRU status change, such as a switch reboot or disabling or enabling an FRU component such as `fanDisable` and `fanEnable`.
- `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 an FRU is added or removed. It is not generated when a standby CP is removed.

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

## SW Traps

The Brocade trap (SW-TRAP) can be configured to send traps using the `snmpConfig` command.

The following is the list of specific traps defined in Brocade SW-TRAP.

- `swFCPortScn`: This trap is generated by a port state change.
- `swEventTrap`: This trap is generated by any switch event reported to the system error log. The desired severity level is introduced to filter a `swEventTrap` based on the severity level.

## Traps

- swTrackChangesTrap (no longer supported).
- swIPv6ChangeTrap: This trap is generated when an IPv6 address status change event occurs. It is generated only when the IPv6 stateless state changes to the deprecation state and not for address change notification.
- swPmgrEventTrap: This trap is generated when any partition manager change happens.
- swFabricReconfigTrap: This trap is sent for tracking fabric reconfiguration.
- swFabricSegmentTrap: This trap is sent for tracking segmentation.
- swExtTrap: This trap adds the SSN binding to the traps if it is enabled.
- swStateChangeTrap: This trap is sent when the switch changes its state to online or offline.
- swPortMoveTrap: This trap is sent when the virtual ports are moved from one switch to another.
- swBrcdGenericTrap: This trap is sent for the following events. This trap is for Brocade use.
  - Routing policy change
  - Diagnostics port configuration change
  - Polling status
  - Dynamic port name change
  - Dynamic Port Name feature enable/disable event
- swDeviceStatusTrap: This trap is sent whenever a device logs in or logs out.
- swZoneConfigChangeTrap: This trap is sent whenever there is change in the local zone database.

## FICON Traps

- linkRNIDDeviceRegistration: A device registered with the switch.
- linkRNIDDeviceDeRegistration: A device deregistered with the switch.
- linkLIRRLListenerAdded: A listener for a link failure incident is added.
- linkLIRRLListenerRemoved: A listener for a link failure incident is removed.
- linkRLIRFailureIncident: A link failure incident has occurred.

## IF Traps

- linkDown: A linkDown trap signifies that the SNMPv2 entity acting in an agent role has detected that the ifOperStatus object for one of its communication links is about to transition into the down state.
- linkUp: A linkUp trap signifies that the SNMPv2 entity acting in an agent role has detected that the ifOperStatus object for one of its communication links has transitioned out of the down state.

## MAPS Traps

Consider enabling the MAPS traps if you want to use SNMP to monitor Brocade switches.

- mapsTrapAM: Alerting and Monitoring traps to be sent for Monitoring and Alerting Policy Suite (MAPS) threshold events.
- mapsQuietTimeTrap: Traps to be sent for MAPS threshold events upon QuietTime expiration.

## Loading Brocade MIBs

The Brocade MIBs are 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:

- bcCustomOperation.mib
- BRCD\_REG.mib
- BRCD\_TC.mib
- brcdfcip.mib
- BROCADE-MAPS-MIB.mib
- CPQ\_HOST.mib (supported only on the HP VC 8Gb 24-Port FC Module)
- CPQ\_RACK.mib (supported only on the HP VC 8Gb 24-Port FC Module)
- FA.mib
- faext.mib
- FICON.mib
- fod.mib (supported only on the BR 6547 Embedded Switch)
- HA.mib
- IbmBladeCenter.mib (supported only on the BR 6547 Embedded Switch)
- SW.mib

## Standard MIBs

Distribution of standard MIBs was discontinued starting with Fabric OS 6.4.0. You can download the following MIBs from the <http://www.oidview.com/> or <http://www.mibdepot.com> websites:

- ENTITY-MIB
- FC-MGMT-MIB
- FCIP-MGMT-MIB
- FIBRE-CHANNEL-FE-MIB
- IANAifType-MIB
- IF-MIB
- INET-ADDRESS-MIB
- IP MIB
- *RFC*1155-SMI
- *RFC*1158-MIB
- *RFC*-1212
- *RFC*1213-MIB

- *RFC-1215*
- SNMP-COMMUNITY-MIB
- SNMP-FRAMEWORK-MIB
- SNMP-VIEW-BASED-ACM-MIB
- SNMP-USER-BASED-SM-MIB
- SNMP-TARGET-MIB
- SNMPv2-CONF
- SNMPv2-MIB
- SNMPv2-PARTY-MIB
- SNMPv2-SMI-MIB
- SNMPv2-TC
- T11-FC-ZONE-SERVER-MIB (This is a Brocade proprietary MIB. This MIB contains the following traps: t11ZsRequestRejectNotify, t11ZsMergeFailureNotify, t11ZsMergeSuccessNotify, t11ZsDefZoneChangeNotify, and t11ZsActivateNotify.)

## 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 the following table to ensure that any MIB dependencies load in the correct order.

Before loading Brocade MIB files, ensure that you have the correct version of SNMP for your Fabric OS version. All versions of Fabric OS support SNMPv1 and SNMPv3. All versions of Fabric OS support SNMPv2c, but do not support trap/inform.

The following table list the Brocade SNMP MIB dependencies.

TABLE 1 Brocade SNMP MIB Dependencies

MIB Name	Dependencies
BRCD_REG.mib	<i>RFC1155-SMI</i>
BRCD_TC.mib	Brocade-REG-MIB SNMPv2-TC SNMPv2-SMI
FC-MGMT-MIB	SNMPv2-SMI SNMPv2-CONF SNMPv2-MIB IANAifType-MIB SNMPv2-TC IF-MIB SNMP-FRAMEWORK-MIB
FA.mib	<i>RFC1155-SMI</i> <i>RFC1158-MIB</i> <i>RFC-1212</i> <i>RFC1213-MIB</i> <i>RFC-1215</i>



TABLE 1 Brocade SNMP MIB Dependencies (Continued)

MIB Name	Dependencies
FIBRE-CHANNEL-FE-MIB	SNMPv2-SMI SNMPv2-TC SNMP-FRAMEWORK-MIB SNMPv2-CONF
FCIP-MGMT-MIB	SNMPv2-SMI SNMPv2-TC INET-ADDRESS-MIB FC-MGMT-MIB IF-MIB SNMPv2-CONF SNMP-FRAMEWORK-MIB
ENTITY-MIB	SNMPv2-SMI SNMPv2-TC SNMPv2-CONF SNMP-FRAMEWORK-MIB
SW.mib	SNMPv2-TC SNMPv2-SMI Brocade-TC Brocade-REG-MIB FCMGMT-MIB
brcdfcip.mib	SNMPv2-SMI Brocade-REG-MIB SNMPv2-TC INET-ADDRESS-MIB IF-MIB SNMPv2-CONF
faext.mib	SNMPv2-TC SNMPv2-SMI SW-MIB FCMGMT-MIB
FICON.mib	SNMPv2-SMI SNMPv2-TC Brocade-REG-MIB
HA.mib	SNMPv2-SMI Brocade-REG-MIB SW-MIB ENTITY-MIB SNMPv2-TC
BROCADE-MAPS-MIB	SNMPv2-SMI Brocade-REG-MIB SW-MIB

## Access Gateway and Brocade MIBs

The following table shows the MIBs supported by Brocade Access Gateway.

TABLE 2 Access Gateway MIB Support

MIB Name	Description
MIB-2	Supported in Fabric OS 5.2.1 and later releases.
Entity-MIB	Supported.
HA-MIB	Supported.
SW-MIB	Disabled in Access Gateway because the conventions are specific to fabric switches. In Fabric OS 7.0.0, SNMP allows you to access the following tables in Access Gateway, even if the SW-MIB is disabled: <ul style="list-style-type: none"> <li>• "swConnUnitPortStatExtentionTable" and "swSfpStatTable" (Supported in Fabric OS 7.0.0 and later)</li> <li>• "swCpuOrMemoryUsage" (Supported in Fabric OS 8.1.0 and later)</li> </ul>
FA-MIB	The connUnitSnsTable is not supported because switches in Access Gateway mode do not support name server services.
CPQ-Rack MIB	Supported on the HP VC 8Gb 24-Port FC Module only.
IF-MIB	Supported.
FA-Ext	Supported.
SNMPv2 MIB	Supported.

## Firmware Upgrades and Enabled Traps

You can turn on and off traps individually within a trap group. By default the individual traps are turned off even if the corresponding trap group was enabled before upgrading. You must use the `snmpconfig` command to turn on the individual traps within each trap group.

## Support for Administrative Domains

In Fabric OS 8.0.1 and later, support for Administration Domains (ADs) is deprecated. A warning message is displayed and a RASLog entry is generated for any AD configuration commands or if an AD is activated through a command or zone merge.

## Support for Role-Based Access Control

Role-Based Access Control (RBAC) is supported in Fabric OS 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 and that controls the kinds of jobs and tasks that the user can perform on a fabric or fabric element.

## Support for IPv6 Addressing

IPv6 addressing is supported in Fabric OS 5.3.0 and later releases.

## Support for Virtual Fabric

The Virtual Fabric feature is supported in Fabric OS 6.2.0 and later releases.

**NOTE**

SNMPv3 must be used to manage a Virtual Fabric.

When an SNMPv3 request arrives with a particular user name, it executes in the home Virtual Fabric. From the SNMP manager, all SNMPv3 requests have a home Virtual Fabric that is specified in the `contextName` field. When the home Virtual Fabric is specified, it is then converted to the corresponding switch ID and the home Virtual Fabric is set. If you do not have permission for the specified home Virtual Fabric, this request will fail with an error code of `noAccess`.

For nondefault SNMPv3 user to have a home Virtual Fabric, a list of allowed Virtual Fabrics, an RBAC role, and the name of the SNMPv3 user must match those of the Fabric OS user in the local switch database. SNMPv3 users whose names do not match any of the existing Fabric OS local users are assigned a default RBAC role of "admin" with read and write permission. SNMPv3 user access control permissions. Their SNMPv3 user logs in with an access control of read-only. Both user types will have the default switch as their home Virtual Fabrics.

The `contextName` field should have the format "VF:xxx", where xxx is the actual VF\_ID, for example "VF:1". If the `contextName` field is empty, the home Virtual Fabric of the local Fabric OS user with the same name is used. As Virtual Fabrics and Admin Domains are mutually exclusive, this field is considered as a Virtual Fabrics context when Virtual Fabrics is enabled. You cannot specify a chassis context in the `contextName` field.

The following example shows how the VF:xxx field is used in the `snmpwalk` command. This command is issued on the host, and it walks the specified MIB subtree.

```
switch# snmpwalk -v3 -a MD5 -A passpass -x AES128 -u admin1 -X passpass -n VF:4
10.20.8.17 1.3.6.1.4.1.1588.2.1.2.1.5.1 -l authPriv
```

**NOTE**

In Fabric OS 8.0.1, support for Administration Domains (ADs) is deprecated. A warning message is displayed and a RASLog entry is generated for any AD configuration commands or if an AD is activated through a command or zone merge.

## Filtering Ports

Each port can belong to only one Virtual Fabric at any time. An SNMP request that comes to one Virtual Fabric can view only the port information of the ports that belong to that Virtual Fabric. All port attributes are filtered to allow SNMP to obtain the port information only from within the current Virtual Fabrics context.

## Switch and Chassis Context Enforcement

All attributes are classified into one of two categories:

- Chassis-level attributes
- Switch-level attributes

Attributes that are specific to each logical switch belong to the switch category. These attributes are available in the Virtual Fabrics context and are not available in the Chassis context.

Attributes that are common across the logical switches belong to the chassis level. These attributes are accessible to users that have the chassis-role permission. When a chassis table is queried, the context is set to the chassis context, if the user has the chassis-role permission. The context reverts to the original context after the operation is performed.

## Customized Traps

This section is applicable to OEM customers. The Fabric OS 7.0.0 and 7.0.1 releases supported the addition of system OID in trap OID to customized trap OID on different platforms. For example, the Fabric Watch customized trap OID is 1.3.6.1.4.1.1588.2.1.1.62.0.5 on the Brocade DCX and 1.3.6.1.4.1.1588.2.1.1.71.0.5 on the Brocade 5100. This feature is not supported in Fabric OS 7.1.0 and later releases.

## Retries and Timeouts

Retries are the number of times that a request is sent from the application when a timeout occurs. The recommended value is 3; that is, the request is transmitted 3 times during a timeout.

Timeout is a period of time that an SNMP Manager waits for a response message from an agent. The recommended value is 5 seconds. If multiple OIDs are provided in a single request (for example, Get-Bulk operation) or if multiple requests are sent across slow network connections, the wait time must be increased to allow the SNMP agent to respond to the request.

A maximum of three clients are allowed, two for the Brocade Network Advisor (active/passive) Management application and one for the external SNMP application.

## References

For procedures on configuring SNMP on Brocade switches, refer to the Brocade Fabric OS Administration Guide.

For information about SNMP commands, refer to the Brocade Fabric OS Command Reference.

# Supported Standard MIBs

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- RFC 1213: MIB-II ..... 23
- RFC 4133: Entity MIB ..... 28
- FCIP MIB Objects ..... 31
- FIBRE-CHANNEL-FE-MIB (MIB-II Branch) ..... 33
- SNMPv2 MIB ..... 35
- USM MIB Objects ..... 36

## RFC 1213: MIB-II

### Fully Supported or Deprecated Object Groups

The following groups from RFC 1213 are either fully supported or deprecated.

Object Group Name	OID	Supported?
system	1.3.6.1.2.1.1	Yes  NOTE: 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.
at	1.3.6.1.2.1.3	No  NOTE: Implementation of the Address Translation group is mandatory for all systems. However, this group is deprecated by MIB-II. From MIB-II onward, each network protocol group contains its own address translation tables.
icmp	1.3.6.1.2.1.5	Yes  NOTE: Implementation of the ICMP group is mandatory for all systems.
tcp	1.3.6.1.2.1.6	Yes  NOTE: Implementation of the TCP group is mandatory for all systems that implement 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.
udp	1.3.6.1.2.1.7	Yes  NOTE: Implementation of the UDP group is mandatory for all systems that implement UDP.
egp	1.3.6.1.2.1.8	No

Object Group Name	OID	Supported?
transmission	1.3.6.1.2.1.10	No
snmp	snmp	Yes

NOTE: Implementation of the SNMP group is mandatory for all systems that support an SNMP protocol entity. Some of the objects defined 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 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). snmpInBadTypes and snmpOutReadOnlys are not supported.

## Partially Supported Object Groups

The following groups from *RFC* 1213 are partially supported.

### Interfaces Group

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

Object	OID	Supported?
ifNumber	1.3.6.1.2.1.2.1	Yes
ifTable	1.3.6.1.2.1.2.2	Yes
ifEntry	1.3.6.1.2.1.2.2.1	Yes
ifIndex <sup>1</sup>	1.3.6.1.2.1.2.2.1.1	Yes
ifDescr <sup>1</sup>	1.3.6.1.2.1.2.2.1.2	Yes
ifType <sup>1</sup>	1.3.6.1.2.1.2.2.1.3	Yes
ifMtu <sup>1</sup>	1.3.6.1.2.1.2.2.1.4	Yes
ifSpeed <sup>1</sup>	1.3.6.1.2.1.2.2.1.5	Yes
ifPhysAddress <sup>1</sup>	1.3.6.1.2.1.2.2.1.6	Yes
ifAdminStatus	1.3.6.1.2.1.2.2.1.7	Yes
ifOperStatus	1.3.6.1.2.1.2.2.1.8	Yes
ifLastChange	1.3.6.1.2.1.2.2.1.9	Yes
ifInOctets <sup>2</sup>	1.3.6.1.2.1.2.2.1.10	Yes
ifInUcastPkts <sup>2</sup>	1.3.6.1.2.1.2.2.1.11	No
ifInNUcastPkts	1.3.6.1.2.1.2.2.1.12	No
ifInDiscards <sup>3</sup>	1.3.6.1.2.1.2.2.1.13	Yes
ifInErrors <sup>3</sup>	1.3.6.1.2.1.2.2.1.14	Yes

Object	OID	Supported?
ifInUnknownProtos <sup>3</sup>	1.3.6.1.2.1.2.2.115	No
ifOutOctets <sup>2</sup>	1.3.6.1.2.1.2.2.116	Yes
ifOutUcastPkts <sup>2</sup>	1.3.6.1.2.1.2.2.117	No
ifOutNUcastPkts	1.3.6.1.2.1.2.2.118	No
ifOutDiscards <sup>3</sup>	1.3.6.1.2.1.2.2.119	Yes
ifOutErrors <sup>3</sup>	1.3.6.1.2.1.2.2.120	Yes
ifOutQLen	1.3.6.1.2.1.2.2.121	No
ifSpecific	1.3.6.1.2.1.2.2.122	Yes

1. FCoE Support - The object value changes based on the port type.
2. FCoE Support - This is applicable for both FC and Ethernet port types.
3. FCoE Support - This is applicable for the Ethernet port type only.

## IP Group

Implementation of the IP group is mandatory for all systems.

Object	OID	Supported?
ipForwarding	1.3.6.1.2.1.4.1	Yes
ipDefaultTTL	1.3.6.1.2.1.4.2	Yes
ipInReceives	1.3.6.1.2.1.4.3	Yes
ipInHdrErrors	1.3.6.1.2.1.4.4	Yes
ipInAddrErrors	1.3.6.1.2.1.4.5	Yes
ipForwDatagrams	1.3.6.1.2.1.4.6	Yes
ipInUnknownProtos	1.3.6.1.2.1.4.7	Yes
ipInDiscards	1.3.6.1.2.1.4.8	Yes
ipInDelivers	1.3.6.1.2.1.4.9	Yes
ipOutRequests	1.3.6.1.2.1.4.10	Yes
ipOutDiscards	1.3.6.1.2.1.4.11	Yes
ipOutNoRoutes	1.3.6.1.2.1.4.12	Yes
ipReasmTimeout	1.3.6.1.2.1.4.13	Yes
ipReasmReqds	1.3.6.1.2.1.4.14	Yes
ipReasmOKs	1.3.6.1.2.1.4.15	Yes
ipReasmFails	1.3.6.1.2.1.4.16	Yes
ipFragOKs	1.3.6.1.2.1.4.17	Yes
ipFragFails	1.3.6.1.2.1.4.18	Yes
ipFragCreates	1.3.6.1.2.1.4.19	Yes
ipAddrTable	1.3.6.1.2.1.4.20	Yes

(Continued)

Object	OID	Supported?
ipAddrEntry	1.3.6.1.2.1.4.20.1	Yes
ipAdEntAddr	1.3.6.1.2.1.4.20.1.1	Yes
ipAdEntIfIndex	1.3.6.1.2.1.4.20.1.2	Yes
ipAdEntNetMask	1.3.6.1.2.1.4.20.1.3	Yes
ipAdEntBcastAddr	1.3.6.1.2.1.4.20.1.4	Yes
ipAdEntReasmMaxSize	1.3.6.1.2.1.4.20.1.5	No
ipRouteTable	1.3.6.1.2.1.4.21	Yes
ipRouteEntry	1.3.6.1.2.1.4.21.1	Yes
ipRouteDest	1.3.6.1.2.1.4.21.1.1	Yes
ipRouteIfIndex	1.3.6.1.2.1.4.21.1.2	Yes
ipRouteMetric1	1.3.6.1.2.1.4.21.1.3	Yes
ipRouteMetric2	1.3.6.1.2.1.4.21.1.4	Yes
ipRouteMetric3	1.3.6.1.2.1.4.21.1.5	Yes
ipRouteMetric4	1.3.6.1.2.1.4.21.1.6	Yes
ipRouteNextHop	1.3.6.1.2.1.4.21.1.7	Yes
ipRouteType	1.3.6.1.2.1.4.21.1.8	Yes
ipRouteProto	1.3.6.1.2.1.4.21.1.9	Yes
ipRouteAge	1.3.6.1.2.1.4.21.1.10	No
ipRouteMask	1.3.6.1.2.1.4.21.1.11	Yes
ipRouteMetric5	1.3.6.1.2.1.4.21.1.12	Yes
ipRouteInfo	1.3.6.1.2.1.4.21.1.13	Yes
ipNetToMediaTable	1.3.6.1.2.1.4.22	Yes
ipNetToMediaEntry	1.3.6.1.2.1.4.22.1	Yes
ipNetToMediaIfIndex	1.3.6.1.2.1.4.22.1.1	Yes
ipNetToMediaPhysAddress	1.3.6.1.2.1.4.22.1.2	Yes
ipNetToMediaNetAddress	1.3.6.1.2.1.4.22.1.3	Yes
ipNetToMediaType	1.3.6.1.2.1.4.22.1.4	Yes
ipRoutingDiscards	1.3.6.1.2.1.4.23	No
ipAddressTable	1.3.6.1.2.1.4.34	Yes
ipAddressEntry	1.3.6.1.2.1.4.34.1	Yes
ipAddressAddrType	1.3.6.1.2.1.4.34.1.1	Yes
ipAddressAddr	1.3.6.1.2.1.4.34.1.2	Yes
ipAddressIfIndex	1.3.6.1.2.1.4.34.1.3	Yes
ipAddressType	1.3.6.1.2.1.4.34.1.4	Yes
ipAddressPrefix	1.3.6.1.2.1.4.34.1.5	Yes
ipAddressOrigin	1.3.6.1.2.1.4.34.1.6	Yes



(Continued)

Object	OID	Supported?
ipAddressStatus	1.3.6.1.2.1.4.34.1.7	Yes
ipAddressCreated	1.3.6.1.2.1.4.34.1.8	Yes
ipAddressLastChanged	1.3.6.1.2.1.4.34.1.9	Yes
ipAddressRowStatus	1.3.6.1.2.1.4.34.1.10	Yes
ipAddressStorageType	1.3.6.1.2.1.4.34.1.11	Yes

## ifMIB Group

The ifMIB group supports 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.

For FC ports, the broadcast packets value of an unsupported object returns the value 0, but the same object is supported on FCIP ports. The following table lists the IfMIB group objects.

Object	OID	Supported?
ifXTable	1.3.6.1.2.1.31.1.1	Yes
ifXentry	1.3.6.1.2.1.31.1.1.1	Yes
ifName <sup>1</sup>	1.3.6.1.2.1.31.1.1.1.1	Yes
ifInMulticastPkts <sup>2</sup>	1.3.6.1.2.1.31.1.1.1.2	No
ifInBroadcastPkts <sup>2</sup>	1.3.6.1.2.1.31.1.1.1.3	No
ifOutMulticastPkts <sup>2</sup>	1.3.6.1.2.1.31.1.1.1.4	No
ifOutBroadcastPkts <sup>2</sup>	1.3.6.1.2.1.31.1.1.1.5	No
		NOTE: This object is supported only on FCIP interfaces.
ifHCInOctets <sup>3</sup>	1.3.6.1.2.1.31.1.1.1.6	Yes
ifHCInUcastPkts <sup>3</sup>	1.3.6.1.2.1.31.1.1.1.7	Yes
ifHCInMulticastPkts <sup>2</sup>	1.3.6.1.2.1.31.1.1.1.8	No
ifHCInBroadcastPkts <sup>2</sup>	1.3.6.1.2.1.31.1.1.1.9	No
ifHCOctets <sup>3</sup>	1.3.6.1.2.1.31.1.1.1.10	Yes
ifHCOUcastPkts <sup>3</sup>	1.3.6.1.2.1.31.1.1.1.11	Yes
ifHCOMulticastPkts <sup>2</sup>	1.3.6.1.2.1.31.1.1.1.12	No
ifHCOBroadcastPkts <sup>2</sup>	1.3.6.1.2.1.31.1.1.1.13	No
ifLinkUpDownTrapEnable <sup>3</sup>	1.3.6.1.2.1.31.1.1.1.14	Yes
		NOTE: This object cannot be set and is read only.
ifHighSpeed <sup>3</sup>	1.3.6.1.2.1.31.1.1.1.15	Yes
ifPromiscuousMode <sup>2</sup>	1.3.6.1.2.1.31.1.1.1.16	Yes
ifConnectorPresent <sup>3</sup>	1.3.6.1.2.1.31.1.1.1.17	Yes
ifAlias	1.3.6.1.2.1.31.1.1.1.18	No
ifCounterDiscontinuityTime	1.3.6.1.2.1.31.1.1.1.19	No

1. FCoE support - The object value changes based on the port type.
2. FCoE support - This is applicable for the Ethernet port type only.
3. FCoE support - This is applicable for both FC and Ethernet port types.

## RFC 4133: Entity MIB

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

### Textual Conventions for the Entity MIB

#### PhysicalIndex

An arbitrary value that uniquely identifies the physical entity. The 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

The following are the 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 daughtercard 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.

Values	Description
module (9)	The physical entity class is a self-contained subsystem (such as a plug-in card or daughtercard). If it is removable, 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 multiple chassis entities (such as a stack of multiple chassis entities). A stack might be realized by a virtual cable or a real interconnect cable attached to multiple chassis, or it can comprise multiple interconnect cables. A stack should not be modeled within any other physical entities, but a stack might be contained within another stack. Only chassis entities should be contained within a stack.

## SnmpEngineIdOrNone

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

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

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 is not supported).

- For the Brocade 3016 or Brocade 4020 blades, the snmpEngineID takes the UUID value. For example, if the UUID value is A9914D56-1E5A-0E59-C51E-528802B06E4F, the snmpEngineID displays 80.00.06.34.B1.A9.91.4D.56.1E.5A.0E.59.C5.1E.52.88.02.B0.6E.4F (hex) .
- For other switches, the snmpEngineID takes the WWN. For example, if the WWN value is 10:00:00:05:1e:35:d5:ee, the snmpEngineID displays 80.00.06.34.B2.10.00.00.05.1E.35.D5.EE (hex) .
- If the WWN cannot be taken, the snmpEngineID takes the IP address plus the 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

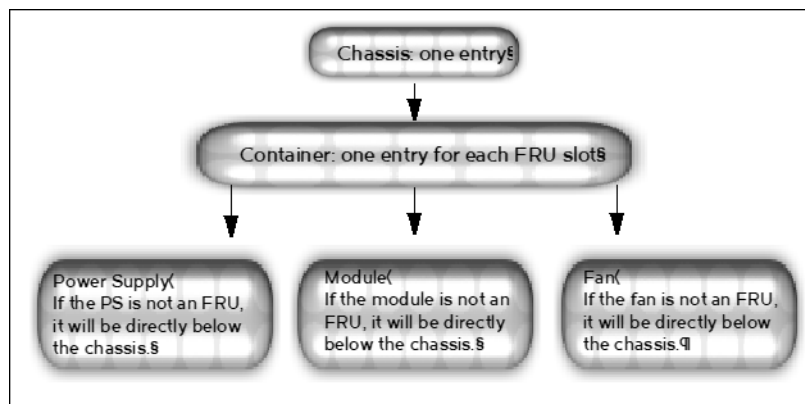
## Fully Supported Object Group

The following group from *RFC 4133* are fully supported.

## Physical Entity Group

Object group name	OID	Supported?
entityPhysical	1.3.6.1.2.1.47.1.1	Yes
entPhysicalTable	1.3.6.1.2.1.47.1.1.1	Yes
entPhysicalEntry	1.3.6.1.2.1.47.1.1.1.1	Yes
entPhysicalIndex	1.3.6.1.2.1.47.1.1.1.1.1	Yes
entPhysicalDescr	1.3.6.1.2.1.47.1.1.1.1.2	Yes
entPhysicalVendorType	1.3.6.1.2.1.47.1.1.1.1.3	Yes
entPhysicalContainedIn	1.3.6.1.2.1.47.1.1.1.1.4	Yes
entPhysicalClass	1.3.6.1.2.1.47.1.1.1.1.5	Yes
entPhysicalParentRelPos	1.3.6.1.2.1.47.1.1.1.1.6	Yes
entPhysicalName	1.3.6.1.2.1.47.1.1.1.1.7	Yes
entPhysicalHardwareRev	1.3.6.1.2.1.47.1.1.1.1.8	Yes
entPhysicalFirmwareRev	1.3.6.1.2.1.47.1.1.1.1.9	Yes
entPhysicalSoftwareRev	1.3.6.1.2.1.47.1.1.1.1.10	Yes
entPhysicalSerialNum	1.3.6.1.2.1.47.1.1.1.1.11	Yes.
entPhysicalMfgName	1.3.6.1.2.1.47.1.1.1.1.12	Yes
entPhysicalModelName	1.3.6.1.2.1.47.1.1.1.1.13	Yes
entPhysicalAlias	1.3.6.1.2.1.47.1.1.1.1.14	Yes
entPhysicalAssetID	1.3.6.1.2.1.47.1.1.1.1.15	Yes
entPhysicalsFRU	1.3.6.1.2.1.47.1.1.1.1.16	Yes

The following figure shows the entPhysicalTable containment hierarchy (entPhysicalContainsTable).



## Unsupported Object Groups

The following groups from *RFC* 4133 are not supported.

Object group name	OID	Supported?
entLogical	1.3.6.1.2.1.47.1.2	No
entityMapping	1.3.6.1.2.1.47.1.3	No
entityGeneral	1.3.6.1.2.1.47.1.4	No

## Partially Supported Object Group

The following groups from *RFC* 4133 are partially supported.

Object group name	OID	Supported?
entityCompliance	1.3.6.1.2.1.47.3.1.1	No
entity2Compliance	1.3.6.1.2.1.47.3.1.2	Yes
entityPhysicalGroup	1.3.6.1.2.1.47.3.2.1	Yes
entityLogicalGroup	1.3.6.1.2.1.47.3.2.2	No
entityMappingGroup	1.3.6.1.2.1.47.3.2.3	Yes
entityGeneralGroup	1.3.6.1.2.1.47.3.2.4	Yes
entityNotificationsGroup	1.3.6.1.2.1.47.3.2.5	Yes
entityPhysical2Group	1.3.6.1.2.1.47.3.2.6	Yes
entityLogical2Group	1.3.6.1.2.1.47.3.2.7	Yes

## FCIP MIB Objects

You can refer to *RFC* 4404 for a description of the entire MIB.

## Fully Supported Object Groups

The following groups from the FCIP MIB are fully supported.

Object group name	OID	Supported?
fcipEntityInstanceTable	1.3.6.1.2.1.224.1.1.4	Yes
fcipLinkTable	1.3.6.1.2.1.224.1.1.5	Yes
fcipTcpConnTable	1.3.6.1.2.1.224.1.1.6	Yes

## Partially Supported Object Groups

The following groups from the FCIP MIB are partially supported.

### FCIP Extended Link Table

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

Object	OID	Supported?
fcipExtendedLinkTable	1.3.6.1.4.1.1588.4.1	Yes
		NOTE: The information stored in this table is returned in response to <b>portshow fciptunnel</b> commands.
fcipExtendedLinkEntry	1.3.6.1.4.1.1588.4.1.1	Yes
fcipExtendedLinkIfIndex	1.3.6.1.4.1.1588.4.1.1.1	Yes
fcipExtendedLinkTcpRetransmits	1.3.6.1.4.1.1588.4.1.1.2	Yes
fcipExtendedLinkTcpDropped Packets	1.3.6.1.4.1.1588.4.1.1.3	Yes
fcipExtendedLinkCompressionRatio	1.3.6.1.4.1.1588.4.1.1.4	Yes
fcipExtendedLinkTcpSmoothedRTT	1.3.6.1.4.1.1588.4.1.1.5	Yes
fcipExtendedLinkRawBytes	1.3.6.1.4.1.1588.4.1.1.6	Yes
fcipExtendedLinkCompressedBytes	1.3.6.1.4.1.1588.4.1.1.7	Yes
fcipExtendedLinkConnectedCount	1.3.6.1.4.1.1588.4.1.1.8	Yes
fcipExtendedLinkRtxRtxTO	1.3.6.1.4.1.1588.4.1.1.9	No
fcipExtendedLinkRtxDupAck	1.3.6.1.4.1.1588.4.1.1.10	No
fcipExtendedLinkDupAck	1.3.6.1.4.1.1588.4.1.1.11	Yes
fcipExtendedLinkRtt	1.3.6.1.4.1.1588.4.1.1.12	Yes
fcipExtendedLinkOoo	1.3.6.1.4.1.1588.4.1.1.13	Yes
fcipExtendedLinkSlowStarts	1.3.6.1.4.1.1588.4.1.1.14	Yes

### FCIP Connection Statistics Table

This table contains statistical information about the FCIP circuit and connection compression, retransmission, packet loss, and latency. For the Brocade 7840 Switch, this table shows only circuit statistics.

This table gives FCIP circuit statistics for the Brocade 7800 Extension Switch or FX8-24 DCX Extension Blade. This table is not supported on the Brocade 7500 or FR4-18i router blade.

Corresponding CLI command:

```
portshow fcipcircuit -t/-q -perf
```

Object	OID	Supported?
fcipConnStatsTable	1.3.6.1.4.1.1588.4.2	Yes
fcipConnStatsEntry	1.3.6.1.4.1.1588.4.2.1	Yes
xfcipEntityId	1.3.6.1.4.1.1588.4.2.1.1	Yes
xfcipLinkIfIndex	1.3.6.1.4.1.1588.4.2.1.2	Yes
xfcipLinkIndex	1.3.6.1.4.1.1588.4.2.1.3	Yes
xfcipExtendedLinkTcRetransmits	1.3.6.1.4.1.1588.4.2.1.4	Yes
xfcipExtendedLinkTcDroppedPackets	1.3.6.1.4.1.1588.4.2.1.5	Yes
xfcipExtendedLinkCompressionRatio	1.3.6.1.4.1.1588.4.2.1.6	Yes
xfcipExtendedLinkTcSmoothedRTT	1.3.6.1.4.1.1588.4.2.1.7	Yes
xfcipExtendedLinkRawBytes	1.3.6.1.4.1.1588.4.2.1.8	Yes
xfcipExtendedLinkCompressedBytes	1.3.6.1.4.1.1588.4.2.1.9	Yes
xfcipInBytesAvg	1.3.6.1.4.1.1588.4.2.1.10	Yes
xfcipOutBytesAvg	1.3.6.1.4.1.1588.4.2.1.11	Yes
xfcipOutMaxCommRt	1.3.6.1.4.1.1588.4.2.1.12	Yes
xfcipRTTMin	1.3.6.1.4.1.1588.4.2.1.13	Yes
xfcipRTTMax	1.3.6.1.4.1.1588.4.2.1.14	Yes
xfcipRTTAvg	1.3.6.1.4.1.1588.4.2.1.15	Yes
xfcipOOO	1.3.6.1.4.1.1588.4.2.1.16	Yes
xfcipDupAcks	1.3.6.1.4.1.1588.4.2.1.17	Yes
xfcipSlowStarts	1.3.6.1.4.1.1588.4.2.1.18	Yes
xfcipFCBytesIn	1.3.6.1.4.1.1588.4.2.1.19	Yes
xfcipFCBytesOut	1.3.6.1.4.1.1588.4.2.1.20	Yes
xfcipFCMaxCommRt	1.3.6.1.4.1.1588.4.2.1.21	Yes
xfcipIPBytesIn	1.3.6.1.4.1.1588.4.2.1.22	Yes
xfcipIPBytesOut	1.3.6.1.4.1.1588.4.2.1.23	Yes
xfcipIPMaxCommRt	1.3.6.1.4.1.1588.4.2.1.24	Yes

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

Brocade supports two versions of the FE MIB:

- FIBRE-CHANNEL-FE-MIB ( *RFC* 2837) in the MIB-II branch.
- FCFABRIC-ELEMENT-MIB in the experimental branch.

The version of the FE MIB that is supported depends on the version of Fabric OS. The following table lists which FE MIB is supported in which Fabric OS version.

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

Fabric OS version	FIBRE-CHANNEL-FE-MIB (MIB-II branch)	FCFABRIC-ELEMENT-MIB (experimental branch)
8.2.0	Yes	No
8.1.0	Yes	No
8.0.1	Yes	No
8.0.0	Yes	No
7.4.0	Yes	No
7.3.0	Yes	No
7.2.0	Yes	No
7.1.0	Yes	No
7.0.0	Yes	No
6.4.1_fcoe	Yes	No
6.4.0	Yes	No
6.3.0	Yes	No
6.2.0	Yes	No
6.1.2_CEE	Yes	No
6.1.0	Yes	No
6.0.0	Yes	No
5.x	Yes	No
4.x	Yes	No
3.1.x	Yes	No
3.0.x	Yes	Yes
2.6.x	No	Yes

### NOTE

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

### NOTE

Brocade does not support the settable "Write" function for any of the Fibre Channel FE MIB objects except fcFxPortPhysAdminStatus.

## Fully Supported Object Groups

The following groups from FIBRE-CHANNEL-FE-MIB are fully supported..



Object group name	OID	Supported?
fcFeConfig group	1.3.6.1.2.1.75.1.1	Yes  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.
fcFeStatus group	1.3.6.1.2.1.75.1.2	Yes  This group consists of tables that contain operational status and established service parameters for the fabric element and the attached Nx_Ports.  NOTE: The value for FcFxPortBbCreditAvailable should be less than or equal to that of fcFxPortBbCredit. The FcFxPortBbCreditAvailable value is not supported on SIM ports, long-distance ports, or fportbuffer ports.
fcFeError group	1.3.6.1.2.1.75.1.3	Yes  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.
fcFeAccounting group	1.3.6.1.2.1.75.1.4	The Accounting group is supported only in Fabric OS 4.x.  The Accounting group consists of the following Fabric OS tables: <ul style="list-style-type: none"> <li>• Class 1 accounting table</li> <li>• Class 2 accounting table</li> <li>• Class 3 accounting table</li> </ul> Each table contains accounting information for the Fx_Ports in the fabric element.
fcFeCapabilities group	1.3.6.1.2.1.75.1.5	Yes  This group consists of a table that describes 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.

## SNMPv2 MIB

### Fully Supported Object Groups

The following groups from th SNMPv2 MIB are fully supported.

Object group name	OID	Supported?
snmpTargetAddrTable	1.3.6.1.6.3.12.1.2	Yes

## USM MIB Objects

Object group name	OID	Supported?
snmpTargetParamsTable	1.3.6.1.6.3.12.1.3	Yes
snmpCommunityTable	1.3.6.1.6.3.18.1.1	Yes

## USM MIB Objects

### Fully Supported Object Groups

The following groups from the USM MIB are fully supported.

Object group name	OID	Supported
usmStats	1.3.6.1.6.3.15.1.1	Yes
usmUser	1.3.6.1.6.3.15.1.2	Yes

# 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.

### NOTE

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

## SW-MIB System Organization of MIB Objects

The following screenshots depict the organization and structure of the SW-MIB.

SW-MIB overall tree structure

## SW-MIB Overview

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

## swTrapsV2 hierarchy

```
- swTrapsV2
  - swFault 1.3.6.1.4.1.1588.2.1.1.1.0.1
  - swSensorScn 1.3.6.1.4.1.1588.2.1.1.1.0.2
  - swFCPortScn 1.3.6.1.4.1.1588.2.1.1.1.0.3
  - swEventTrap 1.3.6.1.4.1.1588.2.1.1.1.0.4
  - swFabricWatchTrap 1.3.6.1.4.1.1588.2.1.1.1.0.5
  - swTrackChangesTrap 1.3.6.1.4.1.1588.2.1.1.1.0.6
  - swIPv6ChangeTrap 1.3.6.1.4.1.1588.2.1.1.1.0.7
  - swPmgrEventTrap 1.3.6.1.4.1.1588.2.1.1.1.0.8
  - swFabricReconfigTrap 1.3.6.1.4.1.1588.2.1.1.1.0.9
  - swFabricSegmentTrap 1.3.6.1.4.1.1588.2.1.1.1.0.10
  - swExtTrap 1.3.6.1.4.1.1588.2.1.1.1.0.11
  - swStateChangeTrap 1.3.6.1.4.1.1588.2.1.1.1.0.12
  - swPortMoveTrap 1.3.6.1.4.1.1588.2.1.1.1.0.13
  - swBrcdGenericTrap 1.3.6.1.4.1.1588.2.1.1.1.0.14
  - swDeviceStatusTrap 1.3.6.1.4.1.1588.2.1.1.1.0.15
```

## swSystem hierarchy

```

- swSystem
  - swCurrentDate 1.3.6.1.4.1.1588.2.1.1.1.1.1
  - swBootDate 1.3.6.1.4.1.1588.2.1.1.1.1.2
  - swFWLastUpdated 1.3.6.1.4.1.1588.2.1.1.1.1.3
  - swFlashLastUpdated 1.3.6.1.4.1.1588.2.1.1.1.1.4
  - swBootPromLastUpdated 1.3.6.1.4.1.1588.2.1.1.1.1.5
  - swFirmwareVersion 1.3.6.1.4.1.1588.2.1.1.1.1.6
  - swOperStatus 1.3.6.1.4.1.1588.2.1.1.1.1.7
  - swAdmStatus 1.3.6.1.4.1.1588.2.1.1.1.1.8
  - swTelnetShellAdmStatus 1.3.6.1.4.1.1588.2.1.1.1.1.9
  - swSsn 1.3.6.1.4.1.1588.2.1.1.1.1.10
  - swFlashDLOperStatus 1.3.6.1.4.1.1588.2.1.1.1.1.11
  - swFlashDLAdmStatus 1.3.6.1.4.1.1588.2.1.1.1.1.12
  - swFlashDLHost 1.3.6.1.4.1.1588.2.1.1.1.1.13
  - swFlashDLUser 1.3.6.1.4.1.1588.2.1.1.1.1.14
  - swFlashDLFile 1.3.6.1.4.1.1588.2.1.1.1.1.15
  - swFlashDLPassword 1.3.6.1.4.1.1588.2.1.1.1.1.16
  - swBeaconOperStatus 1.3.6.1.4.1.1588.2.1.1.1.1.18
  - swBeaconAdmStatus 1.3.6.1.4.1.1588.2.1.1.1.1.19
  - swDiagResult 1.3.6.1.4.1.1588.2.1.1.1.1.20
  - swNumSensors 1.3.6.1.4.1.1588.2.1.1.1.1.21
  - swSensorTable 1.3.6.1.4.1.1588.2.1.1.1.1.22
    - swSensorEntry 1.3.6.1.4.1.1588.2.1.1.1.1.22.1
      - swSensorIndex 1.3.6.1.4.1.1588.2.1.1.1.1.22.1.1
      - swSensorType 1.3.6.1.4.1.1588.2.1.1.1.1.22.1.2
      - swSensorStatus 1.3.6.1.4.1.1588.2.1.1.1.1.22.1.3
      - swSensorValue 1.3.6.1.4.1.1588.2.1.1.1.1.22.1.4
      - swSensorInfo 1.3.6.1.4.1.1588.2.1.1.1.1.22.1.5
    - swTrackChangesInfo 1.3.6.1.4.1.1588.2.1.1.1.1.23
  - swID 1.3.6.1.4.1.1588.2.1.1.1.1.24
  - swEtherIPAddress 1.3.6.1.4.1.1588.2.1.1.1.1.25
  - swEtherIPMask 1.3.6.1.4.1.1588.2.1.1.1.1.26
  - swFCIPAddress 1.3.6.1.4.1.1588.2.1.1.1.1.27
  - swFCIPMask 1.3.6.1.4.1.1588.2.1.1.1.1.28
  - swIPv6Address 1.3.6.1.4.1.1588.2.1.1.1.1.29
  - swIPv6Status 1.3.6.1.4.1.1588.2.1.1.1.1.30
  - swModel 1.3.6.1.4.1.1588.2.1.1.1.1.31
  - swTestString 1.3.6.1.4.1.1588.2.1.1.1.1.32
  - swPortList 1.3.6.1.4.1.1588.2.1.1.1.1.33
  - swBrcdTrapBitMask 1.3.6.1.4.1.1588.2.1.1.1.1.34
  - swFCPortPrevType 1.3.6.1.4.1.1588.2.1.1.1.1.35
  - swDeviceStatus 1.3.6.1.4.1.1588.2.1.1.1.1.36

```

swFabric hierarchy

## SW-MIB Overview

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

### swModule hierarchy

- swModule (1.3.6.1.4.1.1588.2.1.1.1.3)

### swAgtCfg 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

### swFCport 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
    - swFCPortRxLCs 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.17
    - swFCPortRxMcasts 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.18
    - swFCPortTooManyRdys 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.19
    - swFCPortNoTxCredits 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.20
    - swFCPortRxEncInFrs 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.21
    - swFCPortRxCrcs 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.22
    - swFCPortRxTruncs 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.23
    - swFCPortRxTooLongs 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.24
    - swFCPortRxBadEofs 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.25
    - swFCPortRxEncOutFrs 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.26
    - swFCPortRxBadOs 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.27
    - swFCPortC3Discards 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.28
    - swFCPortMcastTimedOuts 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.29
    - swFCPortTxMcasts 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.30
    - swFCPortLipIns 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.31
    - swFCPortLipOuts 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.32
    - swFCPortLipLastAlpa 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.33
    - swFCPortWwn 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.34
    - swFCPortSpeed 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.35
    - swFCPortName 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.36
    - swFCPortSpecifier 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.37
    - swFCPortFlag 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.38
    - swFCPortBrcdType 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.39

```

swNs hierarchy

## 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

## swEvent 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

## swFwSystem hierarchy



```

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

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swEndDevice 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

swGroup 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
      - swGroupMemID 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 1.3.6.1.4.1.1588.2.1.1.1.22.2.1.3

swBlmPerfMnt 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

swTrunk 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

#### swTopTalker 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

#### swCpuorMemoryUsage 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

#### swConnUnitPortStatExtentionTable hierarchy

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

## Textual Conventions for the SW-MIB

Table 3 lists the textual conventions used for the SW-MIB.

TABLE 3 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 3 SW-MIB Textual Conventions (Continued)

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

TABLE 3 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:</p> <p>1 swFwEnvTemp                  2 swFwEnvFan (Not supported)                  3 swFwEnvPS (Not supported)</p> <p>SFP class:</p> <p>4 swFwTransceiverTemp                  5 swFwTransceiverRxp                  6 swFwTransceiverTxp                  7 swFwTransceiverCurrent                  57 swFwTransceiverVoltage</p> <p>Port class:</p> <p>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:</p> <p>17 swFwFabricEd                  18 swFwFabricFr                  19 swFwFabricDi                  20 swFwFabricSc                  21 swFwFabricZc                  23 swFwFabricFl                  24 swFwFabricGs</p> <p>F/FL Port (Optical) class:</p> <p>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:</p> <p>54 swFwPerfEToERxCnt                  55 swFwPerfEToETxCnt</p> <p>Filter Performance Monitor class:</p> <p>56 swFwPerfFltCusDef</p> <p>Security class:</p> <p>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 swFwSecInvalTS (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:</p> <p>25 swFwEPortLink                  26 swFwEPortSync                  27 swFwEPortSignal                  28 swFwEPortPe                  29 swFwEPortWords                  30 swFwEPortCrcs                  31 swFwEPortRXPerf                  32 swFwEPortTXPerf                  33 swFwEPortState                  84 swFwEPortUtil (Not supported)                  87 swFwEPortLr                  91 swFwEPortC3Discard                  97 swFwEPortTrunkUtil                  94 swFwVEPortStateChange                  95 swFwVEPortUtil                  96 swFwVEPortPktLoss</p> <p>Resource class:</p> <p>83 swFwResourceFlash</p>

TABLE 3 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 the Brocade 7800 Extension Switch and FX8-24 DCX Extension Blade.		
In the index swFwEnvTemp, Env refers to the Environment class and Temp refers to the area temperature.		
SwFwWriteVals	Integer	Write-only variable for applying or canceling values or action matrix changes: 1 swFwCancelWrite 2 swFwApplyWrite
SwFwTimebase	Integer	Timebase for thresholds: 1 swFwTbNone 2 swFwTbSec 3 swFwTbMin 4 swFwTbHour 5 swFwTbDay
SwFwStatus	Integer	Status for thresholds: 1 disabled 2 enabled
SwFwEvent	Integer	Possible events available: 1 started 2 changed 3 exceeded 4 below 5 above 6 inBetween 7 lowBufferCrstd
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 are specific to sw traps.

In Fabric OS 6.2.0 and later, sw traps have an extra associated binding to indicate the Virtual Fabric (VF). The traps have a Virtual Fabric ID (VFID) associated with them.

For the fourteen traps defined in the SW-MIB and how to configure the trap, refer to Table 4.

TABLE 4 SW-MIB traps

Trap name	Commands to configure
"swFault" on page 51 (not supported)	N/A
"swSensorScn" on page 51	N/A
"swFCPortScn" on page 51	Always on.
"swEventTrap" on page 52	For more information, refer to the <code>snmpConfig</code> command in the Fabric OS Command Reference.
"swTrackChangesTrap" on page 52	Fabric OS command: <code>trackChangesSet</code> and <code>trackChangesShow</code>
"swIPv6ChangeTrap" on page 52	For more information, refer to the <code>snmpConfig</code> command in the Brocade Fabric OS Command Reference.
"swPmgrEventTrap" on page 53	
"swFabricReconfigTrap" on page 53	
"swFabricSegmentTrap" on page 53	
"swExtTrap" on page 53	
"swStateChangeTrap" on page 53	
"swPortMoveTrap" on page 53	
"swBrcdGenericTrap" on page 54	
"swDeviceStatusTrap" on page 54	

The `swSsn` variable is optional in trap messages.

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

- Set the value of this variable to 0, to use the `sysObjectID`.
- Set the value to 1 to use the fixed enterprise value, "sw" (1.3.6.1.4.1.1588.2.1.1.).



Trap name and OID	Variables	Description
swFault 1.3.6.1.4.1.1588.2.1.1.0.1	swDiagResult swSsn	<p>This trap is no longer generated.</p> <p>A swFault is generated whenever the diagnostics detect a fault with the switch.</p> <p>#TYPE Switch is faulty.</p> <p>#SUMMARY Faulty reason: %d and SSN is #%</p> <p>#ARGUMENTSO, 1</p> <p>#SEVERITY Critical</p> <p>#TIMEINDEX 1</p> <p>#STATE Nonoperational</p>
swSensorScn 1.3.6.1.4.1.1588.2.1.1.0.2	swSensorStatus swSensorIndex swSensorType swSensorValue swSensorInfo swSsn	<p>A swSensorScn (2) is generated whenever an environment sensor changes its operational state: for instance, if a fan stop working. The VarBind in the Trap Data Unit contain the corresponding instance of the sensor status, sensor index, sensor type, sensor value (reading), and sensor information. Note that the sensor information contains the type of sensor and its number, in textual format.</p> <p>#TYPE A sensor (temperature, fan, or other) changed its operational state.</p> <p>#SUMMARY %s: is currently in state %d and SSN is #%</p> <p>#ARGUMENTS4, 0, 5</p> <p>#SEVERITY Informational</p> <p>#TIMEINDEX 1</p> <p>#STATE Operational</p>
swFCPortScn 1.3.6.1.4.1.1588.2.1.1.0.3	swFCPortOpStatus swFCPortIndex swFCPortName swFCPortWwn swFCPortPrevType swFCPortBrcdType swSsn swFCPortFlag swVfld swFCPortDisableReason	<p>A swFCPortScn (3) is generated whenever an FC port changes its operational state or port type. The events that trigger this trap are as follows:</p> <ul style="list-style-type: none"> <li>Port changes its state to online or offline.</li> <li>Port type changes to E_port, F_port, or FL_port.</li> </ul> <p>The VarBind in the Trap Data Unit contains the corresponding instance of the FC port's operational status, index, swFCPortName, and swSsn. swFCPortName and swSsn are optional.</p> <ul style="list-style-type: none"> <li>For offline events swFCPortDisableReason will have the proper disable reason code. For online events, the disable reason code is 0.</li> </ul> <p>#TYPE A Fibre Channel Port changed its operational state.</p> <p>#SUMMARY Port Index %d changed state to %d. Port Name: %s and SSN is #%</p> <p>#ARGUMENTS1, 0, 2, 3</p> <p>#SEVERITY Informational</p> <p>#TIMEINDEX 1</p> <p>#STATE Operational</p>

Trap name and OID	Variables	Description
swEventTrap 1.3.6.1.4.1.1588.2.1.1.0.4	swEventIndex swEventTimeInfo swEventLevel swEventRepeatCount swEventDescr swSsn swVfld	<p>This trap is generated when an event occurs with a level that is at or below <a href="#">swEventTrapLevel</a>.</p> <p>#TYPE        A firmware event has been logged.  #SUMMARY    Event %d: %s (severity level %d) - %s  SSN is #%s  #ARGUMENTSO, 1, 2, 4, 5  #SEVERITY    Informational  #TIMEINDEX 1  #STATE        Operational</p> <p>Each trap recipient has a configured severity level association. Whenever an error message is generated at or above that configured severity level the recipient is notified of the event.</p> <p>This trap is generated for all RASLog messages.</p> <p>To get more details on any particular event, refer to the Fabric OS Message Reference.</p>
swTrackChangesTrap 1.3.6.1.4.1.1588.2.1.1.0.6	swTrackChangesInfo swSsn swVfld	<p>Trap to be sent for tracking log in, log out, or configuration changes.</p> <p>#TYPE        Track changes has generated a trap.  #SUMMARY    %s and SSN is #%s  #ARGUMENTSO, 1  #SEVERITY    Informational  #TIMEINDEX 1  #STATE        Operational</p> <p>Some of the triggers that will generate this trap are:</p> <ul style="list-style-type: none"> <li>• Log out</li> <li>• Unsuccessful log in</li> <li>• Successful log in</li> <li>• Switch configuration changes</li> <li>• Track changes on and off</li> </ul> <p>This trap gets sent when track-changes is set to ENABLED and is configured to send SNMP traps on track events. Use the <b>trackchangeset</b> command to enable the track changes feature and SNMP trap mode.</p> <p>NOTE: This trap is obsolete.</p>
swIPv6ChangeTrap 1.3.6.1.4.1.1588.2.1.1.0.7	swIPv6Address swIPv6Status	<p>This trap is generated when an IPv6 address status change event occurs. It is generated only when IPv6 stateless state changes to the deprecation state and not for address change notification.</p>

Trap name and OID	Variables	Description
swPmgrEventTrap 1.3.6.1.4.1.1588.2.1.1.0.8	swPmgrEventType swPmgrEventTime swPmgrEventDescr swSsn swVfId	This trap is generated when any partition manager change happens. 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>• When any logical switch is changed to base switch.</li> <li>• VF is enabled or disabled.</li> </ul>
swFabricReconfigTrap 1.3.6.1.4.1.1588.2.1.1.0.9	swDomainID	The trap to be sent for tracking fabric reconfiguration. This trap is generated under the following circumstances: <ul style="list-style-type: none"> <li>• Two switches with the same domain ID have connected to one another.</li> <li>• Two fabrics have joined.</li> <li>• An E_Port has gone offline.</li> <li>• A principal link has segmented from the fabric.</li> <li>• Zone conflicts.</li> <li>• Domain conflicts.</li> <li>• Segmentation of the principal link between two switches.</li> <li>• Incompatible link parameters. During E_Port initialization, ports exchange link parameters. Rarely, incompatible parameters result in segmentation.</li> </ul>
swFabricSegmentTrap 1.3.6.1.4.1.1588.2.1.1.0.10	swFCPortIndex swFCPortName swSsn swFCPortFlag swVfId	The trap to be sent for tracking segmentation changes.
swExtTrap 1.3.6.1.4.1.1588.2.1.1.0.11		The trap adds the SSN binding to the traps if it is enabled.  This is an internal trap.
swStateChangeTrap 1.3.6.1.4.1.1588.2.1.1.0.12	swOperStatus swVfId	This trap is sent when the switch changes its state to online or offline.  This trap is disabled by default.
swPortMoveTrap 1.3.6.1.4.1.1588.2.1.1.0.13	swPortList swVfId	This trap is sent when the ports are moved from one switch to another.  This trap is disabled by default.

## Switch System Group

Trap name and OID	Variables	Description
swBrcdGenericTrap 1.3.6.1.4.1.1588.2.1.1.1.0.14	swBrcdTrapBitMask swBrcdBitObjVal swVfid	This trap is sent for one of the following events: <ul style="list-style-type: none"> <li>• fabric change</li> <li>• device change</li> <li>• FAPWWN change</li> <li>• FDMI events</li> <li>• Routing policy change</li> <li>• Diagnostics port configuration change</li> <li>• Polling status</li> <li>• Dynamic port name change</li> <li>• Dynamic port name feature enable/disable event</li> </ul> This trap is enabled by default. NOTE: This trap is for internal use.
swDeviceStatusTrap 1.3.6.1.4.1.1588.2.1.1.1.0.15	swFCPortSpecifier swDeviceStatus swEndDevicePortID swNsNodeName swNsPortName	This trap is sent whenever a device logs in or logs out.

## Switch System Group

Object and OID	Access	Description
swSystem 1.3.6.1.4.1.1588.2.1.1.1	Not accessible	The OID sub-tree for switch system group.
swCurrentDate 1.3.6.1.4.1.1588.2.1.1.1.1	Read only	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

Object and OID	Access	Description
swBootDate 1.3.6.1.4.1.1588.2.1.1.1.2	Read only	<p>The date and time when the system last booted.</p> <p>The return string displays using the following format: ddd MMM DD hh:mm:ss yyyy</p> <p>Where: ddd = day MMM = month DD = date hh = hour mm = minute ss = seconds yyyy = year</p> <p>For example: Thu Aug 17 15:16:09 2000</p>
swFWLastUpdated 1.3.6.1.4.1.1588.2.1.1.1.3	Read only	<p>The date and time when the firmware was last loaded to the switch.</p> <p>The return string displays using the following format: ddd MMM DD hh:mm:ss yyyy</p> <p>Where: ddd = day MMM = month DD = date hh = hour mm = minute ss = seconds yyyy = year</p> <p>For example: Thu Aug 17 15:16:09 2000</p> <p>NOTE: This object is obsolete.</p>

Object and OID	Access	Description
swFlashLastUpdated 1.3.6.1.4.1.1588.2.1.1.1.4	Read only	<p>The date and time when the firmware was last downloaded or the configuration file was last changed.</p> <p>The return string displays using the following format: ddd MMM DD hh:mm:ss yyyy</p> <p>Where: ddd = day MMM = month DD = date hh = hour mm = minute ss = seconds yyyy = year</p> <p>For example: Thu Aug 17 15:16:09 2000</p>
swBootPromLastUpdated 1.3.6.1.4.1.1588.2.1.1.1.5	Read only	<p>The date and time when the BootPROM was last updated.</p> <p>The return string displays using the following format: ddd MMM DD hh:mm:ss yyyy</p> <p>Where: ddd = day MMM = month DD = date hh = hour mm = minute ss = seconds yyyy = year</p> <p>For example: Thu Aug 17 15:16:09 2000</p>
swFirmwareVersion 1.3.6.1.4.1.1588.2.1.1.1.6	Read only	<p>The current version of the firmware.</p> <p>The return value is displayed using the following format: vM.m.f</p> <p>Where: v = deployment indicator M = major version m = minor version f = software maintenance version</p> <p>For example, 6.1.0_main_bld36 describes firmware version 6.1.0 and the specific build number 36. Some versions may not have a build number and will appear as the version. For example, 6.1.0 indicates Fabric OS version 6.0.0.</p>

Object and OID	Access	Description
swOperStatus 1.3.6.1.4.1.1588.2.1.1.1.7	Read only	<p>The current operational status of the switch.</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>• online (1) - The switch is accessible by an external Fibre Channel port.</li> <li>• offline (2) - The switch is not accessible.</li> <li>• testing (3) - The switch is in a built-in test mode and is not accessible by an external Fibre Channel port.</li> <li>• faulty (4) - The switch is not operational.</li> </ul>
swAdmStatus 1.3.6.1.4.1.1588.2.1.1.1.8	Read-write	<p>The desired administrative status of the switch. A management station might place the switch in a desired state by setting this object accordingly.</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>• online (1) - Set the switch to be accessible by an external FC port.</li> <li>• offline (2) - Set the switch to be inaccessible.</li> <li>• testing (3) - Set the switch to run the built-in test.</li> <li>• faulty (4) - Set the switch to a "soft" faulty condition.</li> <li>• reboot (5) - Set the chassis to reboot in 1 second.</li> <li>• fastboot (6) - Set the chassis to fastboot in 1 second.</li> </ul> <p>Fastboot causes the chassis to boot but omit the POST.</p> <p>When the switch is in faulty state, only two states can be set: faulty and reboot/fastboot</p> <p>For the Brocade 3250, 3850, 3900, 8000, 24000, 48000 and DCX director the testing (3) and faulty (4) values are not applicable.</p> <p>The possible values for Brocade 300, 5100 and 5300 are either online (1) or offline (2).</p>
swTelnetShellAdmStatus 1.3.6.1.4.1.1588.2.1.1.1.9	Read-write	<p>The desired administrative status of the Telnet shell.</p> <p>Setting this value to 1 (terminated), deletes the current Telnet shell task. When this variable instance is read, it reports the value last set through SNMP.</p> <p>This OID is supported in Fabric OS 2.x through 3.x.</p> <p>This OID is not supported in Fabric OS 4.0 through 4.2.</p> <p>This OID is supported in Fabric OS 4.3 and later versions.</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>• unknown (0) - The status of the current Telnet shell task is unknown.</li> <li>• terminated (1) - The current Telnet shell task is deleted.</li> </ul> <p>By setting it to 1 (terminated), the current Telnet shell task is deleted. When this variable instance is read, it reports the value last set through SNMP.</p> <p>NOTE: This object is deprecated.</p>
swSsn 1.3.6.1.4.1.1588.2.1.1.1.10	Read only	<p>The soft serial number of the switch.</p> <p>This variable will return the "ssn" value that is stored in the config database. If the "ssn" key value pair is not in the config database it will return WWN of the switch.</p>

#### Flash administration

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.

Object and OID	Access	Description
swFlashDLOperStatus 1.3.6.1.4.1.1588.2.1.1.1.11	Read only	The operational status of the flash. This OID cannot be used for either Firmwaredownload or Configdownload (cannot be set and is read only). The value displayed is always "swCurrent (1)".
swFlashDLAdmStatus 1.3.6.1.4.1.1588.2.1.1.1.12	Read-write	The desired state of the flash.  The host is specified in swFlashDLHost.O. In addition, the user name is specified in swFlashDLUser.O and the file name specified in swFlashDLFile.O.  Possible values are: <ul style="list-style-type: none"> <li>swCurrent (1) - The flash contains the current firmware image or configuration file.</li> <li>swCfUpload (3) - The switch configuration file is to be uploaded to the host specified.</li> <li>swCfDownload (4) - The switch configuration file is to be downloaded from the host specified.</li> <li>swFwCorrupted (5) - The firmware in the flash is corrupted. This value is for informational purposes only; however, setting swFlashDLAdmStatus to this value is not allowed.</li> </ul> For more information about the <b>firmwareDownload</b> , <b>configDownload</b> and <b>configUpload</b> commands, refer to the Fabric OS Command Reference.
swFlashDLHost 1.3.6.1.4.1.1588.2.1.1.1.13	Read-write	The name or IP address (in dot notation) of the host to download or upload a relevant file to the flash.
swFlashDLUser 1.3.6.1.4.1.1588.2.1.1.1.14	Read-write	The user name is used on the host for downloading or uploading a relevant file, to or from the flash.
swFlashDLFile 1.3.6.1.4.1.1588.2.1.1.1.15	Read-write	The name of the file to be downloaded or uploaded.
swFlashDLPassword 1.3.6.1.4.1.1588.2.1.1.1.16	Read-write	The password to be used for FTP transfer of files in the download or upload operation.
swBeaconOperStatus 1.3.6.1.4.1.1588.2.1.1.1.18	Read only	The current operational status of the switch beacon.  Possible values are: <ul style="list-style-type: none"> <li>on (1) - The LEDs on the front panel of the switch run alternately from left to right and right to left. The color is yellow.</li> <li>off (2) - Each LED is in its regular status, indicating color and state.</li> </ul>
swBeaconAdmStatus 1.3.6.1.4.1.1588.2.1.1.1.19	Read-write	The desired status of the switch beacon.  Possible values are: <ul style="list-style-type: none"> <li>on (1) - The LEDs on the front panel of the switch run alternately from left to right and right to left. Set the color to yellow.</li> <li>off (2) - Set each LED to its regular status, indicating color and state.</li> </ul>
swDiagResult 1.3.6.1.4.1.1588.2.1.1.1.20	Read only	The result of the power-on startup test (POST) diagnostics.  Possible values are: <ul style="list-style-type: none"> <li>sw-ok (1) - The switch is okay.</li> <li>sw-faulty (2) - The switch has experienced an unknown fault.</li> <li>sw-embedded-port-fault (3) - The switch has experienced an embedded port fault.</li> </ul>



Object and OID	Access	Description
swNumSensors 1.3.6.1.4.1.1588.2.1.1.1.21	Read only	The number of sensors inside the switch.  The Brocade DCX value is between 1 and 57 (temperature = 50, fan = 3, power supply = 4). The value might vary depending on the switch model.
swSensorTable 1.3.6.1.4.1.1588.2.1.1.1.22	Not accessible	Table of sensor entries.  Table 7 lists the sensors on the Brocade switches.  The sensors on the switches vary based on the blades. For the exact count of temperature sensors, refer to Table 8.
swSensorEntry 1.3.6.1.4.1.1588.2.1.1.1.22.1	Not accessible	An entry of the sensor information.
swSensorIndex 1.3.6.1.4.1.1588.2.1.1.1.22.1.1	Read only	The index of the sensor.  The values are 1 through the value in swNumSensors
swSensorType 1.3.6.1.4.1.1588.2.1.1.1.22.1.2	Read only	The type of sensor.
swSensorStatus 1.3.6.1.4.1.1588.2.1.1.1.22.1.3	Read only	The current status of the sensor.  Possible values are: <ul style="list-style-type: none"> <li>• unknown (1)</li> <li>• faulty (2)</li> <li>• below-min (3) - The sensor value is below the minimal threshold.</li> <li>• nominal (4)</li> <li>• above-max (5) - The sensor value is above the maximum threshold.</li> <li>• absent (6) - The sensor is missing.</li> </ul> For Temperature, valid values include 3 (below-min), 4 (nominal), and 5 (above-max).  For Fan, valid values include 3 (below-min), 4 (nominal), and 6 (absent).  For Power Supply, valid values include 2 (faulty), 4 (nominal), and 6 (absent).
swSensorValue 1.3.6.1.4.1.1588.2.1.1.1.22.1.4	Read only	The current value (reading) of the sensor.  The value -2147483648 represents the maximum value of integer value; it also means that the sensor does not have the capability to measure the actual value. In v2.0, the temperature sensor value is in Celsius, the fan value is in RPM (revolutions per minute), and the power supply sensor reading is unknown.  The unknown value -2147483648 indicates the maximum value of integer value.
swSensorInfo 1.3.6.1.4.1.1588.2.1.1.1.22.1.5	Read only	Additional information on the sensor. It contains the sensor type and number, in textual format; for example:  SLOT #0: TEMP #3  FAN #1  Power Supply #1

## Switch System Group

Object and OID	Access	Description
swTrackChangesInfo 1.3.6.1.4.1.1588.2.1.1.1.23	Read only	Track changes string; for trap only. If there are no events to track, the default return value is "No event so far." If there are events to track, the following are valid return values: <ul style="list-style-type: none"> <li>• Successful log in</li> <li>• Unsuccessful log in</li> <li>• Logout</li> <li>• Configuration file change from task [name of task]</li> <li>• Track-changes on</li> <li>• Track-changes off</li> </ul> NOTE: This object is obsolete.
swID 1.3.6.1.4.1.1588.2.1.1.1.24	Read only	With VF-enabled fabric, the number of switches will be 0 to 128.
swEtherIPAddress 1.3.6.1.4.1.1588.2.1.1.1.25	Read only	The IP address of the Ethernet interface of this switch.
swEtherIPMask 1.3.6.1.4.1.1588.2.1.1.1.26	Read only	The IP mask of the Ethernet interface of this switch.
swFCIPAddress 1.3.6.1.4.1.1588.2.1.1.1.27	Read only	The IP address of the FC interface of this switch.
swFCIPMask 1.3.6.1.4.1.1588.2.1.1.1.28	Read only	The IP mask of the FC interface of this switch.
swIPv6Address 1.3.6.1.4.1.1588.2.1.1.1.29	Not accessible	The IPv6 address. This object is not accessible.
swIPv6Status 1.3.6.1.4.1.1588.2.1.1.1.30	Not accessible	The current status of the IPv6 address. This object is not accessible.
swModel 1.3.6.1.4.1.1588.2.1.1.1.31	Read only	Indicates whether the switch is 7500 or 7500E.
swTestString 1.3.6.1.4.1.1588.2.1.1.1.32	Not accessible	Presence of this string represents test trap.
swPortList 1.3.6.1.4.1.1588.2.1.1.1.33	Not accessible	This string represents the list of ports and its WWN when the ports are moved from one switch to another.
swBrodTrapBitMask 1.3.6.1.4.1.1588.2.1.1.1.34	Not accessible	This represents the type of notification by a single bit. 0x01 - Fabric change event 0x02 - Device change event 0x04 - FAPWWN change event 0x08 - FDMI events 0x0A - Routing policy change 0x10 - D-port configuraiton event 0x20 - SupportSave start/complete event 0x40 - Dynamic port name change 0x80 - Dynamic port name feature enable/disable

Object and OID	Access	Description
<b>swFCPortPrevType</b> 1.3.6.1.4.1.1588.2.1.1.1.35	Not accessible	This represents the port type of a port before it goes online or offline and it is valid only in swFcPortSCN trap.  Valid values are: <ul style="list-style-type: none"> <li>• unknown (1)</li> <li>• other (2)</li> <li>• fl-port (3) - Public loop</li> <li>• f-port (4) - Fabric port</li> <li>• e-port (5) - Fabric expansion port</li> <li>• g-port (6) - Generic fabric port</li> <li>• ex-port (7)</li> <li>• d-port(8) - Diagnostic port</li> <li>• sim-port(9) - Port simulator port</li> <li>• ve-port(10) - Virtual E-port</li> <li>• ae-port (11) - Analytics E-port</li> <li>• af-port (12) - Analytics F-port</li> </ul>
<b>swDeviceStatus</b> 1.3.6.1.4.1.1588.2.1.1.1.36	Not accessible	This represents the status of the attached device. The status changes whenever the port or the node goes to online or offline state.
<b>swBrcdBitObjVal</b> 1.3.6.1.4.1.1588.2.1.1.1.37	Not accessible	The object contains object value for each change mentioned in the swBrcdGenericTrap. It will be empty for the events which do not have any value.
<b>swIODState</b> 1.3.6.1.4.1.1588.2.1.1.1.38	Read only	The object represents the IOD feature state. Possible values are: <ul style="list-style-type: none"> <li>• 1 - enabled</li> <li>• 2 - disabled</li> <li>• 3 - unknown</li> </ul>
<b>swTelnetTable</b> 1.3.6.1.4.1.1588.2.1.1.1.39	Not accessible	Table to display active telnet sessions.
<b>swTelnetEntry</b> 1.3.6.1.4.1.1588.2.1.1.1.39.1	Not accessible	An entry for the swtelnet table.
<b>swTelnetIndex</b> 1.3.6.1.4.1.1588.2.1.1.1.39.1.1	Read only	This object indicates the index of telnet sessions.
<b>swTelnetUser</b> 1.3.6.1.4.1.1588.2.1.1.1.39.1.2	Read only	This object indicates the user from which telnet session is logged in.
<b>swTelnetTTY</b> 1.3.6.1.4.1.1588.2.1.1.1.39.1.3	Read only	This object indicates the terminal of telnet session.
<b>swTelnetIdleTime</b> 1.3.6.1.4.1.1588.2.1.1.1.39.1.4	Read only	This object indicates the idle time of the telnet session.
<b>swTelnetLoginTime</b> 1.3.6.1.4.1.1588.2.1.1.1.39.1.5	Read only	This object indicates the login time of the telnet session.
<b>swTelnetIpAddress</b> 1.3.6.1.4.1.1588.2.1.1.1.39.1.6	Read only	This object indicates the IP Address from where the telnet session exists.  NOTE: If the "login from" field is "-", the SNMP displays the object "swTelnetIpAddress" as "0.0.0.0".

TABLE 5 Sensors on the Various Brocade Switches

Platform	Temp	Fans	Power supply	swNumSensors / connUnitNumSensors
Brocade 6505	4 sensors	2 fans	2 PS	8
Brocade 6510	4 sensors	2 fans	2 PS	8
Brocade 6520	4 sensors	2 fans	2 PS	8
Brocade 7800 Extension Switch	3 sensor	2 fans	2 PS	7
Brocade DCX	16+ sensors	3 fans	4 PS	23+
Brocade DCX-4S	16+ sensors	3 fans	4 PS	23+
Brocade 7840 Extension Switch	4	5	2	11
Brocade DCX 8510-8	58+ sensors	3 fans	4 PS	65+
Brocade DCX 8510-4	35+ sensors	2 fans	2 PS	39+
Brocade G610	6 sensors	4 (a minimum of 2 must be working)	1	11
Brocade G620	7 sensors	6	2	13
Brocade G630	15 sensors	3 (a minimum of 2 must be working)	2	20
Brocade X6-4	35+	2	2	39+
Brocade X6-8	58+ sensors	3 fans	4 PS (3minimum)	65+
Brocade VA-40	4 sensors	2 fans	2 PS	8

TABLE 6 Blade Table

Model	Temp Sensors
FC16-32	5
FC16-48	5
FC16-64	5
FC32-48	5
FC32-64	5
FX8-24	3
SX6	7

## Switch Fabric Group

Object and OID	Access	Description
<b>swFabric</b> 1.3.6.1.4.1.1588.2.1.1.2	Not accessible	The OID sub-tree for the switch Fabric group.
<b>swDomainID</b> 1.3.6.1.4.1.1588.2.1.1.2.1	Read-write	The current Fibre Channel domain ID of the switch. To set a new value, the switch (swAdmStatus) must be in offline or testing state.
<b>swPrincipalSwitch</b> 1.3.6.1.4.1.1588.2.1.1.2.2	Read only	Indicates whether the switch is the principal switch. Possible values are: <ul style="list-style-type: none"> <li>• yes (1)</li> <li>• no (2)</li> </ul>
<b>swNumNbs</b> 1.3.6.1.4.1.1588.2.1.1.2.8	Read only	The number of inter-switch links (ISLs) in the (immediate) neighborhood.
<b>swNbTable</b> 1.3.6.1.4.1.1588.2.1.1.2.9	Not accessible	This table contains the ISLs in the immediate neighborhood of the switch.
<b>swNbEntry</b> 1.3.6.1.4.1.1588.2.1.1.2.9.1	Not accessible	An entry containing each neighbor ISL parameters.
<b>swNbIndex</b> 1.3.6.1.4.1.1588.2.1.1.2.9.1.1	Read only	The index for neighborhood entry.
<b>swNbMyPort</b> 1.3.6.1.4.1.1588.2.1.1.2.9.1.2	Read only	This is the port that has an ISL to another switch. This value is the same as the physical port number of the local switch +1.
<b>swNbRemDomain</b> 1.3.6.1.4.1.1588.2.1.1.2.9.1.3	Read only	This is the Fibre Channel domain on the other end of the ISL. This is the domain ID of the remote switch. Valid values are 1 through 239 as defined by FCS-SW.
<b>swNbRemPort</b> 1.3.6.1.4.1.1588.2.1.1.2.9.1.4	Read only	This is the port index on the other end of the ISL. The physical port number of the remote switch, plus 1.
<b>swNbBaudRate</b> 1.3.6.1.4.1.1588.2.1.1.2.9.1.5	Read only	The baud rate of the ISL. It is always unknown (0). Possible values are: <ul style="list-style-type: none"> <li>• other (1) - None of the following.</li> <li>• oneEighth (2) - 155 Mbaud.</li> <li>• quarter (4) - 266 Mbaud.</li> <li>• half (8) - 532 Mbaud.</li> <li>• full (16) - 1 Gbaud.</li> <li>• double (32) - 2 Gbaud.</li> <li>• quadruple (64) - 4 Gbaud.</li> <li>• octuple (128) - 8 Gbaud.</li> <li>• decuple (256) - 10 Gbaud.</li> <li>• sexdecuple (512) - 16 Gbaud</li> </ul> The valid values for the Brocade DCX are double (32), quadruple (64), and octuple (128).
<b>swNbIsIState</b> 1.3.6.1.4.1.1588.2.1.1.2.9.1.6	Read only	The current state of the ISL. The possible values are as follows. <ul style="list-style-type: none"> <li>• 0 - ISL is down.</li> <li>• 1 - ISL is initiating and not yet operational.</li> <li>• 2, 3, 4, - Used for notification of internal states.</li> <li>• 5 - ISL is active.</li> </ul>
<b>swNbIsIcost</b> 1.3.6.1.4.1.1588.2.1.1.2.9.1.7	Read-write	The current link cost of the ISL. In other words, the cost of a link to control the routing algorithm.

## Switch Agent Configuration Group

Object and OID	Access	Description
<b>swNbRemPortName</b> 1.3.6.1.4.1.1588.2.1.1.2.9.1.8	Read only	The WWN of the remote port.
<b>swFabricMemTable</b> 1.3.6.1.4.1.1588.2.1.1.2.10	Not accessible	This table contains information on the member switches of a fabric. Supported in Fabric OS v2.6.1 and not 3.2.0. This is not available in 6.2.0 and later releases.
<b>swIDIDMode</b> 1.3.6.1.4.1.1588.2.1.1.2.11	Read only	This identifies the status of Insistent Domain ID (IDID) mode. Status indicating if IDID mode is enabled or not.
<b>swPmgrEventType</b> 1.3.6.1.4.1.1588.2.1.1.2.12	Not accessible	This indicates partition manager event type. This OID identifies the following events: <ul style="list-style-type: none"> <li>• create (0)</li> <li>• delete (1)</li> <li>• moveport (2)</li> <li>• fidchange (3)</li> <li>• basechange (4)</li> <li>• vfstatechange (5)</li> </ul>
<b>swPmgrEventTime</b> 1.3.6.1.4.1.1588.2.1.1.2.13	Not accessible	This object identifies the date and time when any events mentioned in swPmgrEventType occur, in textual format.
<b>swPmgrEventDescr</b> 1.3.6.1.4.1.1588.2.1.1.2.14	Not accessible	This object identifies the textual description of the events mentioned in swPmgrEventType.
<b>swVfld</b> 1.3.6.1.4.1.1588.2.1.1.2.15	Read only	The virtual Fabric ID of the switch.  NOTE: swVfld in Switch Fabric group is zero for non VF supported platform and in VF supported platform it is the Virtual fabricID of the switch.
<b>swVfName</b> 1.3.6.1.4.1.1588.2.1.1.2.16	Read only	This represents the virtual switch name configured in the switch.

## Switch Agent Configuration Group

Object and OID	Access	Description
<b>swAgtCfg</b> 1.3.6.1.4.1.1588.2.1.1.4	Not accessible	The OID sub-tree for switch agent configuration group.
<b>swAgtCmtyTable</b> 1.3.6.1.4.1.1588.2.1.1.4.11	Not accessible	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.  NOTE: This table is deprecated in Fabric OS 7.0.0 and later. Use the tables snmpTargetAddrTable, snmpTargetParamsTable, snmpCommunityTable to get the required data.
<b>swAgtCmtyEntry</b> 1.3.6.1.4.1.1588.2.1.1.4.11.1	Not accessible	An entry containing the community parameters.

Object and OID	Access	Description
<b>swAgtCmtyIdx</b> 1.3.6.1.4.1.1588.2.1.1.4.11.1	Read only	The SNMPv1 community entry. The return value for this entry is 1 through 6.
<b>swAgtCmtyStr</b> 1.3.6.1.4.1.1588.2.1.1.4.11.1. 2	Read-write	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: <ul style="list-style-type: none"> <li>• 1 (Secret Code)</li> <li>• 2 (OrigEquipMfr)</li> <li>• 3 (private)</li> <li>• 4 (public)</li> <li>• 5 (common)</li> <li>• 6 (FibreChannel)</li> </ul> Community strings 1-3 are read-write and strings 4-6 are read only. You can change the community setting using the <b>snmpconfig</b> command.
<b>swAgtTrapRcp</b> 1.3.6.1.4.1.1588.2.1.1.4.11.1. 3	Read-write	This is the trap recipient associated with the community. If a new value is set successfully, it takes effect immediately. If not otherwise set, the default IP address for this trap recipient is 0.0.0.0 and the SNMP trap is not sent for the associated community string. With a setting of non-0.0.0.0 IP address, SNMP traps are sent to the host with the associated community string. Any or all of the trap recipients can be configured to send a trap for the associated community string. The maximum number of trap recipients that can be configured is six. If no trap recipient is configured, no traps are sent. The trap recipient IP address should be part of the Access Control List for Fabric OS.(refer to the Fabric OS Command Reference and the <b>snmpConfig</b> command for more information).
<b>swAgtTrapSeverityLevel</b> 1.3.6.1.4.1.1588.2.1.1.4.11.1. 4	Read-write	This is the trap severity level associated with " <b>swAgtTrapRcp</b> ". The trap severity level, is in conjunction with the event's severity level. When an event occurs, and if its severity level is at or below the set value, the SNMP trap is sent to configure trap recipients. The severity level is limited to particular events. If a new value is set successfully, it takes effect immediately. This object obsoletes " <b>swEventTrapLevel</b> ".

## 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.

Object and OID	Access	Description
<b>swFCport</b> 1.3.6.1.4.1.1588.2.1.1.6	Not accessible	The OID sub-tree for Fibre Channel port group.
<b>swFCPortCapacity</b> 1.3.6.1.4.1.1588.2.1.1.6.1	Read only	The maximum number of physical FC ports on the switch.
<b>swFCPortTable</b> 1.3.6.1.4.1.1588.2.1.1.6.2	Not accessible	A table that contains one entry for each switch port, configuration and service parameters of the port.

Object and OID	Access	Description
swFCPortEntry 1.3.6.1.4.1.1588.2.1.1.1.6.2.1	Not accessible	An entry containing the configuration and service parameters of the switch port.
swFCPortIndex 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.1	Read only	The switch port index. The value of swFCPortIndex is 1 higher than the actual port index. For example, a swFCPortIndex of 1 corresponds to the actual port index of 0.
swFCPortType 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.2	Read only	The type of ASIC for the switch port. Possible values are: <ul style="list-style-type: none"> <li>• stitch (1)</li> <li>• flannel (2)</li> <li>• loom (3) (Brocade 2000 series)</li> <li>• bloom (4) (Valid value for Brocade 3250, 3850, 3900, 12000, 24000)</li> <li>• rdbloom (5)</li> <li>• wormhole (6)</li> <li>• other (7) (Valid value for Brocade 200E, 4012, 4100, 4900, 7500, 7600, 48000, 300, 5100 and 5300)</li> <li>• unknown (8)</li> </ul>
swFCPortPhyState 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.3	Read only	The physical state of the port. Possible values are: <ul style="list-style-type: none"> <li>• noCard (1) - No card is present in this switch slot.</li> <li>• noTransceiver (2) - No Transceiver module in this port (Transceiver is the generic name for GBIC, SFP, and so on).</li> <li>• laserFault (3) - The module is signaling a laser fault (defective GBIC).</li> <li>• noLight (4) - The module is not receiving light.</li> <li>• noSync (5) - The module is receiving light but is out of sync.</li> <li>• inSync (6) - The module is receiving light and is in sync.</li> <li>• portFault (7) - The port is marked faulty (defective GBIC, cable, or device).</li> <li>• diagFault (8) - The port failed diagnostics (defective G_Port or FL_Port card or motherboard).</li> <li>• lockRef (9) - The port is locking to the reference signal.</li> <li>• validating (10) - The module is being validated.</li> <li>• invalidModule (11) - The module is invalid.</li> <li>• noSigDet (14) - No Signal is detected in the port.</li> <li>• unknown (255) - The module is unknown.</li> </ul>
swFCPortOpStatus 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.4	Read only	The operational status of the port. Possible values are: <ul style="list-style-type: none"> <li>• unknown (0) - The port module is physically absent.</li> <li>• online (1) - User frames can be passed.</li> <li>• offline (2) - No user frames can be passed.</li> <li>• testing (3) - No user frames can be passed.</li> <li>• faulty (4) - The port module is physically faulty.</li> </ul>



Object and OID	Access	Description
swFCPortAdmStatus 1.3.6.1.4.1.1588.2.1.1.6.2.15	Read-write	<p>The desired state of the port. A management station might place the port in a desired state by setting this object accordingly.</p> <p>Based on the port status, this OID returns one of the following:</p> <ul style="list-style-type: none"> <li>• Online - When queried port is online.</li> <li>• Offline - When queried port is offline.</li> <li>• Faulty - When port is in faulty state.</li> </ul> <p>The following values can be used to set this object:</p> <ul style="list-style-type: none"> <li>• Online - To change port's state to Online.</li> <li>• Offline - To change port's state to Offline.</li> </ul>
swFCPortLinkState 1.3.6.1.4.1.1588.2.1.1.6.2.16	Read-write	<p>Indicates the link state of the port. When the port's link state changes, its operational status (swFCPortOpStatus) is affected.</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>• enabled (1) - The port is allowed to participate in the FC-PH protocol with its attached port (or ports if it is in an FC-AL loop).</li> <li>• disabled (2) - The port is not allowed to participate in the FC-PH protocol with its attached ports.</li> <li>• loopback (3) - The port might transmit frames through an internal path to verify the health of the transmitter and receiver path.</li> </ul>
swFCPortTxType 1.3.6.1.4.1.1588.2.1.1.6.2.17	Read only	<p>Indicates the media transmitter type of the port.</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>• unknown (1) - Cannot determine the port driver.</li> <li>• lw (2) - Long wave laser.</li> <li>• sw (3) - Short wave laser.</li> <li>• ld (4) - Long wave LED.</li> <li>• cu (5) - Copper (electrical).</li> </ul>
swFCPortTxWords 1.3.6.1.4.1.1588.2.1.1.6.2.111	Read only	<p>Counts the number of Fibre Channel words that the port has transmitted. You can convert words to bytes by multiplying this value by 4.</p> <p>NOTE: This object is obsoleted.</p>
swFCPortRxWords 1.3.6.1.4.1.1588.2.1.1.6.2.112	Read only	<p>Counts the number of Fibre Channel words that the port has received. You can convert words to bytes by multiplying this value by 4.</p> <p>NOTE: This object is obsoleted.</p>
swFCPortTxFrames 1.3.6.1.4.1.1588.2.1.1.6.2.113	Read only	Counts the number of Fibre Channel frames that the port has transmitted.
swFCPortRxFrames 1.3.6.1.4.1.1588.2.1.1.6.2.114	Read only	Counts the number of Fibre Channel frames that the port has received.
swFCPortRxC2Frames 1.3.6.1.4.1.1588.2.1.1.6.2.115	Read only	Counts the number of Class 2 frames that the port has received.
swFCPortRxC3Frames 1.3.6.1.4.1.1588.2.1.1.6.2.116	Read only	Counts the number of Class 3 frames that the port has received.
swFCPortRxCs 1.3.6.1.4.1.1588.2.1.1.6.2.117	Read only	Counts the number of link control frames that the port has received.
swFCPortRxCasts 1.3.6.1.4.1.1588.2.1.1.6.2.118	Read only	Counts the number of multicast frames that the port has received.
swFCPortTooManyRdys 1.3.6.1.4.1.1588.2.1.1.6.2.119	Read only	Counts the number of times that RDYs exceeds the frames received.

## Fibre Channel Port Group

Object and OID	Access	Description
swFCPortNoTxCredits 1.3.6.1.4.1.1588.2.1.1.16.2.120	Read only	Counts the number of times that the transmit credit has reached 0.
swFCPortRxEnclnFrs 1.3.6.1.4.1.1588.2.1.1.16.2.121	Read only	Counts the number of encoding error or disparity error inside frames received.
swFCPortRxCrcs 1.3.6.1.4.1.1588.2.1.1.16.2.122	Read only	Counts the number of CRC errors detected for frames received.
swFCPortRxTruncs 1.3.6.1.4.1.1588.2.1.1.16.2.123	Read only	Counts the number of truncated frames that the port has received.
swFCPortRxTooLongs 1.3.6.1.4.1.1588.2.1.1.16.2.124	Read only	Counts the number of received frames that are too long.
swFCPortRxBadEofs 1.3.6.1.4.1.1588.2.1.1.16.2.125	Read only	Counts the number of received frames that have bad EOF delimiters.
swFCPortRxEncOutFrs 1.3.6.1.4.1.1588.2.1.1.16.2.126	Read only	Counts the number of encoding error or disparity error outside frames received.
swFCPortRxBadOs 1.3.6.1.4.1.1588.2.1.1.16.2.127	Read only	Counts the number of invalid ordered sets received.
swFCPortC3Discards 1.3.6.1.4.1.1588.2.1.1.16.2.128	Read only	Counts the number of Class 3 frames that the port has discarded.
swFCPortMcastTimedOuts 1.3.6.1.4.1.1588.2.1.1.16.2.129	Read only	Counts the number of multicast frames that have been timed out.
swFCPortTxMcasts 1.3.6.1.4.1.1588.2.1.1.16.2.130	Read only	Counts the number of multicast frames that have been transmitted.
swFCPortLipIns 1.3.6.1.4.1.1588.2.1.1.16.2.131	Read only	Counts the number of loop initializations that have been initiated by loop devices attached.
swFCPortLipOuts 1.3.6.1.4.1.1588.2.1.1.16.2.132	Read only	Counts the number of loop initializations that have been initiated by the port.
swFCPortLipLastAlpa 1.3.6.1.4.1.1588.2.1.1.16.2.133	Read only	Indicates the physical address (AL_PA) of the loop device that initiated the last loop initialization.
swFCPortWwn 1.3.6.1.4.1.1588.2.1.1.16.2.134	Read only	The WWN of the Fibre Channel port. The contents of an instance are in IEEE extended format, as specified in FC-PH.
swFCPortSpeed 1.3.6.1.4.1.1588.2.1.1.16.2.135	Read-write	The desired baud rate for the port. NOTE: This object is obsoleted.
swFCPortName 1.3.6.1.4.1.1588.2.1.1.16.2.136	Read only	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 1.3.6.1.4.1.1588.2.1.1.16.2.137	Read only	This string indicates the physical port number of the addressed port. This string can be entered as argument on CLI commands such as <b>portShow</b> or wherever a physical port number is expected. The format of the string is: <slot/>port, 'slot' being present only for bladed systems. For LISL, the value is -1/<port #>.
swFCPortFlag 1.3.6.1.4.1.1588.2.1.1.16.2.138	Read only	This string is a bit map of the port status flags, including the port type. <ul style="list-style-type: none"> <li>• physical (0)</li> <li>• virtual (1)</li> </ul>

Object and OID	Access	Description
swFCPortBrodType 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.39	Read only	This string indicates the Brocade port type.  Valid values: <ul style="list-style-type: none"> <li>• unknown (1)</li> <li>• other (2)</li> <li>• fl-port (3) - Public loop</li> <li>• f-port (4) - Fabric port</li> <li>• e-port (5) - Fabric expansion port</li> <li>• g-port (6) - Generic fabric port</li> <li>• ex-port (7)</li> <li>• d-port(8) - Diagnostic port</li> <li>• sim-port(9) - Port simulator port</li> <li>• ve-port(10) - Virtual E-port</li> <li>• ae-port (11) - Analytics E-port</li> <li>• af-port (12) - Analytics F-port</li> </ul>
swFCPortDisableReason 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.40	not-accessible	This string indicates the state change reason when a port goes from online to offline.

## Name Server Database Group

Object and OID	Access	Description
swNs 1.3.6.1.4.1.1588.2.1.1.1.7	Not accessible	The OID sub-tree for Name Server database group.
swNsLocalNumEntry 1.3.6.1.4.1.1588.2.1.1.1.7.1	Read only	The number of local Name Server entries.
swNsLocalTable 1.3.6.1.4.1.1588.2.1.1.1.7.2	Not accessible	The table of local Name Server entries.
swNsLocalEntry 1.3.6.1.4.1.1588.2.1.1.1.7.2.1	Not accessible	An entry from the local Name Server database.
swNsEntryIndex 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.1	Read only	The index of the Name Server database entry.
swNsPortID 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.2	Read only	The Fibre Channel port address ID of the entry.
swNsPortType 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.3	Read only	The type of port for this entry.  Possible values, as defined in FC-GS-2, are: <ul style="list-style-type: none"> <li>• nPort (1)</li> <li>• nlPort (2)</li> </ul>
swNsPortName 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.4	Read only	The Fibre Channel WWN of the port entry.
swNsPortSymb 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.5	Read only	The contents of a symbolic name of the port entry. In FC-GS-2, a symbolic name consists of a byte array of 1 through 256 bytes, and the first byte of the array specifies the length of its contents. This object variable corresponds to the contents of the symbolic name, with the first byte removed.
swNsNodeName 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.6	Read only	The Fibre Channel WWN of the associated node, as defined in FC-GS-2.

## Event Group

Object and OID	Access	Description
<b>swNsNodeSymb</b> 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.7	Read only	The contents of a Symbolic Name of the node associated with the entry. In FC-GS-2, a Symbolic Name consists of a byte array of 1 through 256 bytes, and the first byte of the array specifies the length of its contents. This object variable corresponds to the contents of the Symbolic Name, with the first byte removed.
<b>swNsIPA</b> 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.8	Read only	The Initial Process Associators of the node for the entry as defined in FC-GS-2. This value is read only and cannot be changed.
<b>swNslpAddress</b> 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.9	Read only	The IP address of the node for the entry as defined in FC-GS-2. The format of the address is in IPv6.
<b>swNsCos</b> 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.10	Read only	The class of services supported by the port. This value is a hard-coded bitmap and indicates the supported services as follows: <ul style="list-style-type: none"><li>• Class F (1)</li><li>• Class 1 (2)</li><li>• Class F-1 (3)</li><li>• Class 2 (4)</li><li>• Class F-2 (5)</li><li>• Class 1-2 (6)</li><li>• Class F-1-2 (7)</li><li>• Class 3 (8)</li><li>• Class F-3 (9)</li><li>• Class 1-3 (10)</li><li>• Class F-1-3 (11)</li><li>• Class 2-3 (12)</li><li>• Class F-2-3 (13)</li><li>• Class 1-2-3 (14)</li><li>• Class F-1-2-3 (15)</li></ul>
<b>swNsFc4</b> 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.11	Read only	The FC-4s supported by the port, as defined in FC-GS-2.
<b>swNslpNxPort</b> 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.12	Read only	The object identifies IpAddress of the Nx_Port for the entry.
<b>swNsWwn</b> 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.13	Read only	The object identifies the World Wide Name (WWN) of the Fx_Port for the entry.
<b>swNsHardAddr</b> 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.14	Read only	The object identifies the 24-bit hard address of the node for the entry.

## Event Group

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

Object and OID	Access	Description
<b>swEvent</b> 1.3.6.1.4.1.1588.2.1.1.1.8	Not accessible	The OID sub-tree for switch event group.
<b>swEventTrapLevel</b> 1.3.6.1.4.1.1588.2.1.1.1.8.1	Read-write	Deprecated.
<b>swEventNumEntries</b> 1.3.6.1.4.1.1588.2.1.1.1.8.4	Read only	The number of entries in the event table. The value ranges from 0 to 1024.

Object and OID	Access	Description
<b>swEventTable</b> 1.3.6.1.4.1.1588.2.1.1.1.8.5	Not accessible	The table of event entries. The events will be received from the CHASSIS and the created logical switches.  Only external RASlog messages are supported. These external messages are documented in the Fabric OS Message Reference.
<b>swEventEntry</b> 1.3.6.1.4.1.1588.2.1.1.1.8.5.1	Not accessible	An entry of the event table.
<b>swEventIndex</b> 1.3.6.1.4.1.1588.2.1.1.1.8.5.1.1	Read only	Every RASLOG message is identified with a unique number which is swEventIndex.
<b>swEventTimeInfo</b> 1.3.6.1.4.1.1588.2.1.1.1.8.5.1.2	Read only	The date and time that this event occurred.  The return string is displayed using the following format:  YYYY/MM/DD-hh:mm:ss  Where: YYYY = Year MM = Month DD = Date hh = Hour mm = Minute ss = Seconds  For example:  2005/12/05-07:33:41
<b>swEventLevel</b> 1.3.6.1.4.1.1588.2.1.1.1.8.5.1.3	Read only	The severity level of this event entry.  Possible values are: <ul style="list-style-type: none"> <li>• critical (1)</li> <li>• error (2)</li> <li>• warning (3)</li> <li>• informational (4)</li> <li>• debug (5)</li> </ul>
<b>swEventRepeatCount</b> 1.3.6.1.4.1.1588.2.1.1.1.8.5.1.4	Read only	If the most recent event is the same as the previous, this number increments by 1, and is the count of consecutive times this particular event has occurred.
<b>swEventDescr</b> 1.3.6.1.4.1.1588.2.1.1.1.8.5.1.5	Read only	A textual description of the event.  This field uses the message title and number (for example, WEBD-1006) and the message text. For more information on error messages, refer to the Fabric OS Message Reference.
<b>swEventVfid</b> 1.3.6.1.4.1.1588.2.1.1.1.8.5.1.6	Read only	This object identifies the Virtual Fabric ID.

## Fabric Watch Group

### NOTE

From Fabric OS 7.4.0 or later, the Fabric Watch feature is deprecated.

## End Device Group

Object and OID	Access	Description
<b>swEndDevice</b> 1.3.6.1.4.1.1588.2.1.1.1.21	Not accessible	The OID sub-tree for end device group.
<b>swEndDeviceRlsTable</b> 1.3.6.1.4.1.1588.2.1.1.1.21.1	Not accessible	The table of RLS for individual end devices.
<b>swEndDeviceRlsEntry</b> 1.3.6.1.4.1.1588.2.1.1.1.21.1.1	Not accessible	An entry of an individual end devices' RLS. Since Brocade switches start with port # 0, the SNMP port # should be physical port # plus 1. In turn, that means that SNMP port # 3 translates to port # 2.
<b>swEndDevicePort</b> 1.3.6.1.4.1.1588.2.1.1.1.21.1.1	Not accessible	This object represents the port of the local switch to which the end device is connected. This is an obsolete entry and does not show any value.
<b>swEndDeviceAlpa</b> 1.3.6.1.4.1.1588.2.1.1.1.21.1.2	Not accessible	This object represents the AL_PA of the end device. SNMP AL_PA number should be the logical AL_PA number plus 1. For example, SNMP AL_PA number Oxfo translates to Oxef. This is an obsolete entry and does not show any value.
<b>swEndDevicePortID</b> 1.3.6.1.4.1.1588.2.1.1.1.21.1.3	Read only	The Fibre Channel port address ID of the entry.
<b>swEndDeviceLinkFailure</b> 1.3.6.1.4.1.1588.2.1.1.1.21.1.4	Read only	Link failure count for the end device.
<b>swEndDeviceSyncLoss</b> 1.3.6.1.4.1.1588.2.1.1.1.21.1.5	Read only	Sync loss count for the end device.
<b>swEndDeviceSigLoss</b> 1.3.6.1.4.1.1588.2.1.1.1.21.1.6	Read only	Signal loss count for the end device.
<b>swEndDeviceProtoErr</b> 1.3.6.1.4.1.1588.2.1.1.1.21.1.7	Read only	Protocol error count for the end device.
<b>swEndDeviceInvalidWord</b> 1.3.6.1.4.1.1588.2.1.1.1.21.1.8	Read only	Invalid word count for the end device.
<b>swEndDeviceInvalidCRC</b> 1.3.6.1.4.1.1588.2.1.1.1.21.1.9	Read only	Invalid CRC count for the end device.

## Switch Group

Switch group is not supported.

Object and OID	Access	Description
<b>swGroup</b> 1.3.6.1.4.1.1588.2.1.1.22	Not accessible	The OID sub-tree for switch group.
<b>swGroupTable</b> 1.3.6.1.4.1.1588.2.1.1.22.1	Not accessible	The table of groups. This is not available on all versions of Fabric OS.
<b>swGroupEntry</b> 1.3.6.1.4.1.1588.2.1.1.22.1.1	Not accessible	An entry of table of groups.

Object and OID	Access	Description
<b>swGroupIndex</b> 1.3.6.1.4.1.1588.2.1.1.1.22.1.1.1	Read only	This object is the group index, starting from 1.
<b>swGroupName</b> 1.3.6.1.4.1.1588.2.1.1.1.22.1.1.2	Read only	This object identifies the name of the group. NOTE: This object is obsolete.
<b>swGroupType</b> 1.3.6.1.4.1.1588.2.1.1.1.22.1.1.3	Read only	This object identifies the type of the group. NOTE: This object is obsolete.
<b>swGroupMemTable</b> 1.3.6.1.4.1.1588.2.1.1.1.22.2	Not accessible	The table of members of all groups. This might not be available on all versions of the Fabric OS.
<b>swGroupMemEntry</b> 1.3.6.1.4.1.1588.2.1.1.1.22.2.1	Not accessible	An entry for a member of a group.
<b>swGroupID</b> 1.3.6.1.4.1.1588.2.1.1.1.22.2.1.1	Read only	This object identifies the group ID of the member switch.
<b>swGroupMemWwn</b> 1.3.6.1.4.1.1588.2.1.1.1.22.2.1.2	Read only	This object identifies the WWN of the member switch.
<b>swGroupMemPos</b> 1.3.6.1.4.1.1588.2.1.1.1.22.2.1.	Read only	This object identifies the position of the member switch in the group, based on the order that the switches were added in the group. NOTE: This object is obsolete.

## Bloom Performance Monitor Group

### NOTE

Beginning with Fabric OS 7.4.0 or later, the Bloom performance monitor feature is deprecated.

## Trunking Group

Object and OID	Access	Description
<b>swTrunk</b> 1.3.6.1.4.1.1588.2.1.1.1.24	Not accessible	The OID sub-tree for swTrunk group.
<b>swSwitchTrunkable</b> 1.3.6.1.4.1.1588.2.1.1.1.24.1	Not accessible	This object indicates whether the switch supports the trunking feature or not: <ul style="list-style-type: none"> <li>• no (0)</li> <li>• yes (8)</li> </ul>
<b>swTrunkTable</b> 1.3.6.1.4.1.1588.2.1.1.1.24.2	Not accessible	This object displays trunking information for the switch.
<b>swTrunkEntry</b> 1.3.6.1.4.1.1588.2.1.1.1.24.2.1	Not accessible	Entry for the trunking table.
<b>swTrunkPortIndex</b> 1.3.6.1.4.1.1588.2.1.1.1.24.2.1.1	Read only	This object identifies the switch port index.  The value of a port index is extracted from the second octet of the port WWN stored in swFCPortWwn (refer to "swFCPortWwn" in the Fibre Channel port group).

## CPU or Memory Usage Group

Object and OID	Access	Description
<b>swTrunkGroupNumber</b> 1.3.6.1.4.1.1588.2.1.1.1.24.2.1.2	Read only	This object is a logical entity that specifies the group number to which the port belongs. If this value is 0, the port is not trunked.
<b>swTrunkMaster</b> 1.3.6.1.4.1.1588.2.1.1.1.24.2.1.3	Read only	Port number that is the trunk master of the group. The trunk master implicitly defines the group. All ports with the same master are considered to be part of the same group.
<b>swPortTrunked</b> 1.3.6.1.4.1.1588.2.1.1.1.24.2.1.4	Read only	The active trunk status of the member port.  Valid values: <ul style="list-style-type: none"><li>• enabled (1)</li><li>• disabled (0)</li></ul>
<b>swTrunkGrpTable</b> 1.3.6.1.4.1.1588.2.1.1.1.24.3	Not accessible	The table displays trunking performance information for the switch.
<b>swTrunkGrpEntry</b> 1.3.6.1.4.1.1588.2.1.1.1.24.3.1	Not accessible	Entry for the trunking group table.
<b>swTrunkGrpNumber</b> 1.3.6.1.4.1.1588.2.1.1.1.24.3.1.1	Read only	This object is a logical entity that specifies the group number to which port belongs.
<b>swTrunkGrpMaster</b> 1.3.6.1.4.1.1588.2.1.1.1.24.3.1.2	Read only	This object gives the master port ID for the trunk group.
<b>swTrunkGrpTx</b> 1.3.6.1.4.1.1588.2.1.1.1.24.3.1.3	Read only	Gives the aggregate value of the transmitted words from this trunk group.  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 <b>portStatsShow</b> command (stat_wtx value) for the corresponding trunk ports.
<b>swTrunkGrpRx</b> 1.3.6.1.4.1.1588.2.1.1.1.24.3.1.4	Read only	Gives the aggregate value of the received words by this trunk group.  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 <b>portStatsShow</b> command (stat_wrx value) for the corresponding trunk ports.

## CPU or Memory Usage Group

The memory usage of a system indicates the system's RAM. This table is supported on MAPS-enabled switches.

Beginning with Fabric OS 8.0.1 or later, the CPU and memory usage objects listed in the following table are accessible in Access Gateway mode.

Object and OID	Access	Description
<b>swCpuOrMemoryUsage</b> 1.3.6.1.4.1.1588.2.1.1.1.26	Read only	The object identifier sub-tree for CPU or memory usage group.
<b>swCpuUsage</b> 1.3.6.1.4.1.1588.2.1.1.1.26.1	Read only	The system's CPU usage.



Object and OID	Access	Description
<b>swCpuNoOfRetries</b> 1.3.6.1.4.1.1588.2.1.1.1.26.2	Read only	The number of times the system should take a CPU utilization sample before sending the CPU utilization trap.
<b>swCpuUsageLimit</b> 1.3.6.1.4.1.1588.2.1.1.1.26.3	Read only	The CPU usage limit. NOTE: This object is not supported on MAPS-enabled switches.
<b>swCpuPollingInterval</b> 1.3.6.1.4.1.1588.2.1.1.1.26.4	Read only	The time after which the next CPU usage value will be recorded.
<b>swCpuAction</b> 1.3.6.1.4.1.1588.2.1.1.1.26.5	Read only	The action to be taken if the CPU usage exceeds the specified threshold limit. NOTE: This object is not supported on MAPS-enabled switches.
<b>swMemUsage</b> 1.3.6.1.4.1.1588.2.1.1.1.26.6	Read only	The system's memory usage.
<b>swMemNoOfRetries</b> 1.3.6.1.4.1.1588.2.1.1.1.26.7	Read only	The number of times the system should take a memory usage sample before sending the MAPS trap that indicates the current memory usage.
<b>swMemUsageLimit</b> 1.3.6.1.4.1.1588.2.1.1.1.26.8	Read only	This OID specifies the total available memory of the system.
<b>swMemPollingInterval</b> 1.3.6.1.4.1.1588.2.1.1.1.26.9	Read only	The time after which the next memory usage sample will be taken.
<b>swMemAction</b> 1.3.6.1.4.1.1588.2.1.1.1.26.10	Read only	The action to be taken if the memory usage exceed the specified threshold limit. NOTE: This object is not supported on MAPS-enabled switches.
<b>swMemUsageLimit1</b> 1.3.6.1.4.1.1588.2.1.1.1.26.11	Read only	This OID specifies the low threshold value. NOTE: This object is not supported on MAPS-enabled switches.
<b>swMemUsageLimit3</b> 1.3.6.1.4.1.1588.2.1.1.1.26.12	Read only	This OID specifies the high threshold value. NOTE: This object is not supported on MAPS-enabled switches.
<b>swMemFlashUsage</b> 1.3.6.1.4.1.1588.2.1.1.1.26.13	Read only	This OID specifies the flash memory usage in percentage value.

## Switch Connectivity Unit Port Statistics Extension Table

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

Object and OID	Access	Description
<b>swConnUnitPortStatExtensionTable</b> 1.3.6.1.4.1.1588.2.1.1.1.27	Not accessible	This table represents the connectivity unit port statistics. NOTE: This table is specific to FC port, so the object instance of its corresponding Ethernet and FCoE port's object value will not display when you execute SNMP GET or SNMP WALK command.
<b>swConnUnitPortStatEntry</b> 1.3.6.1.4.1.1588.2.1.1.1.27.1	Not accessible	This represents the connectivity unit port statistics.
<b>swConnUnitCRCWithBadEOF</b> 1.3.6.1.4.1.1588.2.1.1.1.27.1.1	Read only	The number of frames with CRC error having Bad EOF.

## Switch Connectivity Unit Port Statistics Extension Table

Object and OID	Access	Description
swConnUnitZeroTenancy 1.3.6.1.4.1.1588.2.1.1.1.27.1.2	Read only	This counter is incremented when the FL_port acquires the loop, but does not transmit a frame.
swConnUnitFLNumOfTenancy 1.3.6.1.4.1.1588.2.1.1.1.27.1.3	Read only	This counter is incremented when the FL_port acquires the loop.
swConnUnitNLNumOfTenancy 1.3.6.1.4.1.1588.2.1.1.1.27.1.4	Read only	This counter is incremented when the NL_port acquires the loop.
swConnUnitStopTenancyStarVation 1.3.6.1.4.1.1588.2.1.1.1.27.1.5	Read only	This counter is incremented when the FL_port cannot transmit a frame because of lack of credit.
swConnUnitOpend 1.3.6.1.4.1.1588.2.1.1.1.27.1.6	Read only	The number of times FC port entered OPENED state.
swConnUnitTransferConnection 1.3.6.1.4.1.1588.2.1.1.1.27.1.7	Read only	The number of times FC port entered TRANSFER state.
swConnUnitOpen 1.3.6.1.4.1.1588.2.1.1.1.27.1.8	Read only	The number of times FC port entered OPEN state.
swConnUnitInvalidARB 1.3.6.1.4.1.1588.2.1.1.1.27.1.9	Read only	The number of times FC port received invalid ARB.
swConnUnitFTB1Miss 1.3.6.1.4.1.1588.2.1.1.1.27.1.10	Read only	This counter is incremented when the port receives a frame with a DID that cannot be routed by FCR. Applicable to 8G platforms only.
swConnUnitFTB2Miss 1.3.6.1.4.1.1588.2.1.1.1.27.1.11	Read only	This counter is incremented when the port receives a frame with an SID/DID combination that cannot be routed by the VF module. Applicable to 8G platforms only.
swConnUnitFTB6Miss 1.3.6.1.4.1.1588.2.1.1.1.27.1.12	Read only	This counter is incremented when port receives a frame with an SID that cannot be routed by FCR. Applicable to 8G platforms only.
swConnUnitZoneMiss 1.3.6.1.4.1.1588.2.1.1.1.27.1.13	Read only	This counter is incremented when the port receives a frame with an SID and DID that are not zoned together.
swConnUnitLunZoneMiss 1.3.6.1.4.1.1588.2.1.1.1.27.1.14	Read only	This counter is incremented when the port receives a frame with an SID, DID, and LUN that are not zoned together. This is not currently used.
swConnUnitBadEOF 1.3.6.1.4.1.1588.2.1.1.1.27.1.15	Read only	The number of frames with bad EOF.
swConnUnitLCRX 1.3.6.1.4.1.1588.2.1.1.1.27.1.16	Read only	The number of link control frames received.
swConnUnitRDYPriority 1.3.6.1.4.1.1588.2.1.1.1.27.1.17	Read only	The number of times that sending R_RDY or VC_RDY primitive signals was a higher priority than sending frames, due to diminishing credit reserves in the transmitter at the other end of the fibre.
swConnUnitLli 1.3.6.1.4.1.1588.2.1.1.1.27.1.18	Read only	The number of low level interrupts generated by the physical and link layer.

Object and OID	Access	Description
swConnUnitInterrupts 1.3.6.1.4.1.1588.2.1.1.1.27.1.19	Read only	The object represents all the interrupts received on a port. The interrupt includes LLI, unknown, and so on.
swConnUnitUnknownInterrupts 1.3.6.1.4.1.1588.2.1.1.1.27.1.20	Read only	The object represents the unknown interrupts received on a port.
swConnUnitTimedOut 1.3.6.1.4.1.1588.2.1.1.1.27.1.21	Read only	The object represents the number of frames that have been timed out due to any reason.
swConnUnitProcRequired 1.3.6.1.4.1.1588.2.1.1.1.27.1.22	Read only	The object represents the number of frames trapped by CPU.
swConnUnitTxBufferUnavailable 1.3.6.1.4.1.1588.2.1.1.1.27.1.23	Read only	The object shows the count for the number of times the port failed to transmit frames.
swConnUnitStateChange 1.3.6.1.4.1.1588.2.1.1.1.27.1.24	Read only	The object shows the count for the number of times the port has gone to offline, online, and faulty state.
swConnUnitC3DiscardDueToRXTimeout 1.3.6.1.4.1.1588.2.1.1.1.27.1.25	Read only	The number of Class 3 receive frames discarded due to timeout.
swConnUnitC3DiscardDueToDestUnreachable 1.3.6.1.4.1.1588.2.1.1.1.27.1.26	Read only	The number of Class 3 frames discarded due to destination unreachable.
swConnUnitC3DiscardDueToTXTimeout 1.3.6.1.4.1.1588.2.1.1.1.27.1.27	Read only	The number of Class 3 transmit frames discarded due to timeout.
swConnUnitC3DiscardOther 1.3.6.1.4.1.1588.2.1.1.1.27.1.28	Read only	The number of Class 3 frames discarded due to unknown reasons.
swConnUnitPCSErrorCounter 1.3.6.1.4.1.1588.2.1.1.1.27.1.29	Read only	The number of Physical Coding Sublayer (PCS) block errors.
swConnUnitUnroutableFrameCounter 1.3.6.1.4.1.1588.2.1.1.1.27.1.30	Read only	The object represents the unroutable frame counter.
swConnUnitFECCorrectedCounter 1.3.6.1.4.1.1588.2.1.1.1.27.1.31	Read only	The object indicates the Forward Error Correction (FEC) corrected blocks count. The FEC feature is applicable only on 10G and 16G platforms and not supported on 32G platforms.
swConnUnitFECUncorrectedCounter 1.3.6.1.4.1.1588.2.1.1.1.27.1.32	Read only	The object indicates the Forward Error Correction uncorrected blocks count. The FEC feature is applicable only on 16G and 32G platforms.
swConnUnitFECCorrectedRate 1.3.6.1.4.1.1588.2.1.1.1.27.1.33	Read only	The object indicates the Forward Error Correction rate. The FEC feature is applicable only on 32G platforms.

# MAPS-MIB Objects

---

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## MAPS-MIB Overview

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

## MAPS-MIB System Organization of MIB Objects

Figure 5 depicts the organization and structure of MAPS-MIB.

```
- iso
  - org
    - dod
      - internet
        - private
          - enterprises
            - bcsi
              - bcsiReg
                - bcsiModules
                  - bcsiModculeTC
                  - swMibModule
                  - maps
                    - mapsTraps
                    - mapsConfig
```

FIGURE 5 MAPS-MIB overall tree structure

```
- mapsTraps 1.3.6.1.4.1.1588.3.1.4.0
  - mapsTrapAM 1.3.6.1.4.1.1588.3.1.4.0.1
```

FIGURE 6 mapsTraps hierarchy

- mapsConfig 1.3.6.1.4.1.1588.3.1.4.1
  - mapsConfigRuleName 1.3.6.1.4.1.1588.3.1.4.1.1
  - mapsConfigCondition 1.3.6.1.4.1.1588.3.1.4.1.2
  - mapsConfigNumOfMS 1.3.6.1.4.1.1588.3.1.4.1.3
  - mapsConfigMsName 1.3.6.1.4.1.1588.3.1.4.1.4
  - mapsConfigObjectGroupType 1.3.6.1.4.1.1588.3.1.4.1.5
  - mapsConfigObjectKeyType 1.3.6.1.4.1.1588.3.1.4.1.6
  - mapsConfigObjectKeyValue 1.3.6.1.4.1.1588.3.1.4.1.7
  - mapsConfigValueType 1.3.6.1.4.1.1588.3.1.4.1.8
  - mapsConfigCurrentValue 1.3.6.1.4.1.1588.3.1.4.1.9
  - mapsConfigTimeBase 1.3.6.1.4.1.1588.3.1.4.1.10
  - mapsConfigSeverityLevel 1.3.6.1.4.1.1588.3.1.4.1.11
  - mapsConfigMsList 1.3.6.1.4.1.1588.3.1.4.1.12
  - mapsConfigAction 1.3.6.1.4.1.1588.3.1.4.1.13

FIGURE 7 mapsConfig hierarchy

## MAPS Traps

The OID represents the MAPS Alerting and Monitoring traps.

TABLE 19

Trap name and OID	Variables	Description
mapsTrapAM 1.3.6.1.4.1.1588.3.1.4.0.1	mapsConfigRuleName mapsConfigObjectGroupType mapsConfigObjectKeyType mapsConfigObjectKeyValue mapsConfigNumOfMS mapsConfigMsList mapsConfigSeverityLevel mapsConfigCondition mapsConfigAction swVfid mapsDbCategory mapsRuleTriggerCount mapsLastRuleExecTime mapsQuietTime NOTE: Beginning with Fabric OS 8.1.0 or later, mapsRuleTriggerCount, mapsLastRuleExecTime, and mapsQuietTime OIDs are deprecated from var-binds of the trap.	This Alerting and Monitoring trap is sent for MAPS threshold events.

The OID represents the MAPS QuietTime traps.

TABLE 20

Trap name and OID	Variables	Description
mapsQuietTimeTrap 1.3.6.1.4.1.1588.3.1.4.0.2	mapsConfigRuleName mapsConfigObjectGroupType mapsConfigObjectKeyType mapsConfigObjectKeyValue mapsConfigNumOfMS mapsConfigMsList mapsConfigSeverityLevel mapsConfigCondition mapsConfigAction swVfid mapsDbCategory mapsRuleTriggerCount mapsLastRuleExecTime	This trap is sent for MAPS upon quiet time (QT) expiration.

## MAPS Configuration

The OID represents the MAPS configuration.

TABLE 21

Object and OID	Access	Description
mapsConfig		This object represents the MAPS configuration parameters.
mapsConfigRuleName 1.3.6.1.4.1.1588.3.1.4.1.1	Read only	This object indicates the rule name which associates a condition with actions that must be triggered when the specified condition is evaluated to be true.
mapsConfigCondition 1.3.6.1.4.1.1588.3.1.4.1.2	Read only	This object indicates the condition defined in the rule. It includes the counter, time base, and threshold value with the logical operation that must be evaluated. For example, (CRC/MIN > 10).
mapsConfigNumOfMS 1.3.6.1.4.1.1588.3.1.4.1.3	Read only	This object indicates the number of monitoring system entries in the notifications.
mapsConfigMsName 1.3.6.1.4.1.1588.3.1.4.1.4	Read only	This object indicates the monitoring system name like CRC, ITW, PS, FAN.
mapsConfigObjectGroupType 1.3.6.1.4.1.1588.3.1.4.1.5	Read only	This object indicates the object group type like circuit, PS, FAN.
mapsConfigObjectKeyType 1.3.6.1.4.1.1588.3.1.4.1.6	Read only	This object indicates the object key type. The object helps the NMS applications to interpret the data easily.  For example, if the mapsConfigObjectGroupType is port, then the key type is an integer, and the key value is the port number.
mapsConfigObjectKeyValue 1.3.6.1.4.1.1588.3.1.4.1.7	Read only	This object indicates the object key value. For example, <ul style="list-style-type: none"> <li>• For integer the value is 1, 2, 3, 4, ...</li> <li>• For string the value is flowname1, flowname2, ...</li> <li>• If group type is port, then the object key value is the port number.</li> </ul>

TABLE 21

Object and OID	Access	Description
mapsConfigValueType 1.3.6.1.4.1.1588.3.1.4.1.8	Read only	This object indicates the value type which can be an integer, float, or string. The object helps NMS applications to interpret data easily.
mapsConfigCurrentValue 1.3.6.1.4.1.1588.3.1.4.1.9	Read only	This object indicates the actual value of the monitoring system.
mapsConfigTimeBase 1.3.6.1.4.1.1588.3.1.4.1.10	Read only	This object indicates the time period across which the change in a counter is to be monitored.
mapsConfigSeverityLevel 1.3.6.1.4.1.1588.3.1.4.1.11	Read only	This object indicates the severity level of the condition triggered.
mapsConfigMsList 1.3.6.1.4.1.1588.3.1.4.1.12	Read only	This object indicates the list of the monitoring systems. The format is <msname>, <value-type>, <current-value>.
mapsConfigAction 1.3.6.1.4.1.1588.3.1.4.1.13	Read only	<p>This object indicates the actions (bitmask value) that must be triggered when the specified condition is evaluated to be true. Action bitmask value mapping are,</p> <ul style="list-style-type: none"> <li>none (0),</li> <li>raslog (1),</li> <li>snmp (2),</li> <li>portlog (4),</li> <li>port-fence (8),</li> <li>email (16),</li> <li>hareboot (32),</li> <li>switchpolicy (64)</li> </ul> <p>For example, mapsConfigAction value 3 represents both raslog and snmp actions.</p>
mapsRuleTriggerCount 1.3.6.1.4.1.1588.3.1.4.1.15	Read only	This object indicates the number of times rule trigger in quiet time.
mapsLastRuleExecTime 1.3.6.1.4.1.1588.3.1.4.1.16	Read only	This object indicates the last rule execution time.
mapsQuietTime 1.3.6.1.4.1.1588.3.1.4.1.17	Read only	This object indicates quiet time configured in the rule.
mapsConfigObjectNewKeyValue 1.3.6.1.4.1.1588.3.1.4.1.18	Read only	This object replaces mapsConfigObjectKeyValue OID. New OID is enhanced version of deprecated one. The OID is inline with other alerts - RASLOG, EMAIL and has following formats: F-Port 1, Flow(<flow details>), etc.

# High-Availability MIB Objects

---

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## HA-MIB Overview

The HA-MIB provides information about the High Availability features of Fabric OS 6.3.0 and later.

The object types in HA-MIB are organized into the following groupings and the descriptions of each of these MIB variables come directly from the HA-MIB itself:

- High-Availability group
- HA-MIB traps

Figure 8 and Figure 9 depict the organization and structure of the HA-MIB file system.

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



FIGURE 8 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 9 haMIB and haMIBTraps hierarchy

Table 22 lists the objects or definitions that are imported into the HA-MIB and the modules from which they are imported.

TABLE 22 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 22 Objects imported into the HA-MIB (Continued)

Object	Imported from this module
DisplayString	SNMPv2-TC
TimeStamp	

## High-Availability Group

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

TABLE 23

Object and OID	Access	Description
haStatus 1.3.6.1.4.1.1588.2.1.2.1.1	Read only	Indicates whether the system is redundant.  Possible values are: <ul style="list-style-type: none"> <li>• redundant (0) Dual CP with standby CP ready to take over.</li> <li>• nonredundant (1) Single or Dual CP system where the standby CP is not available to take over operation of the switch.</li> </ul>

## FRU Table

TABLE 24

Object and OID	Access	Description
fruTable 1.3.6.1.4.1.1588.2.1.2.1.5	Not accessible	This table inventories the field-replaceable unit (FRU) slots available.  This table contains an entry for each entry in the entPhysicalTable that has entPhysicalClass set to "Container (5)" and has a child entry having entPhysicalIsFRU set to "true (1)".  In Fabric OS, the chassis is marked as a FRU. Unlike other FRUs, the chassis FRU does not have a corresponding container entry.  <a href="#">Table 25</a> includes information on all FRUs except the chassis.
fruEntry 1.3.6.1.4.1.1588.2.1.2.1.5.1	Not accessible	An entry for FRU slot in the fruTable.
fruClass 1.3.6.1.4.1.1588.2.1.2.1.5.1.1	Read only	The type of the FRU object that this slot can hold. <ul style="list-style-type: none"> <li>• other (1)</li> <li>• unknown (2)</li> <li>• chassis (3)</li> <li>• cp (4)</li> <li>• other-CP (5)</li> <li>• switchblade (6)</li> <li>• wwn (7)</li> <li>• powerSupply (8)</li> <li>• fan (9)</li> <li>• CoreBlade (10)</li> <li>• ApplicationBlade (11)</li> </ul>
fruStatus 1.3.6.1.4.1.1588.2.1.2.1.5.1.2	Read only	The current status of the FRU object in the slot.  Valid values: <ul style="list-style-type: none"> <li>• other (1)</li> <li>• unknown (2)</li> <li>• on (3)</li> <li>• off (4)</li> <li>• faulty (5)</li> </ul>

TABLE 24

Object and OID	Access	Description
<b>fruObjectNum</b> 1.3.6.1.4.1.1588.2.1.2.1.5.1.3	Read only	The slot number of the blade, and the unit number for everything else.
<b>fruSupplierId</b> 1.3.6.1.4.1.1588.2.1.2.1.5.1.4	Read only	The supplier ID.
<b>fruSupplierPartNum</b> 1.3.6.1.4.1.1588.2.1.2.1.5.1.5	Read only	The supplier part number.
<b>fruSupplierSerialNum</b> 1.3.6.1.4.1.1588.2.1.2.1.5.1.6	Read only	The supplier serial number.
<b>fruSupplierRevCode</b> 1.3.6.1.4.1.1588.2.1.2.1.5.1.7	Read only	The supplier revision code.
<b>fruPowerConsumption</b> 1.3.6.1.4.1.1588.2.1.2.1.5.1.8	Read only	The power consumption of the switch blades.

TABLE 25 Valid FRU counts for the various Brocade switches

Platform	Blades	Fans	Power supply	WWN card
Brocade DCX	8 port blades 2 CP blades	3 fans	4 PS	2 WWNs
Brocade DCX-4S	4 port blades 2 CP blades	2 fans	4 PS	2 WWNs
Brocade 300	NA	3 fans	1 PS	NA
Brocade 5100	NA	2 fans	2 PS	NA
Brocade 5300	NA	3 fans	2 PS	NA
Brocade 7800 Extension Switch	NA	2 fans	2 PS	NA
Brocade 6505	1	2 fans	2 PS	1 WWN
Brocade 6510	1	2 fans	2 PS	1 WWN
Brocade 6520	1	2 fans	2 PS	1 WWN
Brocade DCX 8510-8 Backbone	8 port blades 2 CP blades	3 fans	4 PS	2 WWNs
Brocade DCX 8510-4 Backbone	4 port blades 2 CP blades	2 fans	4 PS	2 WWNs
Brocade VA-40FC	NA	2 FRUs	2 PS	NA
Brocade G620	NA	2 fans	2 PS	1 WWN
Brocade X6-4	4 port blades 2 core blades 2 CP blades	2 fans	2 PS	2 WWNs
Brocade X6-8	8 port blades 2 core blades 2 CP blades	3 fans	4 PS	2 WWNs

## FRU History Table

TABLE 26

Object and OID	Access	Description
<b>fruHistoryTable</b> 1.3.6.1.4.1.1588.2.1.2.1.6	Not accessible	This table gives the contents of the entire history log of the FRU events.
<b>fruHistoryEntry</b> 1.3.6.1.4.1.1588.2.1.2.1.6.1	Not accessible	An entry in this table represents a particular FRU event.
<b>fruHistoryIndex</b> 1.3.6.1.4.1.1588.2.1.2.1.6.1.1	Read only	Index of the FRU event in the history table.
<b>fruHistoryClass</b> 1.3.6.1.4.1.1588.2.1.2.1.6.1.2	Read only	The type of the FRU object related to the event. Valid values: <ul style="list-style-type: none"> <li>• other (1)</li> <li>• unknown (2)</li> <li>• chassis (3)</li> <li>• cp (4)</li> <li>• other-CP (5)</li> <li>• switchblade (6)</li> <li>• wwn (7)</li> <li>• powerSupply (8)</li> <li>• fan (9)</li> <li>• CoreBlade (10)</li> <li>• ApplicationBlade (11)</li> </ul>
<b>fruHistoryObjectNum</b> 1.3.6.1.4.1.1588.2.1.2.1.6.1.3	Read only	The slot number of the blade and the unit number for everything else.
<b>fruHistoryEvent</b> 1.3.6.1.4.1.1588.2.1.2.1.6.1.4	Read only	The type of the FRU event. Valid values: <ul style="list-style-type: none"> <li>• added (1)</li> <li>• removed (2)</li> <li>• invalid (3)</li> </ul>
<b>fruHistoryTime</b> 1.3.6.1.4.1.1588.2.1.2.1.6.1.5	Read only	The time at which this event happened.
<b>fruHistoryFactoryPartNum</b> 1.3.6.1.4.1.1588.2.1.2.1.6.1.6	Read only	The Brocade part number of the FRU object.
<b>fruHistoryFactorySerialNum</b> 1.3.6.1.4.1.1588.2.1.2.1.6.1.7	Read only	The Brocade serial number of the FRU object.

## CP Table

TABLE 27

Object and OID	Access	Description
<b>cpTable</b> 1.3.6.1.4.1.1588.2.1.2.1.7	Not accessible	This table lists all the CPs in the system.
<b>cpEntry</b> 1.3.6.1.4.1.1588.2.1.2.1.7.1	Not accessible	An entry represents a single CP in the system.

## BP Table

TABLE 27

Object and OID	Access	Description
<b>cpStatus</b> 1.3.6.1.4.1.1588.2.1.2.1.7.1.1	Read only	The current status of the CP.  Valid values: other (1) unknown (2) active (3) standby (4) failed (5)
<b>cpIpAddress</b> 1.3.6.1.4.1.1588.2.1.2.1.7.1.2	Read only	The IP address of the Ethernet interface of this CP.
<b>cpIpMask</b> 1.3.6.1.4.1.1588.2.1.2.1.7.1.3	Read only	The IP mask of the Ethernet interface of this CP.
<b>cpIpGateway</b> 1.3.6.1.4.1.1588.2.1.2.1.7.1.4	Read only	The IP address of the IP gateway for this CP.
<b>cpLastEvent</b> 1.3.6.1.4.1.1588.2.1.2.1.7.1.5	Read only	The last event related to this CP.  Valid values: <ul style="list-style-type: none"> <li>• other (1)</li> <li>• unknown (2)</li> <li>• haSync (3)</li> <li>• haOutSync (4)</li> <li>• cpFaulty (5)</li> <li>• cpHealthy (6)</li> <li>• cpActive (7)</li> <li>• configChange (8)</li> <li>• failOverStart (9)</li> <li>• failOverDone (10)</li> <li>• firmwareCommit (11)</li> <li>• firmwareUpgrade (12)</li> </ul>

## BP Table

TABLE 28

Object and OID	Access	Description
<b>bpTable</b> 1.3.6.1.4.1.1588.2.1.2.1.8	Not accessible	This table lists all the blade processor entries.
<b>bpEntry</b> 1.3.6.1.4.1.1588.2.1.2.1.8.1	Not accessible	An entry of the blade processor information.
<b>bpStatus</b> 1.3.6.1.4.1.1588.2.1.2.1.8.1.1	Read only	The current status of the BP.  Valid values: on(1) off(2) faulty(3) unknow(4) others(5)
<b>bpeth0IpAddress</b> 1.3.6.1.4.1.1588.2.1.2.1.8.1.2	Read only	The IP address of the Ethernet interface Eth0 of the Scimitar blade.

TABLE 28

Object and OID	Access	Description
<b>bpeth1IpAddress</b> 1.3.6.1.4.1.1588.2.1.2.1.8.1.3	Read only	The IP address of the Ethernet interface Eth1 of the Scimitar blade.
<b>bpsubNetMaskIpAddress</b> 1.3.6.1.4.1.1588.2.1.2.1.8.1.4	Read only	The IP mask of the Ethernet interface of this CP.
<b>bpIpGateway</b> 1.3.6.1.4.1.1588.2.1.2.1.8.1.5	Read only	The IP address of the IP Gateway for this CP.
<b>bpSasPriVersion</b> 1.3.6.1.4.1.1588.2.1.2.1.8.1.6	Read only	The current primary version of the SAS.
<b>bpSasSecVersion</b> 1.3.6.1.4.1.1588.2.1.2.1.8.1.7	Read only	The current secondary version of the SAS.

## HA-MIB Traps

This section lists the HA-MIB traps.

TABLE 29

Trap name and OID	Variables	Description
<b>fruStatusChanged</b> 1.3.6.1.4.1.1588.2.1.2.2.0.1	entPhysicalName fruStatus fruClass fruObjectNum	This trap will be generated under the following events: <ul style="list-style-type: none"> <li>• When FRU is added, removed, or failed</li> <li>• When FRU is powered on or off</li> <li>• When the switch is rebooted</li> <li>• When there is a fault in the blade</li> </ul>
<b>cpStatusChanged</b> 1.3.6.1.4.1.1588.2.1.2.2.0.2	cpStatus cpLastEvent swID swSsn	This trap is sent when the status of any CP object changes. The cpLastEvent variable provides the information about the event that occurred. Some of the triggers that will generate this trap are: <ul style="list-style-type: none"> <li>• Reboot</li> <li>• firmwareDownload</li> <li>• fastboot</li> <li>• HA failover</li> </ul>
<b>fruHistoryTrap</b> 1.3.6.1.4.1.1588.2.1.2.2.0.3	fruHistoryClass fruHistoryObjectNum fruHistoryEvent fruHistoryTime fruHistoryFactoryPartNum fruHistoryFactorySerialNum	This trap is generated when a FRU is added, removed, or failed.

# FibreAlliance MIB Objects

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## FibreAlliance MIB Overview

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

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

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

### NOTE

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

## FCMGMT-MIB System Organization of MIB Objects

Figure 10 through Figure 20 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 10 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 11 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 12 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 13 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 14 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 15 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 16 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 17 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
    - connUnitPortStatCountFRJTFFrames 1.3.6.1.3.94.4.5.1.12
    - connUnitPortStatCountPRJTFFrames 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
    - connUnitPortStatCountClass1FRJTFFrames 1.3.6.1.3.94.4.5.1.18
    - connUnitPortStatCountClass1PRJTFFrames 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
    - connUnitPortStatCountClass2FRJTFFrames 1.3.6.1.3.94.4.5.1.24
    - connUnitPortStatCountClass2PRJTFFrames 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 18 ConnUnitPortStatTable hierarchy

```

- connUnitServiceSet
  - connUnitServiceScalars
    - connUnitSnsMaxEntry 1.3.6.1.3.94.5.1.1

```

FIGURE 19 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 20 ConnUnitSnsTable hierarchy

## Definitions for FCMGMT-MIB

Table 30 lists the definitions used for FCMGMT-MIB.

TABLE 30 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 30 Definitions for FCMGMT-MIB (Continued)

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

## Connectivity Unit Group

Implementation of the connectivity group is mandatory for all systems.

TABLE 31

Object and OID	Access	Description
uNumber 1.3.6.1.3.94.1.1	Read only	The number of connectivity units present on this system (represented by this agent). Might be a count of the boards in a chassis or the number of full boxes in a rack.  The connectivity unit is mapped to a switch. uNumber is always set to one.
systemURL 1.3.6.1.3.94.1.2	Read only	The top-level URL of the system; if it does not exist, the value is an empty string. The URL format is implementation dependant and can have keywords embedded that are preceded by a percent sign (for example, %USER).The following are the defined keywords that are recognized and replaced with data during a launch.  USER Replace with username PASSWORD Replace with password GLOBALID Replace with global ID SERIALNO Replace with serial number  The expected value for system URL.0 is:  <code>http://{a.b.c.d}</code>  where {a.b.c.d} is the IP address of the switch if a Web Tools license is available.  "" (null)  where " " is used when a Web Tools license is not available.
connUnitTable 1.3.6.1.3.94.1.6	Not accessible	A list of units under a single SNMP agent. The number of entries is given by the value of uNumber. The value is 1 for stand-alone system.
connUnitEntry 1.3.6.1.3.94.1.6.1	Not accessible	A connectivity unit entry containing objects for a particular unit.
connUnitId 1.3.6.1.3.94.1.6.1.1	Read only	This object indicates the WWN of the switch.  The Brocade implementation maps the switch WWN to the first 8 octets of this object and sets the remaining 8 octets to 0.

TABLE 31

Object and OID	Access	Description
connUnitGlobalId 1.3.6.1.3.94.1.6.1.2	Read only	<p>An optional global-scope identifier for this connectivity unit. It must be a WWN for this connectivity unit or 16 octets of value 0.</p> <p>The following characteristics are required.</p> <ul style="list-style-type: none"> <li>• WWN formats requiring fewer than 16 octets must be extended to 16 octets with trailing 0 octets.</li> <li>• If a WWN is used for connUnitId, the same WWN must be used for connUnitGlobalId.</li> </ul> <p>When a non-zero value is provided, the following characteristics are strongly recommended.</p> <ul style="list-style-type: none"> <li>• It should be persistent across agent and unit resets.</li> <li>• It should be globally unique.</li> <li>• It should be one of these FC-PH/PH3 formats: <ul style="list-style-type: none"> <li>• IEEE (NAA=1)</li> <li>• IEEE Extended (NAA=2)</li> <li>• IEEE Registered (NAA=5)</li> <li>• IEEE Registered extended (NAA=6)</li> </ul> </li> </ul> <p>Use of the IEEE formats allows any IEEE-registered vendor to assure global uniqueness independently. The following are some references on IEEE WWN formats:</p> <p><a href="http://standards.ieee.org/regauth/oui/tutorials/ffbformat.html">http://standards.ieee.org/regauth/oui/tutorials/ffbformat.html</a></p> <p><a href="http://standards.ieee.org/regauth/oui/tutorials/ffbcomp_id.html">http://standards.ieee.org/regauth/oui/tutorials/ffbcomp_id.html</a></p> <p>If one or more WWNs are associated with the connUnit through other management methods, one of them should be used for connUnitGlobalId.</p> <p>If a WWN is not assigned specifically to the connUnit, there is some merit to using a WWN assigned to (one of) its permanently attached FC/LAN interfaces. This cannot risk uniqueness, though.</p> <p>As a counterexample, if your agent runs in a host and the host has an HBA, it is quite possible that agent, host, and HBA are all distinct connUnits, so the host and agent cannot use the WWN of the HBA.</p> <p>If your hub has a built-in Ethernet port, it might be reasonable for the hub to use its LAN address (prefixed with the appropriate NAA) as its connUnitId. But if the Ethernet is a replaceable PCCard, the hub should have an independent ID.</p> <p>The Brocade implementation maps the switch WWN to the top 8 octets of this variable and sets the remaining lower 8 octets to 0.</p> <p>For example:</p> <p>If Brocade's switch WWN is 10:0:0:60:69:10:02:18, then use the SNMP GET command on connUnitGlobalId.10.0.0.60.69.10.02.18.0.0.0.0.0.0.0 returns:</p> <pre>10 00 00 60 69 10 02 18 00 00 00 00 00 00 00 00</pre>
connUnitType 1.3.6.1.3.94.1.6.1.3	Read only	<p>The type of this connectivity unit.</p> <p>Set to 4 for Fibre Channel switches or to 14 for Brocade Access Gateway.</p>



TABLE 31

Object and OID	Access	Description																								
<code>connUnitNumports</code> 1.3.6.13.94.1.6.1.4	Read only	<p>Number of physical ports (between 0 and the maximum number of system supported ports) in the connectivity unit (external).</p> <p>The Brocade switches support 0 to maximum number of system supported ports.</p> <p>NOTE: The ConnUnitNumports will not count the GE ports present on the FC4-16IP blade.</p> <p>The maximum number of supported ports are as follows.</p> <table border="0"> <tr> <td>Brocade 7800 Extension Switch</td> <td>24 ports</td> </tr> <tr> <td>Brocade Encryption Switch</td> <td>32 ports</td> </tr> <tr> <td>Brocade DCX</td> <td>640 ports</td> </tr> <tr> <td>Brocade DCX-4S</td> <td>320 ports</td> </tr> <tr> <td>Brocade 6505</td> <td>24 ports</td> </tr> <tr> <td>Brocade 6510</td> <td>48 ports</td> </tr> <tr> <td>Brocade 6520</td> <td>96 ports</td> </tr> <tr> <td>Brocade DCX 8510-4 Backbone</td> <td>320 ports</td> </tr> <tr> <td>Brocade DCX 8510-8 Backbone</td> <td>640 ports</td> </tr> <tr> <td>Brocade G620</td> <td>64 ports</td> </tr> <tr> <td>Brocade X6-4</td> <td>320 ports</td> </tr> <tr> <td>Brocade X6-8</td> <td>512 ports</td> </tr> </table>	Brocade 7800 Extension Switch	24 ports	Brocade Encryption Switch	32 ports	Brocade DCX	640 ports	Brocade DCX-4S	320 ports	Brocade 6505	24 ports	Brocade 6510	48 ports	Brocade 6520	96 ports	Brocade DCX 8510-4 Backbone	320 ports	Brocade DCX 8510-8 Backbone	640 ports	Brocade G620	64 ports	Brocade X6-4	320 ports	Brocade X6-8	512 ports
Brocade 7800 Extension Switch	24 ports																									
Brocade Encryption Switch	32 ports																									
Brocade DCX	640 ports																									
Brocade DCX-4S	320 ports																									
Brocade 6505	24 ports																									
Brocade 6510	48 ports																									
Brocade 6520	96 ports																									
Brocade DCX 8510-4 Backbone	320 ports																									
Brocade DCX 8510-8 Backbone	640 ports																									
Brocade G620	64 ports																									
Brocade X6-4	320 ports																									
Brocade X6-8	512 ports																									
<code>connUnitState</code> 1.3.6.13.94.1.6.1.5	Read only	<p>Overall state of the connectivity unit.</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>• unknown (1)</li> <li>• online (2) - Set the state to online.</li> <li>• offline (3) - Set the state to offline.</li> </ul> <p>Mapped as follows:</p> <pre>switchState (ONLINE) 2 (online) switchState (not ONLINE) 3 (offline, testing, faulty)</pre>																								
<code>connUnitStatus</code> 1.3.6.13.94.1.6.1.6	Read only	<p>Overall status of the connectivity unit. This switch status is based on the most severe status of contributors like Power supplies, Temperatures, Fans, WWN servers, Standby CP, Blades, Flash, Marginal ports, Faulty ports, Missing SFPs, and so on. <code>switchStatusPolicyShow</code> command displays the policy parameters that determines the overall switch status.</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>• unknown (1) - Unknown</li> <li>• unused (2) - Unmonitored</li> <li>• ok (3) - Healthy/ok</li> <li>• warning (4) - Marginal/Warning</li> <li>• failed (5) - Down/Failed</li> </ul>																								
<code>connUnitProduct</code> 1.3.6.13.94.1.6.1.7	Read only	<p>The connectivity unit vendor's product model name.</p> <p>This is the same as for <code>sysDescr</code> (set for as many as 79 bytes).</p> <p>If the switch is in Access Gateway mode, the default value is Access Gateway.</p>																								
<code>connUnitSn</code> 1.3.6.13.94.1.6.1.8	Read only	<p>The serial number for this connectivity unit.</p> <p>Set to the SSN (which by default is the WWN).</p>																								
<code>connUnitUpTime</code> 1.3.6.13.94.1.6.1.9	Read only	<p>The number of centiseconds since the last unit initialization.</p>																								

TABLE 31

Object and OID	Access	Description
connUnitUrl 1.3.6.1.3.94.1.6.1.10	Read only	<p>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.</p> <p>(Same as systemURL.) The expected value for connUnitURL.O is:  <code>"http://{a.b.c.d}"</code>            where {a.b.c.d} is the IP address of the switch if Web Tools license is available.</p> <p><code>"</code> (null)            where "" is the IP address of the switch if Web Tools license is not available.</p>
connUnitDomainId 1.3.6.1.3.94.1.6.1.11	Read only	<p>24-bit Fibre Channel address ID of this connectivity unit, right-justified with leading 0s if required. If this value is not applicable, return all bits to one.</p> <p>Set to the switch domain ID (as per FC-SW).</p> <p>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.</p>
connUnitProxyMaster 1.3.6.1.3.94.1.6.1.12	Read only	<p>A value of "yes" means this is the proxy master unit for a set of managed units.</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>• unknown (1)</li> <li>• no (2)</li> <li>• yes (3)</li> </ul> <p>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.</p> <p>Set to 3 (yes).</p>
connUnitPrincipal 1.3.6.1.3.94.1.6.1.13	Read only	<p>Indicates whether this connectivity unit is the principal unit within the group of fabric elements. If this value is not applicable, it returns "unknown".</p> <p>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).</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>• unknown (1)</li> <li>• no (2)</li> <li>• yes (3)</li> </ul>
connUnitNumSensors 1.3.6.1.3.94.1.6.1.14	Read only	<p>Number of sensors (between 0 and maximum number of sensors) in the connUnitSensorTable.</p> <p>For specific sensor counts on the various switches, refer to <a href="#">Table 7</a> on page 62.</p>
connUnitStatusChangeTime 1.3.6.1.3.94.1.6.1.15	Read only	<p>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.</p> <p>NOTE: This object is not supported.</p>

TABLE 31

Object and OID	Access	Description
connUnitConfigurationChangeTime 1.3.6.1.3.94.1.6.1.16	Read only	The sysuptime time stamp (in centiseconds) at which the last configuration change occurred for any members of the set. In other words, this is the latest time stamp of flash memory update. This represents a union of change information for connUnitConfigurationChangeTime  NOTE: This object is not supported.
connUnitNumRevs 1.3.6.1.3.94.1.6.1.17	Read only	The number of revisions in connUnitRevsTable. Set to 2.
connUnitNumZones 1.3.6.1.3.94.1.6.1.18	Read only	Number of zones defined in connUnitZoneTable. NOTE: This object is not supported.
connUnitModuleId 1.3.6.1.3.94.1.6.1.19	Read only	This is a unique ID, persistent between boots, that can be used to group a set of connUnits together into a module. The intended use would be to create a connUnit with a connUnitType of "module" to represent a physical or logical group of connectivity units. Then the value of the group would be set to the value of connUnitId for this "container" connUnit.  connUnitModuleId should be 0s if this connUnit is not part of a module. Set to the WWN of the switch.
connUnitName 1.3.6.1.3.94.1.6.1.20	Read-write	A display string containing a name for this connectivity unit. This object value should be persistent between boots. Set to switchName/sysName.
connUnitInfo 1.3.6.1.3.94.1.6.1.21	Read-write	A display string containing information about this connectivity unit. This object value should be persistent between boots. For a Fabric switch set to sysDescr and read only. For a Brocade Access Gateway device set to "Access Gateway."

TABLE 31

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

TABLE 31

Object and OID	Access	Description
<b>connUnitRevsTable</b> 1.3.6.1.3.94.1.7	Not accessible	Table of the revisions supported by connectivity units managed by this agent.  Usage Notes This table lists the versions of hardware and software elements in the switch.  One entry for the hardware platform version and another entry for the Fabric OS version. For example, for the Brocade 4100 the hardware platform number is 32.0. The Fabric OS version for this release is 5.1.
<b>connUnitRevsEntry</b> 1.3.6.1.3.94.1.7.1	Not accessible	Each entry contains the information for a specific revision.
<b>connUnitRevsUnitId</b> 1.3.6.1.3.94.1.7.1.1	Read only	The connUnitId value for the connectivity unit that contains this revision table.
<b>connUnitRevsIndex</b> 1.3.6.1.3.94.1.7.1.2	Read only	A unique value among all connUnitRevsEntrys with the same value of connUnitRevsUnitId, in the range between 1 and connUnitNumRevs.  Index 1 returns the hardware version. Index 2 returns the software version.
<b>connUnitRevsRevId</b> 1.3.6.1.3.94.1.7.1.3	Read only	A vendor-specific string identifying a revision of a component of the connUnit indexed by connUnitRevsUnitId.  Index 1 returns the switchType from switchShow. Index 2 returns the Fabric OS version using Telnet command version: for example, v8.0.1.
<b>connUnitRevsDescription</b> 1.3.6.1.3.94.1.7.1.4	Read only	Description of a component to which the revision corresponds.  Index 1 returns the hardware version. Index 2 returns the software version.
<b>connUnitSensorTable</b> 1.3.6.1.3.94.1.8	Not accessible	Table of the sensors supported by each connectivity unit managed by this agent.  For specific sensor counts on the various switches., refer to <a href="#">Table 7</a> on page 62.
<b>connUnitSensorEntry</b> 1.3.6.1.3.94.1.8.1	Not accessible	Each entry contains the information for a specific sensor.
<b>connUnitSensorUnitId</b> 1.3.6.1.3.94.1.8.1.1	Read only	The connUnitId value of the connectivity unit that contains this sensor table.  Set to connUnitId.
<b>connUnitSensorIndex</b> 1.3.6.1.3.94.1.8.1.2	Read only	A unique value among all connUnitSensorEntrys with the same value of connUnitSensorUnitId, in the range between 1 and the return value from connUnitNumSensor.
<b>connUnitSensorName</b> 1.3.6.1.3.94.1.8.1.3	Read only	A textual identification of the sensor, intended primarily for operator use.  Each contains the name of sensor in textual format: for example, Temp #1, Fan #2, and so on.
<b>connUnitSensorStatus</b> 1.3.6.1.3.94.1.8.1.4	Read only	The status indicated by the sensor.  Possible values are: <ul style="list-style-type: none"> <li>• unknown (1)</li> <li>• other (2)</li> <li>• ok (3) The sensor indicates okay.</li> <li>• Warning (4) - The sensor indicates a warning.</li> <li>• failed (5) - The sensor indicates failure.</li> <li>• Nominal = 3 (ok).</li> </ul>
<b>connUnitSensorInfo</b> 1.3.6.1.3.94.1.8.1.5	Read only	Miscellaneous static information about the sensor, such as its serial number.  Each contains textual information about the sensor.  Returns the serial ID if this is for the power supply; otherwise, returns Null.

TABLE 31

Object and OID	Access	Description								
<b>connUnitSensorMessage</b> 1.3.6.1.3.94.1.8.1.6	Read only	<p>This describes the status of the sensor as a message. It may also provide some information about the sensor, for example:</p> <pre>sensor 1: type 3 is OK, value is 33</pre> <p>Each contains the sensor status (and reading if applicable) in textual format.</p>								
<b>connUnitSensorType</b> 1.3.6.1.3.94.1.8.1.7	Read only	<p>The type of component being monitored by this sensor.</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>• unknown (1)</li> <li>• other (2)</li> <li>• battery (3)</li> <li>• fan (4)</li> <li>• power-supply (5)</li> <li>• transmitter (6)</li> <li>• enclosure (7)</li> <li>• board (8)</li> <li>• receiver (9)</li> </ul> <p>The following mapping is for each individual sensor, where applicable:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">swSensorType</td> <td>connUnitSensorType</td> </tr> <tr> <td>1 (temperature)</td> <td>8 (board)</td> </tr> <tr> <td>2 (fan)</td> <td>4 (fan)</td> </tr> <tr> <td>3 (power supply)</td> <td>5 (power supply)</td> </tr> </table>	swSensorType	connUnitSensorType	1 (temperature)	8 (board)	2 (fan)	4 (fan)	3 (power supply)	5 (power supply)
swSensorType	connUnitSensorType									
1 (temperature)	8 (board)									
2 (fan)	4 (fan)									
3 (power supply)	5 (power supply)									
<b>connUnitSensorCharacteristic</b> 1.3.6.1.3.94.1.8.1.8	Read only	<p>The characteristics being monitored by this sensor.</p> <p>The following mapping is for each individual sensor, where applicable:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">swSensorType</td> <td>connUnitSensorCharacteristic</td> </tr> <tr> <td>1 (temperature)</td> <td>3 (temperature)</td> </tr> <tr> <td>2 (fan)</td> <td>7 (airflow)</td> </tr> <tr> <td>3 (power supply)</td> <td>9 (power)</td> </tr> </table> <p>Possible values are:</p> <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 2.6.1.</li> </ul>	swSensorType	connUnitSensorCharacteristic	1 (temperature)	3 (temperature)	2 (fan)	7 (airflow)	3 (power supply)	9 (power)
swSensorType	connUnitSensorCharacteristic									
1 (temperature)	3 (temperature)									
2 (fan)	7 (airflow)									
3 (power supply)	9 (power)									
<b>connUnitPortTable</b> 1.3.6.1.3.94.1.10	Not accessible	<p>Generic information on ports for a specific connUnit.</p> <p>NOTE: This table is specific to FC port, so the object instance of its corresponding Ethernet and FCoE port's object values will not display when you execute SNMP GET or SNMP WALK command.</p>								
<b>connUnitPortEntry</b> 1.3.6.1.3.94.1.10.1	Not accessible	Each entry contains the information for a specific port,								

TABLE 31

Object and OID	Access	Description																										
<b>connUnitPortUnitId</b> 1.3.6.1.3.94.1.10.1.1	Read only	The connUnitId value of the connectivity unit that contains this port. Same value as connUnitId.																										
<b>connUnitPortIndex</b> 1.3.6.1.3.94.1.10.1.2	Read only	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 physical ports are as follows: <table border="0" style="margin-left: 40px;"> <tr> <td>Brocade 7800 Extension Switch</td> <td>24 ports</td> </tr> <tr> <td>Brocade Encryption Switch</td> <td>32 ports</td> </tr> <tr> <td>Brocade DCX</td> <td>640 ports</td> </tr> <tr> <td>Brocade DCX-4S</td> <td>320 ports</td> </tr> <tr> <td>Brocade 6505</td> <td>24 ports</td> </tr> <tr> <td>Brocade 6510</td> <td>48 ports</td> </tr> <tr> <td>Brocade 6520</td> <td>96 ports</td> </tr> <tr> <td>Brocade DCX 8510-4 Backbone</td> <td>320 ports</td> </tr> <tr> <td>Brocade DCX 8510-8 Backbone</td> <td>640 ports</td> </tr> <tr> <td>Brocade VA-40FC</td> <td>40 ports</td> </tr> <tr> <td>Brocade G620</td> <td>64 ports</td> </tr> <tr> <td>Brocade X6-4</td> <td>320 ports</td> </tr> <tr> <td>Brocade X6-8</td> <td>512 ports</td> </tr> </table>	Brocade 7800 Extension Switch	24 ports	Brocade Encryption Switch	32 ports	Brocade DCX	640 ports	Brocade DCX-4S	320 ports	Brocade 6505	24 ports	Brocade 6510	48 ports	Brocade 6520	96 ports	Brocade DCX 8510-4 Backbone	320 ports	Brocade DCX 8510-8 Backbone	640 ports	Brocade VA-40FC	40 ports	Brocade G620	64 ports	Brocade X6-4	320 ports	Brocade X6-8	512 ports
Brocade 7800 Extension Switch	24 ports																											
Brocade Encryption Switch	32 ports																											
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Brocade G620	64 ports																											
Brocade X6-4	320 ports																											
Brocade X6-8	512 ports																											
<b>connUnitPortType</b> 1.3.6.1.3.94.1.10.1.3	Read only	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. 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> <li>• wan (16)</li> <li>• ac (17) AC power line</li> <li>• dc (18) DC power line</li> <li>• ssa (19) Serial storage architecture</li> </ul>																										

TABLE 31

Object and OID	Access	Description
connUnitPortFCClassCap 1.3.6.1.3.94.1.10.1.4	Read only	<p>Bit mask that specifies the classes of service capability of this port. If this is not applicable, return all bits set to 0.</p> <p>The bits have the following definition:</p> <ul style="list-style-type: none"> <li>• unknown 0</li> <li>• class-f 1</li> <li>• class-one 2</li> <li>• class-two 4</li> <li>• class-three 8</li> <li>• class-four 16</li> <li>• class-five 32</li> <li>• class-six 64</li> </ul> <p>For an F_Port, FL_Port, or sim-port, this value is 0x000C. For a G_Port or E_Port, this value is 0x000D.</p> <p>For a Brocade Access Gateway, both the F_Port and N_Port this value is 0x0008. An Access Gateway supports class-three services only, therefore the value is 8 for both port types.</p> <p>connUnitPortFCClassCap attribute is dependent on the state of the port, that is, whether the port is online or offline. If the port is offline, the class service of U port will be shown as value of onnUnitPortFCClassCap. If it is online, then this mib attribute value will be equal to class service corresponding to the port type (F, E, L port.)</p>
connUnitPortFCClassOp 1.3.6.1.3.94.1.10.1.5	Read only	<p>Bit mask that specifies the classes of service that are currently operational. If this is not applicable, return all bits set to 0. This object has the same definition as connUnitPortFCClassCap.</p> <p>For an F_Port, FL_Port, or sim-port, this value is 0x000C. For a G_Port or E_Port, this value is 0x000D.</p> <p>For a Brocade Access Gateway both the F_Port and N_Port this value is 0x0008. A Brocade Access Gateway supports class-three services only, therefore the value is 8 for both port types.</p> <p>connUnitPortFCClassOp is independent of the state of the port (online or offline). Its value is only dependent on the port type.</p>
connUnitPortState 1.3.6.1.3.94.1.10.1.6	Read only	<p>The state of the port hardware.</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>• unavailable (1) - Do not use.</li> <li>• online (2) - Available for meaningful work.</li> <li>• offline (3) - Not available for meaningful work.</li> <li>• bypassed (4) - No longer used.</li> <li>• diagnostics (5) - Map to your testing. (Not supported in Fabric OS 2.6.1.)</li> </ul> <p>For an E, F, or FL_Port, the value is online. For a U_Port, the value is offline (disabled, testing, faulted).</p>



TABLE 31

Object and OID	Access	Description
<b>connUnitPortStatus</b> 1.3.6.1.3.94.1.10.1.7	Read only	<p>An overall protocol status for the port. For a U_Port, the status should be ols (9).</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>• unknown (1)</li> <li>• unused (2) - Device cannot report this status.</li> <li>• ready (3) - FCAL Loop or FCPH Link reset protocol initialization has completed.</li> <li>• warning (4) - Do not use.</li> <li>• failure (5) - Port is faulty.</li> <li>• notparticipating (6) - Loop not participating and does not have a loop address. Do not use.</li> <li>• initializing (7) - Protocol is proceeding. Do not use.</li> <li>• bypass (8) - Do not use.</li> <li>• ols (9) - FCP offline status. (Not supported in Fabric OS 2.6.1.)</li> </ul> <p>NOTE: For an E_Port, F_Port, or FL_Port, the value is 3 (ok). For a U_Port, the value is 2 (unused) if not faulty with GBIC, 1(unknown) if not faulty but no GBIC, or 5 (failure) if faulty.</p> <p>In Fabric OS 3.x and later, for an E_Port, F_Port, FL_Port or other Port and online port state, the value is 3 (ok). For G_Port or other Port and offline port state, the value is 9 (ols). For unknown portype and offline port state, the value is 1 (unknown).</p>
<b>connUnitPortTransmitter Type</b> 1.3.6.1.3.94.1.10.1.8	Read only	<p>The technology of the port transceiver.</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>• unknown (1)</li> <li>• other (2)</li> <li>• unused (3)</li> <li>• shortwave (4)</li> <li>• longwave (5)</li> <li>• copper (6)</li> <li>• scsi (7)</li> <li>• longwaveNoOFC (8)</li> <li>• shortwaveNoOFC (9)</li> <li>• longwaveLED (10)</li> <li>• ssa (11) (Not supported in Fabric OS 2.6.1.)</li> </ul> <p>For an external FC port, this value should be 9 (shortwaveNoOFC), 8 (longwaveNoOFC), or 6 (copper).</p>
<b>connUnitPortModuleType</b> 1.3.6.1.3.94.1.10.1.9	Read only	<p>The module type of the port connector.</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>• unknown (1)</li> <li>• other (2)</li> <li>• gbic (3)</li> <li>• embedded (4) Fixed (oneXnine)</li> <li>• glm (5)</li> <li>• gbicSerialId (6)</li> <li>• gbicNoSerialId (7)</li> <li>• gbicNotInstalled (8)</li> <li>• smallFormFactor (9)</li> </ul> <p>For an external FC port with GBIC, this value is set to 6 (gbicSerialId) or 7 (gbicNoSerialId). For an external FC port without GBIC, this value is set to 8 (gbicNotInstalled).</p>

TABLE 31

Object and OID	Access	Description
<b>connUnitPortWwn</b> 1.3.6.1.3.94.1.10.110	Read only	<p>The World Wide Name of the port, if applicable; otherwise, an empty string.</p> <p>This is in IEEE Extended format, and the extension contains the internal port number of each port.</p> <p>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.</p>
<b>connUnitPortFCId</b> 1.3.6.1.3.94.1.10.111	Read only	<p>This is the assigned Fibre Channel ID of the port. If the port does not have a Fibre Channel address, this object return all bits set to 1.</p> <p>For an F_Port, this is the Fibre Channel ID to which the connected N_Port is assigned. For an FL_Port, this is the Fibre Channel ID of the FL_Port. For a U or E_Port, this is similar to F_Port.</p> <p>The FC ID is formatted "DD AA PP" (for example, "02 00 02"). The Brocade Access Gateway port FC ID differs from a Fibre Channel switch. A Fibre Channel switch port FC ID has the same DD with a different AA value for each link. The Brocade Access Gateway "PP" is the port number for F_Ports and is always zero for N_Ports. Therefore the N_Port FC ID always appears as "DD AA 00" (for example, "02 00 00"). On a Brocade Access Gateway the FC ID of different ports can have the same "AA" value but different "DD" values and vice versa.</p>
<b>connUnitPortSn</b> 1.3.6.1.3.94.1.10.112	Read only	<p>The serial number of the unit (for example, for a GBIC). If this is not applicable, return an empty string.</p> <p>If the GBIC has a serial ID, the return value is the GBIC part number; otherwise, the return value is Null.</p>
<b>connUnitPortRevision</b> 1.3.6.1.3.94.1.10.113	Read only	<p>The port revision (for example, GBIC).</p> <p>If the GBIC has a serial ID, this returns the GBIC revision number; otherwise, it returns a Null value.</p>
<b>connUnitPortVendor</b> 1.3.6.1.3.94.1.10.114	Read only	<p>The port vendor (for example, for a GBIC).</p> <p>If the GBIC has a serial ID, this returns the GBIC vendor name; otherwise, it returns a Null value.</p>
<b>connUnitPortSpeed</b> 1.3.6.1.3.94.1.10.115	Read only	<p>The speed of the port, in kilobytes per second.</p> <p>For example, the valid values for Brocade 12000, 24000, and 48000 directors: 250,000 KBps, 500,000 KBps, 1,000,000 KBps, 1,250,000 KBps, 2,000,000 KBps, 4,000,000 KBps, 16,000,000 KBps, 32,000,000 KBps depending on the configuration.</p>

TABLE 31

Object and OID	Access	Description
connUnitPortControl 1.3.6.1.3.94.1.10.1.16	Read-write	<p>Controls the addressed connUnit's port.</p> <p>Valid commands are:</p> <p>resetConnUnitPort</p> <p>If the addressed connUnit allows this operation to be performed to this port, the addressed port performs a vendor-specific reset operation. Examples of these operations are:</p> <ul style="list-style-type: none"> <li>• The Link Reset protocol.</li> <li>• The Loop Initialization protocol.</li> <li>• Resynchronization occurring between the transceiver in the addressed port to the transceiver to which the port is connected.</li> </ul> <p>bypassConnUnitPort</p> <p>If the addressed connUnit allows this operation to be performed to this port, the addressed port performs a vendor-specific "bypass" operation. Examples of these operations are:</p> <ul style="list-style-type: none"> <li>• Transitioning from online to offline.</li> <li>• A request (NON-PARTICIPATING) command to the loop port state machine.</li> <li>• Removal of the port from an arbitrated loop by a hub.</li> </ul> <p>unbypassConnUnitPort</p> <p>If the addressed connUnit allows this operation to be performed to this port, the addressed port performs a vendor-specific "unbypass" operation. Examples of these operations are:</p> <ul style="list-style-type: none"> <li>• The Link Failure protocol.</li> <li>• A request (PARTICIPATING) command to the loop port state machine.</li> <li>• Addition of the port to an arbitrated loop by a hub.</li> </ul> <p>offlineConnUnitPort</p> <p>If the addressed connUnit allows this operation to be performed to this port, the addressed port performs a vendor-specific offline operation. Examples of these operations are:</p> <ul style="list-style-type: none"> <li>• Disabling a port's transceiver.</li> <li>• The Link Failure protocol.</li> <li>• Request (NON-PARTICIPATING) command to the loop port state machine removal of the port from an arbitrated loop by a hub.</li> </ul> <p>onlineConnUnitPort</p> <p>If the addressed connUnit allows this operation to be performed to this port, the addressed port performs a vendor-specific online operation. Examples of these operations are:</p> <ul style="list-style-type: none"> <li>• Enabling a port's transceiver.</li> <li>• The Link Failure protocol, request (PARTICIPATING) command to the loop port state machine.</li> <li>• Addition of the port from an arbitrated loop by a hub.</li> </ul> <p>Each implementation might choose not to allow any or all of these values on a SET.</p> <p>If the management station uses in-band communication (FC-IP) with the switch, either of the two following actions might result in a loss of in-band communication with the switch.</p> <ul style="list-style-type: none"> <li>• Disabling the FC port that is connected to the management station</li> <li>• Disabling the embedded port</li> </ul>

TABLE 31

Object and OID	Access	Description																										
connUnitPortControl 1.3.6.1.3.94.1.10.1.16 (continued)	Read-write	<ul style="list-style-type: none"> <li>• Return values are:               <ul style="list-style-type: none"> <li>- resetConnUnitPort portDisable (F or E_Port, loop for U_Port)</li> <li>- bypassConnUnitPort portDisable (FL_Port)</li> <li>- unbypassConnUnitPort portEnable (FL_Port)</li> <li>- offlineConnUnitPort portDisable (E, F, FL_Port)</li> <li>- onlineConnUnitPort portEnable (U)</li> <li>- resetConnUnitPortCounters clear the port statistics counter. -- when rebooted, this defaults to 1 (unknown).</li> </ul> </li> </ul>																										
connUnitPortName 1.3.6.1.3.94.1.10.1.17	Read-write	<p>A string describing the addressed port.</p> <p>NOTE: This object is read only for Brocade switches.</p>																										
connUnitPortPhysicalNumber 1.3.6.1.3.94.1.10.1.18	Read only	<p>This is the internal port number by which this port is known. In many implementations, this should be the same as connUnitPortIndex. Some implementations might have an internal port representation not compatible with the rules for table indices. In these cases, provide the internal representation of this port in this object. This value might also be used in the connUnitLinkPortNumberX or connUnitLinkPortNumberY objects of the connUnitLinkTable.</p> <p>The internal port numbers for Brocade switch. The Brocade switches support 0 through maximum number of ports.</p> <p>The maximum number of supported ports are as follows.</p> <table border="0"> <tbody> <tr> <td>Brocade 300</td> <td>24 ports</td> </tr> <tr> <td>Brocade 5100</td> <td>40 ports</td> </tr> <tr> <td>Brocade 5300</td> <td>80 ports</td> </tr> <tr> <td>Brocade 7800 Extension Switch</td> <td>24 ports</td> </tr> <tr> <td>Brocade Encryption Switch</td> <td>32 ports</td> </tr> <tr> <td>Brocade DCX</td> <td>640 ports</td> </tr> <tr> <td>Brocade DCX-4S</td> <td>320 ports</td> </tr> <tr> <td>Brocade 6505</td> <td>24 ports</td> </tr> <tr> <td>Brocade 6510</td> <td>48 ports</td> </tr> <tr> <td>Brocade 6520</td> <td>96 ports</td> </tr> <tr> <td>Brocade DCX 8510-4 Backbone</td> <td>320 ports</td> </tr> <tr> <td>Brocade DCX 8510-8 Backbone</td> <td>640 ports</td> </tr> <tr> <td>Brocade VA-40FC</td> <td>40 ports</td> </tr> </tbody> </table>	Brocade 300	24 ports	Brocade 5100	40 ports	Brocade 5300	80 ports	Brocade 7800 Extension Switch	24 ports	Brocade Encryption Switch	32 ports	Brocade DCX	640 ports	Brocade DCX-4S	320 ports	Brocade 6505	24 ports	Brocade 6510	48 ports	Brocade 6520	96 ports	Brocade DCX 8510-4 Backbone	320 ports	Brocade DCX 8510-8 Backbone	640 ports	Brocade VA-40FC	40 ports
Brocade 300	24 ports																											
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Brocade DCX	640 ports																											
Brocade DCX-4S	320 ports																											
Brocade 6505	24 ports																											
Brocade 6510	48 ports																											
Brocade 6520	96 ports																											
Brocade DCX 8510-4 Backbone	320 ports																											
Brocade DCX 8510-8 Backbone	640 ports																											
Brocade VA-40FC	40 ports																											
connUnitPortStatObject 1.3.6.1.3.94.1.10.1.19	Read only	<p>This OID is deprecated.</p> <p>This contains the OID of the first object of the table that contains the statistics for this particular port. If this has a value of 0, then there are no statistics available for this port. The port type information helps identify the statistics objects found in the table. From this point, use the getnext command to get the next statistics object. When the first part of the OID changes, the end of table is reached.</p> <p>Mapped to connUnitPortStatFabricUnitId.</p>																										

TABLE 31

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

TABLE 31

Object and OID	Access	Description
connUnitEventTable 1.3.6.1.3.94.1.11	Not accessible	<p>The table of connectivity unit events. Errors, warnings, and information should be reported in this table.</p> <p>This table contains the 1024 most-recent event log entries.</p> <p>Only external RASlog messages are supported. Fabric OS 4.4.0 and later releases do not have Panic or Debug level messages. All external messages are documented in the Fabric OS Message Reference.</p>
connUnitEventEntry 1.3.6.1.3.94.1.11.1	Not accessible	Each entry contains information on a specific event for the given connectivity unit.
connUnitEventUnitId 1.3.6.1.3.94.1.11.1.1	Read only	The connUnitId of the connectivity unit that contains this event table. Same as connUnitId.
connUnitEventIndex 1.3.6.1.3.94.1.11.1.2	Read only	<p>Each connectivity unit has its own event buffer. As it wraps, it might write over previous events. This object is an index into the buffer. It is recommended that this table is read using "getNext"s to retrieve the initial table. The management application 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.</p> <p>An agent might read events 50-75.</p> <p>At the next read interval, connUnitEventCurrID is 189. If the management application tries to read event index 76 and the agent's internal buffer is 100 entries maximum, event index 76 is no longer available.</p> <p>The index value is an incrementing integer starting from 1 every time there is a table reset. On table reset, all contents are emptied and all indices are set to 0. When an event is added to the table, the event is assigned the next-higher integer value than the last item entered into the table. If the index value reaches its maximum value, the next item entered causes the index value to roll over and start at 1 again.</p> <p>Mapped to swEventIndex.</p>
connUnitEventId 1.3.6.1.3.94.1.11.1.3	Read only	<p>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.</p> <p>NOTE: This object is obsoleted.</p>
connUnitREventTime 1.3.6.1.3.94.1.11.1.4	Read only	<p>This is the real time when the event occurred. It has the following format: DDMMYYYY HHMMSS</p> <p>Where:</p> <ul style="list-style-type: none"> <li>DD = day number</li> <li>MM = month number</li> <li>YYYY = year</li> <li>HH = hours</li> <li>MM = minutes</li> <li>SS = seconds</li> </ul> <p>If not applicable, returns a null string.</p>

TABLE 31

Object and OID	Access	Description														
<code>connUnitSEventTime</code> 1.3.6.1.3.94.1.11.1.5	Read only	This is the sysuptime time stamp when the event occurred.														
<code>connUnitEventSeverity</code> 1.3.6.1.3.94.1.11.1.6	Read only	<p>The event severity level. The mapping between error log severity level and this variable is:</p> <table> <tr> <td>Error log</td> <td>FA-MIB</td> </tr> <tr> <td>none (0)</td> <td>unknown (1)</td> </tr> <tr> <td>Critical (1)</td> <td>critical (4)</td> </tr> <tr> <td>Error (2)</td> <td>error (5)</td> </tr> <tr> <td>Warning (3)</td> <td>warning (6)</td> </tr> <tr> <td>Informational (4)</td> <td>info (8)</td> </tr> <tr> <td>Debug (5)</td> <td>debug (9)</td> </tr> </table> <p>For more information about severity, refer to "FcEventSeverity" in <a href="#">Table 30</a> on page 97.</p>	Error log	FA-MIB	none (0)	unknown (1)	Critical (1)	critical (4)	Error (2)	error (5)	Warning (3)	warning (6)	Informational (4)	info (8)	Debug (5)	debug (9)
Error log	FA-MIB															
none (0)	unknown (1)															
Critical (1)	critical (4)															
Error (2)	error (5)															
Warning (3)	warning (6)															
Informational (4)	info (8)															
Debug (5)	debug (9)															
<code>connUnitEventType</code> 1.3.6.1.3.94.1.11.1.7	Read only	<p>The type of this event.</p> <p>Possible values are:</p> <ul style="list-style-type: none"> <li>• unknown (1)</li> <li>• other (2)</li> <li>• status (3)</li> <li>• configuration (4)</li> <li>• topology (5)</li> </ul> <p>Always set to 2 (other).</p>														
<code>connUnitEventObject</code> 1.3.6.1.3.94.1.11.1.8	Read only	<p>This is used with the <code>connUnitEventType</code> to identify to which object the event refers. It can be the OID of a connectivity unit or of another object, like <code>connUnitPortStatus</code>.</p> <p>Always set to null.</p>														
<code>connUnitEventDescr</code> 1.3.6.1.3.94.1.11.1.9	Read only	<p>The description of the event.</p> <p>Same as the string displayed in the system error log. The system error log can be viewed using the <code>errShow</code> or <code>errDump</code> commands.</p> <p>This field uses the message title and number (for example, WEBD-1006) and the message text. For more information on error messages, refer to Fabric OS Message Reference.</p>														

TABLE 31

Object and OID	Access	Description
connUnitLinkTable 1.3.6.1.3.94.1.12	Not accessible	<p>A list of links known to this agent from this connectivity unit to other connectivity units- X is switch data and Y is other end.</p> <p>The link table is intended to organize and communicate any information the agent has that might assist a management application to discover the connectivity units in the framework and the topology of their interconnect- the goal is to assist the management application by mapping the elements of the framework in addition to listing them.</p> <p>With this goal, the agent should include as much as it possesses about any links from its own connectivity units to others, including links among its own units.</p> <p>An agent should include partial information about links if it is not able to fully define them in accord with the following structure; however, the information must include either a nonzero connUnitNodeld—or a nonzero connUnitPortWwn—for each end of the link.</p> <p>If the agent is able to discover links that do not directly attach to members of its agency and its discovery algorithm gives some assurance that the links are recently valid, it might include these links.</p> <p>Link information entered by administrative action might be included even if not validated directly if the link has at least one endpoint in this agency, but it should not be included otherwise.</p> <p>A connectivity unit should fill the table in as best it can. One of the methods to fill this in would be to use the RNID ELS command (ANSI document 99-422vO). This command queries a port for the information needed for the link table.</p> <p>This table is accessed either directly, if the management software has an index value, or using getNext. The values of the indexes are not required to be contiguous. Each entry created in this table is assigned an index. This relationship is kept persistent until the entry is removed from the table or the system is reset. The total number of entries is defined by the size of the table.</p> <p>For an entry to be considered valid, both the X (local) and the Y (remote) values need to have one valid value.</p> <p>A Brocade Access Gateway has no ISLs (InterSwitch Links); therefore all F_Port and N_Port connections display in ag --show for online F_Ports.</p> <p>Dedicated ISL   DISL    An ISL physically connected between two virtual switches belonging to same VF ID. A DISL is dedicated to carry frames only related to VF ID of connected virtual switches.</p> <p>Extended ISL   XISL    A XISL belongs to the base fabric and by default carries frames of the base fabric and for other fabrics using the encapsulation and IFR header.</p> <p>Logical ISL    LISL    A virtual link between 2 virtual switches that is used for control frames. LISL might not map directly to a single physical ISL depending on topology.</p>
connUnitLinkEntry 1.3.6.1.3.94.1.12.1	Not accessible	An entry describing a particular link to another.
connUnitLinkUnitId 1.3.6.1.3.94.1.12.1.1	Read only	The connUnitId of the connectivity unit that contains this link table. Set to WWN of the local switch.



TABLE 31

Object and OID	Access	Description
connUnitLinkIndex 1.3.6.1.3.94.1.12.1.2	Read only	This value is used to create a unique value for each entry in the link table with the same connUnitLinkUnitId. The value can only be reused if it is not currently in use and the value is the next candidate to be used. This value is allowed to wrap at the highest value represented by the number of bits. This value is reset to 0 when the system is reset and the first value to be used is 1.  Indexes 1 through maximum number of ports is reserved for ISL.  Indexes maximum number of ports + 1 and above are reserved for end devices and are calculated based on portID of the end devices.
connUnitLinkNodeldX 1.3.6.1.3.94.1.12.1.3	Read only	The node WWN of the unit at one end of the link. If the node WWN is unknown and the node is a connUnit in the responding agent, then the value of this object must be equal to its connUnitID.  WWN of the local switch.
connUnitLinkPortNumbe rX 1.3.6.1.3.94.1.12.1.4	Read only	The port number on the unit specified by connUnitLinkNodeldX, if known; otherwise, -1. If the value is nonnegative, then it is equal to connUnitPortPhysicalNumber.  ISL- Physical port number of the E_Port.  Device- Physical port # to which the device is connected.
connUnitLinkPortWwnX 1.3.6.1.3.94.1.12.1.5	Read only	The port WWN of the unit specified by 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	Read only	The node WWN of the unit at the other end of the link. If the node WWN is unknown and the node is a connUnit in the responding SNMP agency, then the value of this object must be equal to its connUnitID.  ISL- WWN of the remote switch.  Device- Node name of the device.
connUnitLinkPortNumbe rY 1.3.6.1.3.94.1.12.1.7	Read only	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	Read only	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.
connUnitLinkAgentAddre ssY 1.3.6.1.3.94.1.12.1.9	Read only	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).
connUnitLinkAgentAddre ssTypeY 1.3.6.1.3.94.1.12.1.10	Read only	If connUnitLinkAgentAddressY is nonzero, it is a protocol address. connUnitLinkAgentAddressTypeY is the "address family number" assigned by IANA to identify the address format (for example, 1 is Ipv4, 2 is Ipv6).  ISL- Type 1.  Device- 0 (Null).

TABLE 31

Object and OID	Access	Description
connUnitLinkAgentPortY 1.3.6.1.3.94.1.12.1.11	Read only	The IP port number for the agent. This is provided in case the agent is at a non-standard SNMP port.  ISL- IP port.  Device- 0 (Null).
connUnitLinkUnitTypeY 1.3.6.1.3.94.1.12.1.12	Read only	Type of the FC connectivity unit, as defined in connUnitType. <ul style="list-style-type: none"> <li>• ISL- Switch device.</li> <li>• End devices- End device types based on an FCP Inquiry.</li> </ul> Brocade does not support Hubs.  Table 32 displays the types of the connectivity unit.
connUnitLinkConnIdY 1.3.6.1.3.94.1.12.1.13	Read only	This is the Fibre Channel ID of this port. If the connectivity unit is a switch, this is expected to be a Big Endian value of 24 bits. If this is loop, then it is the AL_PA that is connected. If this is an E_Port, then it contains only the domain ID. If this is an F_Port or sim-port, then it contains both the area and domain ID. If not any of those, unknown or cascaded loop, return all bits set to 1.  ISL- Port ID of the remote port.  Device- Port ID of the remote port.
connUnitLinkCurrIndex 1.3.6.1.3.94.1.12.1.14	Read only	The last-used link index.

TABLE 32 connUnitLinkUnitTypeY end devices

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

## Statistics Group

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

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

The high order bit is reserved to indicate whether the object is supported. All objects start at a value of 0 at hardware initialization and continue incrementing until 18,446,744,073,709,551,615 bits and then wrap to 0.

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

TABLE 33

Object and OID	Access	Description
connUnitPortStatTable 1.3.6.1.3.94.4.5	Not accessible	A list of statistics for the fabric port types. NOTE: This table is specific to FC port, so the object instance of its corresponding Ethernet and FCoE port's object values will not display when you execute SNMP GET or SNMP WALK command.
connUnitPortStatEntry 1.3.6.1.3.94.4.5.1	Not accessible	An entry describing port statistics.
connUnitPortStatUnitId 1.3.6.1.3.94.4.5.1.1	Read only	The connUnitId of the connectivity unit that contains this port statistics table.
connUnitPortStatIndex 1.3.6.1.3.94.4.5.1.2	Read only	This object represents the port index.
connUnitPortStatCountError 1.3.6.1.3.94.4.5.1.3	Read only	A count of the errors that have occurred on this port.
connUnitPortStatCountTxObjects 1.3.6.1.3.94.4.5.1.4	Read only	The number of frames that have been transmitted by this port. A Fibre Channel frame starts with SOF and ends with EOF. FC loop devices should not count frames passed through. This value represents the sum total for all other transmitted objects.
connUnitPortStatCountRxObjects 1.3.6.1.3.94.4.5.1.5	Read only	The number of frames, packets, IOs, and so forth, that have been received by this port. A Fibre Channel frame starts with SOF and ends with EOF. FC loop devices should not count frames passed through. This value represents the sum total for all other received objects.
connUnitPortStatCountTxElements 1.3.6.1.3.94.4.5.1.6	Read only	The number of octets or bytes that have been transmitted by this port. There is an one-second periodic polling of the port. This value is saved and compared with the next polled value to compute net throughput.
connUnitPortStatCountRxElements 1.3.6.1.3.94.4.5.1.7	Read only	The number of octets or bytes that have been received by this port. There is an one-second periodic polling of the port. This value is saved and compared with the next polled value to compute net throughput.
connUnitPortStatCountBBCreditZero 1.3.6.1.3.94.4.5.1.8	Read only	The number of transitions in or out of BB credit zero state.
connUnitPortStatCountInputBuffersFull 1.3.6.1.3.94.4.5.1.9	Read only	The number of occurrences when all input buffers of a port were full and outbound buffer-to-buffer credit transitioned to 0. There is no credit to provide to other side. Return Value - 800000000 This is a Fibre Channel statistic only. NOTE: This object is not supported.
connUnitPortStatCountFBSYFrames 1.3.6.1.3.94.4.5.1.10	Read only	The number of times that FBSY was returned to this port as a result of a frame that could not be delivered to the other end of the link. This occurs if either the fabric or the destination port is temporarily busy. Port can only occur on SOFcl 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. NOTE: This object is not supported.

TABLE 33

Object and OID	Access	Description
connUnitPortStatCountP BSYFrames 1.3.6.1.3.94.4.5.111	Read only	<p>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).</p> <p>Return Value - 800000000</p> <p>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.</p> <p>NOTE: This object is not supported.</p>
connUnitPortStatCountF RJTFrames 1.3.6.1.3.94.4.5.112	Read only	<p>The number of times that FRJT was returned to this port as a result of a frame that was rejected by the fabric.</p> <p>This is the total for all classes and is a Fibre Channel only statistic.</p> <p>NOTE: This object is not supported.</p>
connUnitPortStatCountP RJTFrames 1.3.6.1.3.94.4.5.113	Read only	<p>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.</p> <p>Return Value - 800000000</p> <p>This is the total for all classes and is a Fibre Channel only statistic.</p> <p>NOTE: This object is not supported.</p>
connUnitPortStatCountCI ass1RxFrames 1.3.6.1.3.94.4.5.114	Read only	<p>The number of Class 1 Frames received at this port. This is a Fibre Channel only statistic. Brocade does not support Class 1 Frames.</p> <p>Return value - 800000000</p> <p>NOTE: This object is not supported.</p>
connUnitPortStatCountCI ass1TxFrames 1.3.6.1.3.94.4.5.115	Read only	<p>The number of Class 1 Frames transmitted out this port. This is a Fibre Channel only statistic. Brocade does not support Class 1 Frames.</p> <p>Return value - 800000000</p> <p>NOTE: This object is not supported.</p>
connUnitPortStatCountCI ass1FBSYFrames 1.3.6.1.3.94.4.5.116	Read only	<p>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).</p> <p>This is a Fibre Channel only statistic. Brocade does not support Class 1 Frames.</p> <p>Return value - 800000000</p> <p>NOTE: This object is not supported.</p>
connUnitPortStatCountCI ass1PBSYFrames 1.3.6.1.3.94.4.5.117	Read only	<p>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).</p> <p>This is a Fibre Channel only statistic. Brocade does not support Class 1 Frames.</p> <p>Return value - 800000000</p> <p>NOTE: This object is not supported.</p>

TABLE 33

Object and OID	Access	Description
connUnitPortStatCountCI ass1FRJTFrames 1.3.6.1.3.94.4.5.118	Read only	The number of times that FRJT was returned to this port as a result of a Class 1 Frame that was rejected by the fabric.  This is a Fibre Channel only statistic. Brocade does not support Class 1 Frames.  Return value - 800000000  NOTE: This object is not supported.
connUnitPortStatCountCI ass1PRJTFrames 1.3.6.1.3.94.4.5.119	Read only	The number of times that FRJT was returned to this port as a result of a Class 1 Frame that was rejected at the destination N_Port.  This is a Fibre Channel only statistic. Brocade does not support Class 1 Frames.  Return value- 800000000  NOTE: This object is not supported.
connUnitPortStatCountCI ass2RxFrames 1.3.6.1.3.94.4.5.120	Read only	The number of Class 2 Frames received at this port.  This is a Fibre Channel only statistic.
connUnitPortStatCountCI ass2TxFrames 1.3.6.1.3.94.4.5.121	Read only	The number of Class 2 Frames transmitted out this port.  This is a Fibre Channel only statistic.  Return value - 800000000  NOTE: This object is not supported.
connUnitPortStatCountCI ass2FBSYFrames 1.3.6.1.3.94.4.5.122	Read only	The number of times that FBSY was returned to this port because Class 2 Frame that could not be delivered to the other end of the link. This occurs if either the fabric or the destination port is temporarily busy. FBSY can only occur on SOFcl frames (the frames that establish a connection).  This is a Fibre Channel only statistic.  Return value - 800000000  NOTE: This object is not supported.
connUnitPortStatCountCI ass2PBSYFrames 1.3.6.1.3.94.4.5.123	Read only	The number of times that PBSY was returned to this port as a result of a Class 2 Frame that could not be delivered to the other end of the link. This occurs if the destination N_Port is temporarily busy. PBSY can only occur on SOFcl frames (the frames that establish a connection).  This is a Fibre Channel only statistic.  Return value - 800000000  NOTE: This object is not supported.
connUnitPortStatCountCI ass2FRJTFrames 1.3.6.1.3.94.4.5.124	Read only	The number of times that FRJT was returned to this port as a result of a Class 2 Frame that was rejected by the fabric.  This is a Fibre Channel only statistic.  Return value - 800000000  NOTE: This object is not supported.
connUnitPortStatCountCI ass2PRJTFrames 1.3.6.1.3.94.4.5.125	Read only	The number of times that FRJT was returned to this port as a result of a Class 2 Frame that was rejected at the destination N_Port.  This is a Fibre Channel only statistic.  Return value - 800000000  NOTE: This object is not supported.

TABLE 33

Object and OID	Access	Description
connUnitPortStatCountCI ass3RxFrames 1.3.6.1.3.94.4.5.1.26	Read only	The number of Class 3 Frames received at this port. This is a Fibre Channel only statistic.
connUnitPortStatCountCI ass3TxFrames 1.3.6.1.3.94.4.5.1.27	Read only	The number of Class 3 Frames transmitted out this port. This is a Fibre Channel only statistic. Return value - 800000000 NOTE: This object is not supported.
connUnitPortStatCountCI ass3Discards 1.3.6.1.3.94.4.5.1.28	Read only	The number of Class 3 Frames that were discarded upon reception at this port. There is no FBSY or FRJT generated for Class 3 Frames. They are discarded if they cannot be delivered. This is a sum of all Class 3 discards. This is a Fibre Channel only statistic.
connUnitPortStatCountR xMulticastObjects 1.3.6.1.3.94.4.5.1.29	Read only	The number of multicast frames or packets received at this port.
connUnitPortStatCountTx MulticastObjects 1.3.6.1.3.94.4.5.1.30	Read only	The number of multicast frames or packets transmitted out this port.
connUnitPortStatCountR xBroadcastObjects 1.3.6.1.3.94.4.5.1.31	Read only	The number of broadcast frames or packets received at this port. Return value - 800000000 NOTE: This object is not supported.
connUnitPortStatCountTx BroadcastObjects 1.3.6.1.3.94.4.5.1.32	Read only	The number of broadcast frames or packets transmitted out this port. On a Fibre Channel loop, count only OPNr frames generated. Return value - 800000000 NOTE: This object is not supported.
connUnitPortStatCountR xLinkResets 1.3.6.1.3.94.4.5.1.33	Read only	The number of link resets received. This is a Fibre Channel only statistic.
connUnitPortStatCountTx LinkResets 1.3.6.1.3.94.4.5.1.34	Read only	The number of link resets transmitted. This is a Fibre Channel only statistic.
connUnitPortStatCountN umberLinkResets 1.3.6.1.3.94.4.5.1.35	Read only	The number of link resets and LIPs detected at this port. The number times the reset link protocol is initiated. This is a count of the logical resets, a count of the number of primitives. This is a Fibre Channel only statistic. Return value - 800000000 NOTE: This object is not supported.
connUnitPortStatCountR xOfflineSequences 1.3.6.1.3.94.4.5.1.36	Read only	The number of offline primitive OLS received at this port. This is a Fibre Channel only statistic.
connUnitPortStatCountTx OfflineSequences 1.3.6.1.3.94.4.5.1.37	Read only	The number of offline primitive OLS transmitted from this port. This is a Fibre Channel only statistic.

TABLE 33

Object and OID	Access	Description
connUnitPortStatCountNumberOfflineSequences 1.3.6.13.94.4.5.138	Read only	The number of offline primitive sequence received at this port. This is a Fibre Channel only statistic. Return Value - 800000000 NOTE: This object is not supported.
connUnitPortStatCountLinkFailures 1.3.6.13.94.4.5.139	Read only	The number of link failures. This count is part of the Link Error Status Block (LESB). (FC-PH 29.8) This is a Fibre Channel only statistic.
connUnitPortStatCountInvalidCRC 1.3.6.13.94.4.5.140	Read only	The number of frames received with invalid CRC. This count is part of the Link Error Status Block (LESB). (FC-PH 29.8) Loop ports should not count CRC errors passing through when monitoring. This is a Fibre Channel only statistic.
connUnitPortStatCountInvalidTxWords 1.3.6.13.94.4.5.141	Read only	The number of invalid transmission words received at this port. This count is part of the Link Error Status Block (LESB). (FC-PH 29.8) This is a Fibre Channel only statistic. This is the sum of encoding in and encoding out error.
connUnitPortStatCountPrimitiveSequenceProtocolErrors 1.3.6.13.94.4.5.142	Read only	The number of primitive sequence protocol errors detected at this port. This count is part of the Link Error Status Block (LESB). (FC-PH 29.8) This is a Fibre Channel only statistic.
connUnitPortStatCountLossesofSignal 1.3.6.13.94.4.5.143	Read only	The number of instances of signal loss detected at port. This count is part of the Link Error Status Block (LESB). (FC-PH 29.8) This is a Fibre Channel only statistic.
connUnitPortStatCountLossesofSynchronization 1.3.6.13.94.4.5.144	Read only	The number of instances of synchronization loss detected at port. This count is part of the Link Error Status Block (LESB). (FC-PH 29.8) This is a Fibre Channel only statistic.
connUnitPortStatCountInvalidOrderedSets 1.3.6.13.94.4.5.145	Read only	The number of invalid ordered sets received at port. This count is part of the Link Error Status Block (LESB). (FC-PH 29.8). This is a Fibre Channel only statistic.
connUnitPortStatCountFramesTooLong 1.3.6.13.94.4.5.146	Read only	The number of frames received at this port where the frame length was greater than what was agreed to in FLOGI/PLOGI. This could be caused by losing the end of frame delimiter. This is a Fibre Channel only statistic.
connUnitPortStatCountFramesTruncated 1.3.6.13.94.4.5.147	Read only	The number of frames that are less than the Fibre Channel minimum frame size of 36 bytes.
connUnitPortStatCountAddressErrors 1.3.6.13.94.4.5.148	Read only	The number of frames received with unknown addressing. For example, unknown SID or DID. The SID or DID is not known to the routing algorithm. This is a Fibre Channel only statistic.
connUnitPortStatCountDelimiterErrors 1.3.6.13.94.4.5.149	Read only	The count of frames that have either a bad start of frame or end of frame.
connUnitPortStatCountEncodingDisparityErrors 1.3.6.13.94.4.5.150	Read only	The number of encoding errors inside of frames.

## Service Group

Implementation of the Service group is mandatory for all systems.

The Service group contains the following subgroups:

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

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

TABLE 34

Object and OID	Access	Description
connUnitSnsMaxEntry 1.3.6.1.3.94.5.1.1	Read only	The maximum number of entries in the table.
connUnitSnsTable 1.3.6.1.3.94.5.2.1	Not accessible	This table contains an entry for each object registered with this port in the switch.  Implementation of the Connectivity Unit Service Tables group is mandatory for all systems.  A Brocade Access Gateway has no name server information; therefore this table is disabled.
connUnitSnsEntry 1.3.6.1.3.94.5.2.1.1	Not accessible	The simple name server (SNS) table for the port represented by connUnitSnsPortIndex.
lconnUnitSnsId 1.3.6.1.3.94.5.2.1.1.1	Read only	The connUnitId of the connectivity unit that contains this name server table.
connUnitSnsPortIndex 1.3.6.1.3.94.5.2.1.1.2	Read only	The physical port number of this SNS table entry. Each physical port has an SNS table with 1-n entries indexed by connUnitSnsPortIdentifier (port address).
connUnitSnsPortIdentifier 1.3.6.1.3.94.5.2.1.1.3	Read only	The port identifier for this entry in the SNS table.
connUnitSnsPortName 1.3.6.1.3.94.5.2.1.1.4	Read only	The port name for this entry in the SNS table.
connUnitSnsNodeName 1.3.6.1.3.94.5.2.1.1.5	Read only	The node name for this entry in the SNS table.
connUnitSnsClassOfSvc 1.3.6.1.3.94.5.2.1.1.6	Read only	The Classes of Service offered by this entry in the SNS table.
connUnitSnsNodeIPAddresses 1.3.6.1.3.94.5.2.1.1.7	Read only	The IPv6 formatted address of the Node for this entry in the SNS table.
connUnitSnsProcAssoc 1.3.6.1.3.94.5.2.1.1.8	Read only	The process associator for this entry in the SNS table. Hard coded to FF.
connUnitSnsFC4Type 1.3.6.1.3.94.5.2.1.1.9	Read only	The FC-4 types supported by this entry in the SNS table.
connUnitSnsPortType 1.3.6.1.3.94.5.2.1.1.10	Read only	The port type of this entry in the SNS table.
connUnitSnsPortIPAddress 1.3.6.1.3.94.5.2.1.1.11	Read only	The IPv6 formatted address of this entry in the SNS table.



TABLE 34

Object and OID	Access	Description
connUnitSnsFabricPortName 1.3.6.1.3.94.5.2.1.12	Read only	The fabric port name of this entry in the SNS table.
connUnitSnsHardAddress 1.3.6.1.3.94.5.2.1.13	Read only	The hard address of this entry in the SNS table.
connUnitSnsSymbolicPortName 1.3.6.1.3.94.5.2.1.14	Read only	The symbolic port name of this entry in the SNS table. If the attached device has only the symbolicPortName, the symbolicPortName is shown and the symbolicNodeName appears as "null".
connUnitSnsSymbolicNodeName 1.3.6.1.3.94.5.2.1.15	Read only	The symbolic node name of this entry in the SNS table. If the attached device has only the symbolicNodename, the symbolicNodename is shown and the symbolicPortname appears as "null".

## SNMP Trap Registration Group

TABLE 35

Object and OID	Access	Description
trapMaxClients 1.3.6.1.3.94.2.1	Read only	The maximum number of SNMP trap recipients supported by the connectivity unit. Set to 6.
trapClientCount 1.3.6.1.3.94.2.2	Read only	The current number of rows in the trap table.
trapRegTable 1.3.6.1.3.94.2.3	Not accessible	A table containing a row for each IP address or port number to which traps are sent.
trapRegEntry 1.3.6.1.3.94.2.3.1	Not accessible	IP/port pair for a specific client.
trapRegIpAddress 1.3.6.1.3.94.2.3.1.1	Read only	The IP address of a client registered for traps.
trapRegPort 1.3.6.1.3.94.2.3.1.2	Read only	The UDP port to send traps to for this host. Normally this would be the standard trap port (162). This object is an index and must be specified to create a row in this table. Set to 162.
trapRegFilter 1.3.6.1.3.94.2.3.1.3	Read-write	This value defines the trap severity filter for this trap host. The connUnit sends traps to this host that have a severity level less than or equal to this value. The default value of this object is Warning. The mapping between errorlog severity level and this variable is shown in <a href="#">Table 36</a> . For severity level, refer to "FcEventSeverity" in <a href="#">Table 30</a> on page 97. The values 1, 3, 7, and 10 are not valid for SET operations.
trapRegRowState 1.3.6.1.3.94.2.3.1.4	Read-write	Specifies the state of the row. This entry always returns rowActive and allows for read only. For the state of the row, refer to <a href="#">Table 37</a> .

TABLE 36 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)

TABLE 37 trapRegRowState for Read/Write

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

## Revision Number Scalar

TABLE 38

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

## Unsupported Tables

The Connectivity Unit Port Statistics Fabric Table (connUnitPortStatTable) is supported in Fabric OS, however Brocade does not support the following:

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

## FibreAlliance MIB Traps

TABLE 39

Trap name and OID	Variables	Description
connUnitStatusChange 1.3.6.1.3.94.0.1	connUnitStatus connUnitState	<p>The overall status of the connectivity unit has changed. Recommended severity level (for filtering) - alert. Generated when connUnitStatus changes. For a description of how the value is calculated, refer to "connUnitStatus" on page 101. Sample trap output for Fabric OS 8.0.1.</p> <pre>connUnitStatus.16.0.0.96.105.144.109.136.0.0.0.0.0.0.0.1 = warning(4) connUnitState.16.0.0.96.105.144.109.136.0.0.0.0.0.0.0.1 = offline(3)</pre> <p>For information on how the switch status is determined, refer to the Fabric Watch Administrator's Guide.</p>
connUnitDeletedTrap 1.3.6.1.3.94.0.3	connUnitId	<p>A connUnit has been deleted from this agent. Recommended severity level (for filtering) - warning. Not implemented.</p>

TABLE 39

Trap name and OID	Variables	Description
connUnitEventTrap 1.3.6.1.3.94.0.4	connUnitEventType connUnitEventObject connUnitEventDescr	<p>An event has been generated by the connectivity unit.</p> <p>Recommended severity level (for filtering) - info.</p> <p>Sample trap output for Fabric OS 8.0.1.</p> <pre> connUnitEventType.16.0.0.96.105.144.109.136.0 .0.0.0.0.0.0.0.0.354 = other(2) connUnitEventObject.16.0.0.96.105.144.109.136 .0.0.0.0.0.0.0.0.354 = null connUnitEventDescr.16.0.0.96.105.144.109.136. 0.0.0.0.0.0.0.0.354 = FW-1425 Switch status changed from MARGINAL to HEALTHY. </pre> <p>For more information, refer to "swEventTrap".</p>
connUnitPortStatus Change 1.3.6.1.3.94.0.6	connUnitPortStatus connUnitPortState	<p>Overall status of the connectivity unit changed. Recommended severity level (for filtering)- alert.</p> <p>This trap sends the instance of connUnitPortName as part of the trap; the instance string is NULL, if the port name is not defined for the specified port.</p> <p>Sample trap output for Fabric OS 8.0.1.</p> <pre> 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 .0.0.0.0.0.0.0.0.29 = online(2) connUnitPortName.16.0.0.96.105.144.109.136.0. 0.0.0.0.0.0.0.0.29 = test </pre> <p>For more information, refer to "swFCPortScn".</p>

# FibreAlliance Extension MIB Objects

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## FibreAlliance Extension MIB Overview

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

### NOTE

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

The following screenshots depict the organization and structure of the FA-EXT-MIB file system.

FA-EXT-MIB overall tree structure

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

FA-EXT-MIB hierarchy

FA-EXT-MIB hierarchy

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

## Textual Conventions for FA-EXT-MIB

Table 40 lists the textual conventions used for FA-EXT-MIB.

TABLE 40 Textual conventions for FA-EXT-MIB

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

## SFP Statistics Table

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

### NOTE

In the CLI output, the value of `swSfpRxPower` and `swSfpTxPower` is in float data type.

The float data type is not supported by SNMP and hence the object is defined as Octet string.

The value may start from minus infinity ("-in") to any floating number.

## Port Configuration Table for the Fabric Assigned PWWN Feature

Object and OID	Access	Description
<b>swFapwwnFeature</b> 1.3.6.1.4.1.1588.2.1.1.1.28.2	Not accessible	The OID sub-tree for the Fabric Assigned PWWN (FAPWWN) feature.
<b>swPortFapwwnConfigTable</b> 1.3.6.1.4.1.1588.2.1.1.1.28.2.1	Not accessible	This table represents the FAPWWN configuration of ports.
<b>swPortFapwwnConfigEntry</b> 1.3.6.1.4.1.1588.2.1.1.1.28.2.1.1	Not accessible	An entry in this table that represents the FAPWWN configuration of ports.
<b>swPortFapwwnConfigEnable</b> 1.3.6.1.4.1.1588.2.1.1.1.28.2.1.1.1	Read only	This object indicates whether or not the FAPWWN is enabled on the port: <ul style="list-style-type: none"> <li>• true (1)</li> <li>• false (2)</li> </ul>

## Port Configuration Table for the Encryption or Compression Feature

Object and OID	Access	Description
swPortFapwwnConfigFapwwn 1.3.6.1.4.1.1588.2.1.1.1.28.2.1.2	Read only	This object represents the FAPWWN assigned to the port. It returns the WWN irrespective of the state of the FAPWWN.
swPortFapwwnConfigType 1.3.6.1.4.1.1588.2.1.1.1.28.2.1.3	Read only	This object represents the type of FAPWWN. Valid values: <ul style="list-style-type: none"> <li>unknown (1)</li> <li>auto (2)</li> <li>userconfigured (3)</li> </ul>

## Port Configuration Table for the Encryption or Compression Feature

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

## Switch Connectivity Unit Port Table

Object and OID	Access	Description
swConnUnitPortTable 1.3.6.1.4.1.1588.2.1.1.1.28.4	Not accessible	This table represents all the port entries of the connectivity unit.
swConnUnitPortEntry 1.3.6.1.4.1.1588.2.1.1.1.28.4.1	Not accessible	This represents the port entry of the connectivity unit.



Object and OID	Access	Description
swConnUnitPortCapableSpeeds 1.3.6.1.4.1.1588.2.1.1.1.28.4.1.1	Read only	This represents the capable port speed of the connectivity unit.
swConnUnitPortSpeedMode 1.3.6.1.4.1.1588.2.1.1.1.28.4.1.2	Read only	This represents the configured speed mode of the particular port.
swConnUnitPortFECMode 1.3.6.1.4.1.1588.2.1.1.1.28.4.1.3	Read only	This represents the port Forward Error Correction (FEC) mode. The FEC feature is applicable only on 16G and 32G platforms.
swConnUnitPortFECState 1.3.6.1.4.1.1588.2.1.1.1.28.4.1.4	Read only	This represents the FEC state (active or inactive) of a port.

# MIB Object Groupings

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- Switch Variables ..... 135
- Sensor Variables ..... 135
- Port Variables ..... 135
- Event Variables ..... 136
- ISL and End Device Variables ..... 136
- SNMP Configuration Variables ..... 136

## Switch Variables

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

- connUnitTable ..... 99
- connUnitRevsTable ..... 105
- FIBRE-CHANNEL-FE-MIB (MIB-II Branch) ..... 33
- Flash administration ..... 57

## 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 ..... 105
- swNumSensors ..... 59

## Port Variables

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

### Variables for State and Status

- Connectivity Unit Group ..... 99
- Fibre Channel Port Group ..... 65
- fcFxpPortTable
- fcFxpConfTable
- fcFxpPortStatusTable
- fcFxpPortPhysTable
- fcFxpPortCapTable

### Variables for Statistics and Measurement

- Statistics Group ..... 118
- fcFxpPortErrorTable

## Event Variables

- fcFxC2AccountingTable
- fcFeCapabilities group

## Event Variables

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

- connUnitEventTable ..... 114
- Event Group ..... 70

## ISL and End Device Variables

MIB variables that assist in monitoring or modifying an inter-switch link and end devices are in the following tables or groups.

### ISL Variables

- connUnitLinkTable ..... 116
- Switch Fabric Group ..... 63

### End Device Variables

- connUnitLinkTable ..... 116
- swFCPortName ..... 68
- fcFxC2LoginTable

## SNMP Configuration Variables

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

- trapRegTable ..... 125
- Switch Agent Configuration Group ..... 64

# Mapping of CLI Counters to MIB Objects

- portErrShow Command ..... 140
- portShow Command ..... 144
- portStatsShow Command ..... 137
- portStats64Show Command ..... 142

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

## portStatsShow Command

Table 41 lists the counters displayed by the **portStatsShow** command and the corresponding MIB objects.

TABLE 41 portStatsShow command

Counters	Description	MIB Location	Counter Size
stat_wtx	The number of 4-byte words transmitted.	Object: connUnitPortStatCountTxElements multiplied by four Table name: connUnitPortStatTable OID: 1.3.6.1.3.94.4.5.16	64 bits
stat_wrx	The number of 4-byte words received. The size of stat_wrx in portstatsshow is fixed for 32 bit; use portstats64show for 64-bit counters. If the stat_wrx counter is used for 64 bit, it wraps very quickly and the counter may not increment.	Object: connUnitPortStatCountRxElements multiplied by four Table name: connUnitPortStatTable OID: 1.3.6.1.3.94.4.5.17	64 bits
stat_ftx	The number of class 2, class 3, and control frames transmitted.	Object: connUnitPortStatCountTxObjects Table name: connUnitPortStatTable OID: 1.3.6.1.3.94.4.5.14	32 bits
stat_frx	The number of class 2, class 3, and control frames received.	Object: connUnitPortStatCountRxObjects Table name: connUnitPortStatTable OID: 1.3.6.1.3.94.4.5.15	32 bits
stat_c2_frx	The number of class 2 frames received.	Object: connUnitPortStatCountClass2RxFrames Table name: connUnitPortStatTable OID: 1.3.6.1.3.94.4.5.120	32 bits
stat_c3_frx	The number of class 3 frames received.	Object: connUnitPortStatCountClass3RxFrames Table name: connUnitPortStatTable OID: 1.3.6.1.3.94.4.5.126	32 bits
stat_lc_rx	The number of link control frames received.	Object: swConnUnitLCRX Table name: swConnUnitPortStatExtentionTable OID: 1.3.6.1.4.1.1588.2.1.1.1.27.116-	32 bits
stat_mc_rx	The number of multicast frames received.	Object: connUnitPortStatCountRxMulticastObjects Table name: connUnitPortStatTable OID: 1.3.6.1.3.94.4.5.129	32 bits
stat_mc_to	The number of multicast timeouts.	Not supported	—

TABLE 41 portStatsShow command (Continued)

Counters	Description	MIB Location	Counter Size
stat_mc_tx	The number of multicast frames transmitted.	Object: connUnitPortStatCountTxMulticastObjects Table name: connUnitPortStatTable OID: 1.3.6.1.3.94.4.5.130	32 bits
tim_rdy_pri	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 fiber. This parameter is sampled at intervals of 1.8 microseconds, and the counter is incremented by 1 if the condition is true.	Object: swConnUnitRDYPriority Table name: swConnUnitPortStatExtentionTable OID: 1.3.6.1.4.1.1588.2.1.1.1.27.1.17	32 bits
tim_txcrd_z	The number of times that the port was unable to transmit frames because the transmit BB credit was zero. The purpose of this statistic is to detect congestion or a device affected by latency. This parameter is sampled at intervals of 2.5 microseconds, and the counter is incremented if the condition is true. Each sample represents 2.5 microseconds of time with zero Tx BB credit. An increment of this counter means that the frames could not be sent to the attached device for 2.5 microseconds, indicating degraded performance.	Object: connUnitPortStatCountBBCreditZero Table name: connUnitPortStatTable OID: 1.3.6.1.3.94.4.5.18	32 bits
er_enc_in	The number of encoding errors inside frames.	Object: connUnitPortStatCountEncodingDisparityErrors Table name: connUnitPortStatTable OID: 1.3.6.1.3.94.4.5.150	32 bits
er_crc	The number of frames with cyclic redundancy check (CRC) errors.	Object: swConnUnitCRCWithBadEOF Table name: swConnUnitPortStatExtentionTable OID: 1.3.6.1.4.1.1588.2.1.1.1.27.1.1	32 bits
er_trunc	The number of frames shorter than the minimum frame length.	Object: connUnitPortStatCountFramesTruncated Table name: connUnitPortStatTable OID: 1.3.6.1.3.94.4.5.147	32 bits
er_toolong	The number of frames longer than the maximum frame length.	Object: connUnitPortStatCountFramesTooLong Table name: connUnitPortStatTable OID: 1.3.6.1.3.94.4.5.150	32 bits
er_bad_eof	The number of frames with bad end-of-frame.	Object: swConnUnitBadEOF Table name: swConnUnitPortStatExtentionTable OID: 1.3.6.1.4.1.1588.2.1.1.1.27.1.15	32 bits
er64_enc_out	The number of encoding error outside frames.	Object: connUnitPortStatCountEncodingDisparityErrors subtracted from connUnitPortStatCountInvalidTxWords Table name: connUnitPortStatTable OID: 1.3.6.1.3.94.4.5.150 - 1.3.6.1.3.94.4.5.141	32 bits

TABLE 41 portStatsShow command (Continued)

Counters	Description	MIB Location	Counter Size
er_bad_os	The number of invalid ordered sets (platform- and port-specific).	Object: connUnitPortStatCountInvalidOrderedSets Table name: connUnitPortStatTable OID: 1.3.6.1.3.94.4.5.145	32 bits
er_rx_c3_timeout	The number of receive class 3 frames received at this port and discarded at the transmission port due to timeout (platform- and port-specific).	Not supported.	
er_tx_c3_timeout	The number of transmit class 3 frames discarded at the transmission port due to timeout (platform- and port-specific).	Not supported	
er_c3_dest_unreach	The number of class 3 frames discarded because the destination could not be reached. This field is specific to Condor 2-based platforms.	Not supported	
er_other_discard	The number of other discarded frames due to route lookup failures or other reasons.	Not supported	
er_unroutable	The number of unroutable frame counters.	Object: swConnUnitUnroutableFrameCounter Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.1.27.1.30	32 bits
er_pcs_blk	The number of Physical Coding Sublayer (PCS) block errors. This counter records encoding violations on 10 Gb/s or 16 Gb/s ports. This is applicable only on platforms that support 10 Gb/s or 16 Gb/s ports.	Object: swConnUnitPCSErrorCounter Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.1.27.1.29	32 bits
er_type1_miss	The number of FCR frames with transmit errors.	Object: swConnUnitFTB1Miss Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.1.27.1.10	32 bits
er_type2_miss	The number of frames with routing errors.	Object: swConnUnitFTB2Miss Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.1.27.1.11	32 bits
er_type6_miss	The number of FCR frames with receive errors.	Object: swConnUnitFTB6Miss Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.1.27.1.12	32 bits
er_zone_miss	The number of frames discarded due to a hard zoning miss. If Rx port hard zoning is enabled, frames will be discarded at the Rx port. If Tx port hard zoning is enabled, frames will be discarded at the Tx port. If both Rx and Tx port hard zoning is enabled, frames will be discarded at the Rx port.	Object: swConnUnitZoneMiss Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.1.27.1.13	32 bits
er_lun_zone_miss	The number of frames discarded due to a LUN zoning miss. (LUN zoning is currently not supported.)	Object: swConnUnitLunZoneMiss Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.1.27.1.14	32 bits
er_crc_good_eof	The number of CRC errors with a good end-of-frame (EOF) (platform- and port-specific).	Object: connUnitPortStatCountInvalidCRC Table name: connUnitPortStatTable OID:1.3.6.1.3.94.4.5.140	32 bits

## portErrShow Command

TABLE 41 portStatsShow command (Continued)

Counters	Description	MIB Location	Counter Size
er_inv_arb	The number of invalid arbitrated loops (ARBs).	Object: swConnUnitInvalidARB Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.1.27.1.9	32 bits
open	The number of times the FL_Port entered the OPEN state.	Object: swConnUnitOpen Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.1.27.1.8	32 bits
transfer	The number of times the FL_Port entered the TRANSFER state.	Object: swConnUnitTransferConnection Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.1.27.1.7	32 bits
opened	The number of times the FL_Port entered the OPENED state.	Object: swConnUnitOpend Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.1.27.1.6	32 bits
starve_stop	The number of loop tenancies stopped due to starvation.	Object: swConnUnitStopTenancyStarVation Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.1.27.1.5	32 bits
fl_tenancy	The number of times the FL_Port had a loop tenancy.	Object: swConnUnitFLNumOfTenancy Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.1.27.1.3	32 bits
nl_tenancy	The number of times the NL_Port had a loop tenancy.	Object: swConnUnitNLNumOfTenancy Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.1.27.1.4	32 bits
zero_tenancy	The number of times a zero tenancy occurred.	Object: swConnUnitZeroTenancy Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.1.27.1.2	32 bits

## portErrShow Command

Table 42 lists the counters displayed by the **portErrShow** command and the corresponding MIB objects.

TABLE 42 portErrShow command

Counters	Description	MIB Location	Counter Size
frames_tx	Number of frames transmitted (Tx).	Object: connUnitPortStatCountTxObjects Table name: connUnitPortStatTable OID: 1.3.6.1.3.94.4.5.1.4	64 bits
frames_rx	Number of frames received (Rx).	Object: connUnitPortStatCountRxObjects Table name: connUnitPortStatTable OID: 1.3.6.1.3.94.4.5.1.5	64 bits

TABLE 42 portErrShow command (Continued)

Counters	Description	MIB Location	Counter Size
er_enc_in	Number of encoding errors inside frames received (Rx).	Object: connUnitPortStatCountEncodingDisparityErrors Table name: connUnitPortStatTable OID: 1.3.6.1.3.94.4.5.150	32 bits
crc_err	Number of frames with CRC errors received (Rx).	Object: swConnUnitCRCWithBadEOF Table name: swConnUnitPortStatExtentionTable OID: 1.3.6.1.4.1.1588.2.1.1.1.27.1.1	32 bits
crc_g_eof	Number of frames with CRC errors with a good EOF received (Rx).	Object: connUnitPortStatCountInvalidCRC Table name: connUnitPortStatTable OID: 1.3.6.1.3.94.4.5.140	32 bits
too_short	Number of frames shorter than the minimum received (Rx).	Object: connUnitPortStatCountFramesTruncated Table name: connUnitPortStatTable OID: 1.3.6.1.3.94.4.5.147	32 bits
too_long	Number of frames longer than the maximum received (Rx).	Object: connUnitPortStatCountFramesTooLong Table name: connUnitPortStatTable OID: 1.3.6.1.3.94.4.5.146	32 bits
bad_eof	Number of frames with bad end-of-frame delimiters received (Rx).	Object: swConnUnitBadEOF Table name: swConnUnitPortStatExtentionTable OID: 1.3.6.1.4.1.1588.2.1.1.1.27.1.15	32 bits
enc_out	Number of encoding errors outside of frames received (Rx).	Object: connUnitPortStatCountEncodingDisparityErrors subtracted from connUnitPortStatCountInvalidTxWords Table name: connUnitPortStatTable OID: 1.3.6.1.3.94.4.5.150 - 1.3.6.1.3.94.4.5.141	32 bits
disc_c3	Number of class 3 frames discarded (Rx). This counter includes the sum of the following class 3 discard counters reported by the portStatsShow command: er_rx_c3_timeout, er_tx_c2_timeout, er_c2_dest_unreach, and er_other_disc. Refer to portStatsShow help for a description of these counters.	Object: connUnitPortStatCountClass3Discards Table name: connUnitPortStatTable OID: 1.3.6.1.3.94.4.5.128	32 bits
link_fail	The number of link failures (LF1 or LF2 states) received (Rx).	Object: connUnitPortStatCountLinkFailures Table name: connUnitPortStatTable OID: 1.3.6.1.3.94.4.5.139	32 bits
loss_of_sync	The number of times that synchronization was lost (Rx).	Object: connUnitPortStatCountLossofSynchronization Table name: connUnitPortStatTable OID: 1.3.6.1.3.94.4.5.144	32 bits
loss_of_sig	The number of times that a loss of signal was received (increments whenever an SFP is removed) (Rx).	Object: connUnitPortStatCountLossofSignal Table name: connUnitPortStatTable OID: 1.3.6.1.3.94.4.5.143	32 bits



TABLE 42 portErrShow command (Continued)

Counters	Description	MIB Location	Counter Size
fjrt	The number of transmitted frames rejected with F_RJT (Tx).	Object: connUnitPortStatCountFRJTFrames Table name: connUnitPortStatTable OID: 1.3.6.1.3.94.4.5.112	32 bits
fbsy	The number of transmitted frames busied with F_BSY (Tx).	Object: connUnitPortStatCountFBSYFrames Table name: connUnitPortStatTable OID: 1.3.6.1.3.94.4.5.110	32 bits

## portStats64Show Command

Table 43 lists the counters displayed by the **portStats64Show** command and the corresponding MIB objects.

TABLE 43 portStats64Show command

Counters	Description	MIB Location	Counter Size
stat64_wtx	The number of 4-byte words transmitted.	Object: connUnitPortStatCountTxElements multiplied by four Table name: connUnitPortStatTable OID:1.3.6.1.3.94.4.5.1.6	64 bits
stat64_wrx	The number of 4-byte words received.	Object: connUnitPortStatCountRxElements multiplied by four Table name: connUnitPortStatTable OID:1.3.6.1.3.94.4.5.1.7	64 bits
stat64_ftx	The number of frames transmitted.	Object: connUnitPortStatCountTxObjects Table name: connUnitPortStatTable OID:1.3.6.1.3.94.4.5.1.4	64 bits
stat64_frx	Number of frames received.	Object: connUnitPortStatCountRxObjects Table name: connUnitPortStatTable OID:1.3.6.1.3.94.4.5.1.5	64 bits
stat64_c2_frx	The number of class 2 frames received.	Object: connUnitPortStatCountClass2RxFrames Table name: connUnitPortStatTable OID:1.3.6.1.3.94.4.5.1.20	64 bits
stat64_c3_frx	The number of class 3 frames received.	Object: connUnitPortStatCountClass3RxFrames Table name: connUnitPortStatTable OID:1.3.6.1.3.94.4.5.1.26	64 bits
stat64_lc_rx	The number of link control frames received.	Object: swConnUnitLCRX Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.1.27.1.16	64 bits
stat64_mc_rx	The number of multicast frames received.	Object: connUnitPortStatCountRxMulticastObjects Table name: connUnitPortStatTable OID:1.3.6.1.3.94.4.5.1.29	64 bits

TABLE 43 portStats64Show command (Continued)

Counters	Description	MIB Location	Counter Size
stat64_mc_to	Number of multicast timeouts.	Not supported	
stat64_mc_tx	The number of multicast frames transmitted.	Object: connUnitPortStatCountTxMulticastObjects Table name: connUnitPortStatTable OID:1.3.6.1.3.94.4.5.1.30	64 bits
tim64_rdy_pri	The number of times that R_RDY was a high priority.	Object: swConnUnitRDYPriority Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.1.27.1.17	64 bits
tim64_txcrd_z	The number of times that the TX BB_credit was at zero.	Object: connUnitPortStatCountBBCreditZero Table name: connUnitPortStatTable OID:1.3.6.1.3.94.4.5.1.8	64 bits
er64_enc_in	The number of encoding errors inside of frames.	Object: connUnitPortStatCountEncodingDisparityErrors Table name: connUnitPortStatTable OID:1.3.6.1.3.94.4.5.1.50	64 bits
er64_crc	The number of frames with CRC errors.	Object: connUnitPortStatCountInvalidCRC Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.1.27.1.1	64 bits
er64_trunc	The number of frames shorter than the minimum.	Object: connUnitPortStatCountFramesTruncated Table name: connUnitPortStatTable OID:1.3.6.1.3.94.4.5.1.47	64 bits
er64_toolong	The number of frames longer than the maximum.	Object: connUnitPortStatCountFramesTooLong Table name: connUnitPortStatTable OID:1.3.6.1.3.94.4.5.1.50	64 bits
er64_bad_eof	The number of frames with a bad end-of-frame.	Object: swConnUnitBadEOF Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.1.27.1.15	64 bits
er64_enc_out	The number of encoding errors outside of frames.	Object: connUnitPortStatCountEncodingDisparityErrors subtracted from connUnitPortStatCountInvalidTxWords Table name: connUnitPortStatTable OID:1.3.6.1.3.94.4.5.1.50 - 1.3.6.1.3.94.4.5.1.41	64 bits
er64_disc_c3	The number of class 3 frames discarded.	Object: connUnitPortStatCountClass3Discards Table name: connUnitPortStatTable OID:1.3.6.1.3.94.4.5.1.28	64 bits
er64_pcs_blk	The number of Physical Coding Sublayer (PCS) block errors. This counter records encoding violations on 10 Gb/s or 16 Gb/s ports.	Object: swConnUnitPCSErrorCounter Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.1.27.1.29	64 bits

TABLE 43 portStats64Show command (Continued)

Counters	Description	MIB Location	Counter Size
stat64_fec_cor	The number of errors corrected by FEC.	Object: swConnUnitFECCorrectedCounter Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.27.1.31 NOTE: This object is not supported on 32G platforms.	64 bits
stat64_fec_uncor	The number of errors left uncorrected by FEC.	Object: swConnUnitFECUnCorrectedCounter Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.27.1.32	64 bits
stat64_PRJTFrames	The number of P_RJT frames transmitted.	Not supported	—
stat64_PBSYFrames	The number of P_BSY frames transmitted.	Not supported	—
stat64_inputBuffersFull	The number of occasions when input buffers are full.	Not supported	—
stat64_rxClass1Frames	The number of class 1 frames received.	Not supported	—

## portShow Command

Table 44 lists the counters displayed by the **portShow** command and the corresponding MIB objects.

TABLE 44 portShow command

Counters	Description	MIB Location	Counter Size
Interrupts	The total number of interrupts.	Object: swConnUnitInterrupts Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.27.1.19	32 bits
Unknown	Interrupts that are not counted elsewhere.	Object: swConnUnitUnknownInterrupts Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.27.1.20	32 bits
Lli	Low-level interface (physical state, primitive sequences).	Object: swConnUnitLli Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.27.1.18	32 bits
Proc_rqrd	Frames delivered for embedded N_Port processing.	Object: swConnUnitProcRequired Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.27.1.22	32 bits
Timed_out	Frames that have timed out.	Object: swConnUnitTimedOut Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.27.1.21	32 bits
portState	The state of the port.	Object: swConnUnitStateChange Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.27.1.24	32 bits

TABLE 44 portShow command (Continued)

Counters	Description	MIB Location	Counter Size
Tx_unavail	Frames returned from an unavailable transmitter.	Object: swConnUnitTxBufferUnavailable Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.1.27.1.23	32 bits
er64_pcs_blk	The number of Physical Coding Sublayer (PCS) block errors. This counter records encoding violations on 10 Gb/s or 16 Gb/s ports.	Object: swConnUnitPCSErrorCounter Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.1.27.1.29	32 bits
stat64_fec_uncor	The number of errors left uncorrected by FEC.	Object: swConnUnitFECUnCorrectedCounter Table name: swConnUnitPortStatExtentionTable OID:1.3.6.1.4.1.1588.2.1.1.1.27.1.32	32 bits
Link_failure	The number of link failures (LF1 or LF2 states) received (Rx).	Object: connUnitPortStatCountLinkFailures Table name: connUnitPortStatTable OID: 1.3.6.1.3.94.4.5.1.39	32 bits
Loss_of_sig	The number of times that a loss of signal was received (increments whenever an SFP is removed) (Rx).	Object: connUnitPortStatCountLossofSignal Table name: connUnitPortStatTable OID:1.3.6.1.3.94.4.5.1.43	32 bits
Loss_of_sync	The number of times that synchronization was lost (Rx).	Object: connUnitPortStatCountLossofSynchronization Table name: connUnitPortStatTable OID:1.3.6.1.3.94.4.5.1.44	32 bits
Protocol_err	Protocol errors.	Object: connUnitPortStatCountPrimitiveSequenceProtocolErrors Table name: connUnitPortStatTable OID:1.3.6.1.3.94.4.5.1.42	32 bits
Invalid_word	Encoding errors inside the frames.	Object: connUnitPortStatCountInvalidTxWords Table name: connUnitPortStatTable OID:1.3.6.1.3.94.4.5.1.41	32 bits
Invalid_crc	The number of invalid CRCs..	Object: connUnitPortStatCountInvalidCRC Table name: connUnitPortStatTable OID:1.3.6.1.3.94.4.5.1.40	32 bits
Delim_err	Delimiter error.	Object: connUnitPortStatCountDelimiterErrors Table name: connUnitPortStatTable OID:1.3.6.1.3.94.4.5.1.49	32 bits
Address_err	Address error.	Object: connUnitPortStatCountAddressErrors Table name: connUnitPortStatTable OID:1.3.6.1.3.94.4.5.1.48	32 bits
Lr_in	Link reset on the remote switch.	Object: connUnitPortStatCountTxLinkResets Table name: connUnitPortStatTable OID:1.3.6.1.3.94.4.5.1.34	32 bits
Lr_out	Link reset on the local switch.	Object: connUnitPortStatCountRxLinkResets Table name: connUnitPortStatTable OID:1.3.6.1.3.94.4.5.1.33	32 bits

TABLE 44 portShow command (Continued)

Counters	Description	MIB Location	Counter Size
Ols_in	Inbound offline sequence.	Object: connUnitPortStatCountRxOfflineSequences Table name: connUnitPortStatTable OID:1.3.6.1.3.94.4.5.1.36	32 bits
Ols_out	Outbound offline sequence.	Object: connUnitPortStatCountTxOfflineSequences Table name: connUnitPortStatTable OID:1.3.6.1.3.94.4.5.1.37	32 bits
fjrt	Number of transmitted frames rejected with F_RJT (Tx).	Object: connUnitPortStatCountFRJTFrames Table name: connUnitPortStatTable OID:1.3.6.1.3.94.4.5.1.12	32 bits
fbsy	Number of transmitted frames busied with F_BSY (Tx).	Object: connUnitPortStatCountFBSYFrames Table name: connUnitPortStatTable OID:1.3.6.1.3.94.4.5.1.10	32 bits

# Revision History

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## FOS-821-MIB-RM101; September 28, 2018

- Revised the publication number.
- Updated the document template.
- Added the "Revision History" chapter to the document.

## FOS-821-MIB-RM100; August 28, 2018

- Updated the following MIB support for Access Gateway mode in "Access Gateway MIB Support" on page 20:
  - swConnUnitPortStatExtentionTable
  - swCpuOrMemoryUsage
  - swSfpStatTable
- Added a note to update information on swSfpRxPower and swSfpTxPower under "SFP Statistics Table" on page 131.