Brocade MIB

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Document History

The table below lists all versions of the *Brocade MIB Reference Manual*.

Document Title	Publication Number	Publication Date
Brocade MIB Reference Manual (v2.3)	53-0000069-02	December 2000
Brocade MIB Reference Manual (v3)	53-0000134-03	July 2001
Brocade MIB Reference Manual (v3.0, 4.0)	53-0000184-02	March 2002
Brocade MIB Reference Manual (v4.1, 4.0.x, 3.1, 3.0.x, 2.6.x)	53-0000521-02	April 2003

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Preface

This manual provides comprehensive information to help you administer your SilkWorm switch and storage area network (SAN). This manual was developed to help technical experts operate, maintain, and troubleshoot SAN products. A list of additional SAN resource reference materials is also included. The sections that follow provide:

- A summary of updates to this document.
- The intended audience for this document.
- Information to help you use Brocade documentation.
- Information on additional SAN resources.
- How to get Technical Support.

What's New in This Book

The following changes have been made since this book was last released (part number 53-0000184-02):

- Information that was added:
  - Each MIB listing now contains the complete Object ID (OID).
  - The following new Brocade-specific MIBs have been added:
    - HA-MIB (High Availability enhancements)
    - Entity-MIB

    These MIBs are supported only in Fabric OS v4.1.
  - Section II includes MIB loading information and a Fabric OS compatibility table.
  - The SW-MIB has been combined into one master MIB.
  - Brocade supports two FE MIBs, one in the *experimental* branch and one in the *mib-2* branch. Both of these MIBs are listed in Chapter 2, *FE MIB Objects*.
  - For Fabric OS v4.1, the following MIB features are new or updated:
    - Security Support
    - Fabric Watch (FW) Support
    - Field Replaceable Unit (FRU) Support

- Information that was modified:
  - This document has been reorganized into the following sections, with appropriate chapters in each section:
    - Standard MIBs
    - Brocade Proprietary MIBs
    - Fibre Alliance MIBs
  - This document now describes the MIBs that are supported in the following Fabric OS versions:
    - v2.6.x
    - v3.x
    - v4.x.
  - The MIB trees at the beginning of each chapter now contain links to the MIB objects. If an object is blue, you can click it to jump to the MIB description.
  - Because this document supports multiple Fabric OS versions, the version number of the document no longer corresponds to the version number of the Fabric OS. When Brocade makes any modifications to the Management Information Base (MIB) files, the updated *Brocade MIB Reference* document will accompany the subsequent Fabric OS release and the version number will change as follows:
    - If **a new MIB is added**:

      The version number will increment by "1.x.x" (Version 6.0 will become Version 7.0)
    - If no new MIBs are added, but **an existing MIB is modified**:

      The version number will increment by "x.1.x" (Version 7.0 will become Version 7.1).
    - If this is a **new Fabric OS release with no MIB updates**:

      The version number will increment by "x.x.1" (Version 7.1 will become Version 7.1.1).
- Information that was removed:
  - The Syntax, Access, and Status entries have been removed from each MIB object. The MIB files contain this information.

Intended Audience

This document is intended for use by systems administrators and technicians experienced with networking, Fibre Channel, and SAN technologies.

Manual Conventions

This section lists text formatting conventions and important notices formats used in this document.

Formatting

The following table describes the formatting conventions that are used in this book:

Convention	Purpose
bold text	• identifies command names • identifies GUI elements • identifies keywords/operands • identifies text to enter at the GUI or CLI
italic text	• provides emphasis • identifies variables • identifies paths and internet addresses • identifies book titles and cross references
`code` text	• identifies CLI output • identifies syntax examples

Notes, Cautions, and Warnings

The following notices appear in this document:

Note: A note provides a tip, emphasizes important information, or provides a reference to related information.

Caution: A caution alerts you to potential damage to hardware, firmware, software, or data.

Warning: A warning alerts you to potential danger to personnel.

Related Publications

This section lists additional documentation that you may find helpful.

Brocade Documentation

The following related publications are provided on the Brocade Documentation CD-ROM and on the Brocade Partner Web site:

- **Brocade Fabric OS documentation**
  - *Brocade Diagnostic and System Error Message Reference*
  - *Brocade Fabric OS Procedures Guide*
  - *Brocade Fabric OS Reference*
- **Brocade Fabric OS optional features documentation**
  - *Brocade Advanced Performance Monitoring User's Guide*
  - *Brocade Advanced Web Tools User's Guide*
  - *Brocade Advanced Zoning User's Guide*
  - *Brocade Distributed Fabrics User's Guide*
  - *Brocade Fabric Watch User's Guide*
  - *Brocade ISL Trunking User's Guide*
  - *Brocade QuickLoop User's Guide (v 3.1 only)*
  - *Brocade Secure Fabric OS User's Guide*
  - *Secure Fabric OS QuickStart Guide*
- **Brocade Hardware documentation**
  - *Brocade SilkWorm 12000 Hardware Reference (for v.4.1 software)*
  - *Brocade SilkWorm 12000 QuickStart Guide (for v4.1 software)*
  - *Brocade SilkWorm 3900 Hardware Reference (for v.4.1 software)*
  - *Brocade SilkWorm 3800 Hardware Reference (for v.3.1 software)*
  - *Brocade SilkWorm 3200 Hardware Reference (for v.3.1 software)*

Release notes are available on the Brocade Partner Web site and are also bundled with the Fabric OS.

Additional Resource Information

For practical discussions about SAN design, implementation, and maintenance, *Building SANs with Brocade Fabric Switches* is available through:

http://www.amazon.com

For additional Brocade documentation, visit the Brocade SAN Info Center and click on the Resource Library location:

http://www.brocade.com

For additional resource information, visit the Technical Committee T11 Web site. This Web site provides interface standards for high-performance and mass storage applications for fibre channel, storage management, as well as other applications:

http://www.t11.org

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

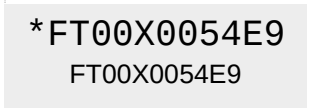
http://www.fibrechannel.org

How to Get Technical Support

Contact your switch supplier for hardware, firmware, and software support, including product repairs and part ordering. To assist your support representative and to expedite your call, have the following three sets of information immediately available when you call:

1. **General Information**
   - Technical Support contract number, if applicable
   - switch model
   - switch operating system version
   - error messages received
   - **supportshow** command output
   - detailed description of the problem and specific questions
   - description of any troubleshooting steps already performed and results
2. **Switch Serial Number**

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

   The serial number label is located as follows:
   - *SilkWorm 2000 series switches:* Bottom of chassis
   - *SilkWorm 3200 and 3800 switches:* Back of chassis
   - *SilkWorm 3900 switches:* Bottom of chassis
   - *SilkWorm 6400 and 12000 switches:* Inside front of chassis, on wall to left of ports
3. **Worldwide Name (WWN)**
   - *SilkWorm 3900 and 12000 switches:* Provide the license ID. Use the **licenseidshow** command to display the license ID.
   - *All other SilkWorm switches:* Provide the switch WWN. Use the **wwn** command to display the switch WWN.

Section

I

Standard MIBs

This section provides the following information:

- Chapter 1, *MIB-II (RFC1213-MIB)*
- Chapter 2, *FE MIB Objects*
- Chapter 3, *Entity MIB Objects*

MIB-II (RFC1213-MIB)

Chapter 1

This chapter provides descriptions and other information specific to MIB-II, including the following information:

Overview

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

The objects in MIB-II are organized into the following groupings:

- *System Group*
- *Interfaces Group*
- *Address Translation Group*
- *IP Group*
- *ICMP Group*
- *TCP Group*
- *UDP Group*
- *EGP Group*
- *Transmission Group*
- *SNMP Group*

MIB-II Object Hierarchy

Figure 1-1 through Figure 1-4 depict the organization and structure of MIB-II.

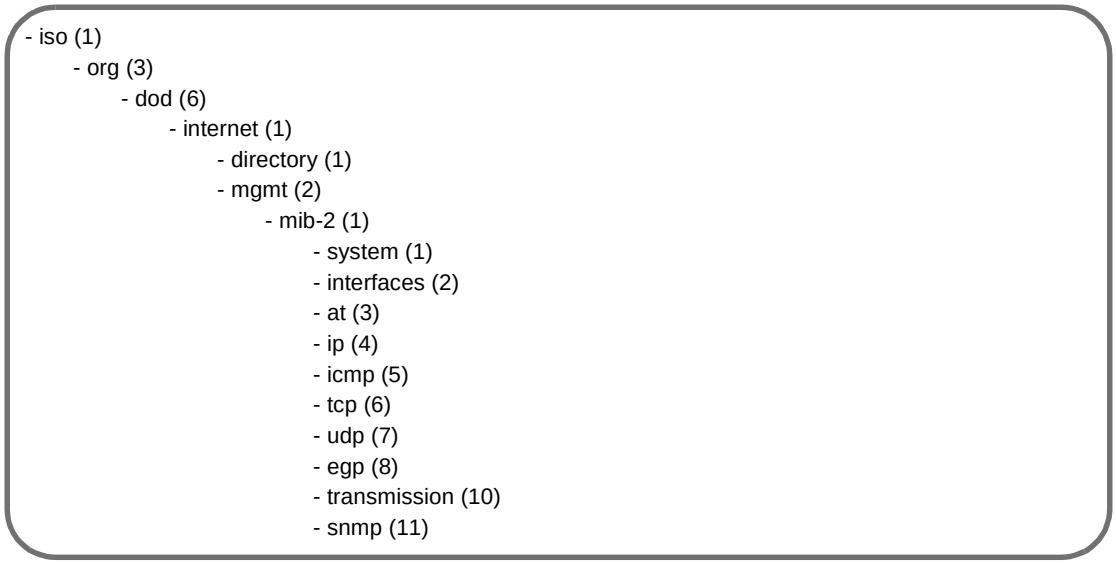


Figure 1-1 MIB-II Overall Tree Structure

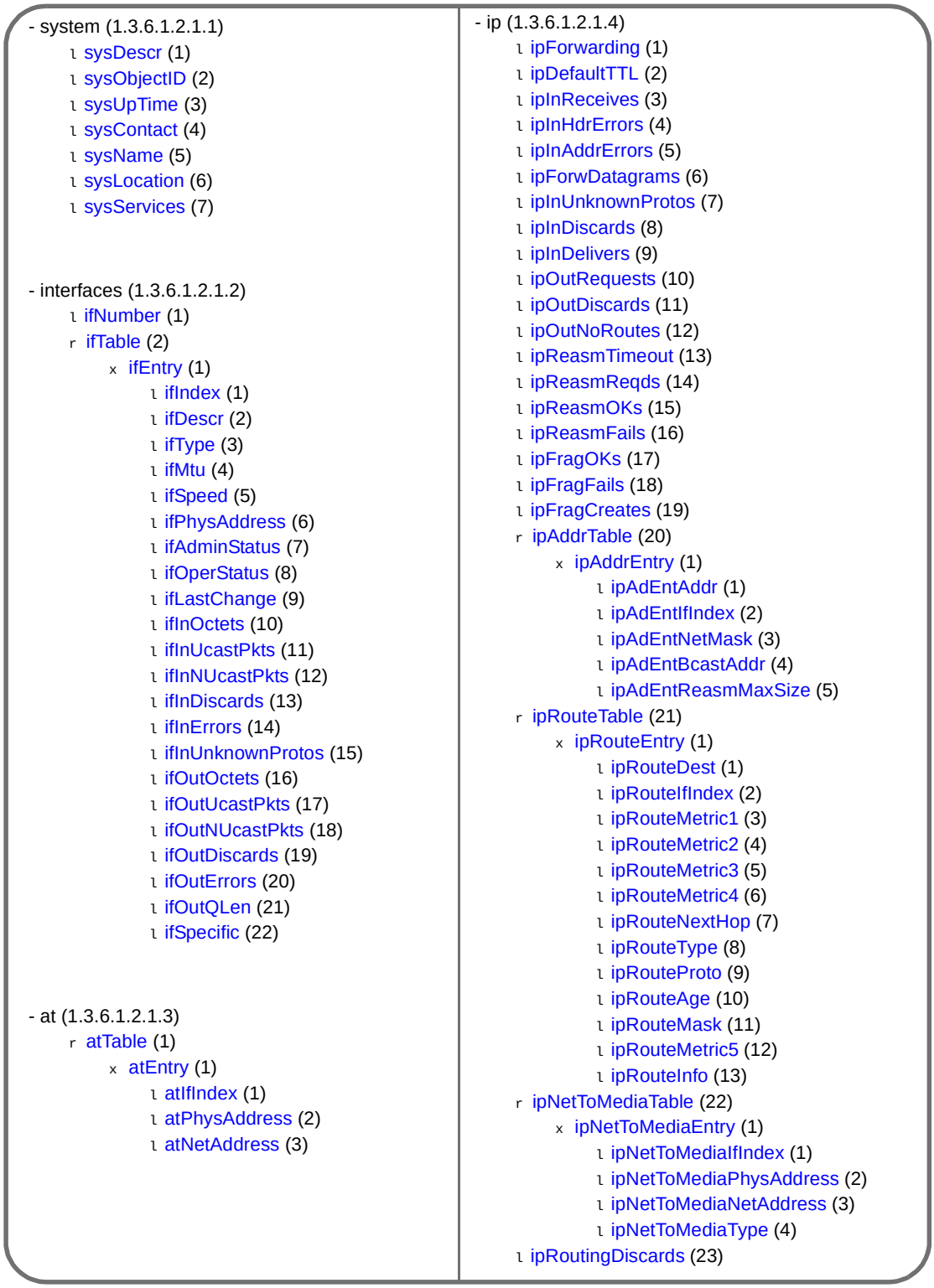


Figure 1-2 Tree Structure for MIB-II System, Interfaces, AT, and IP Groups

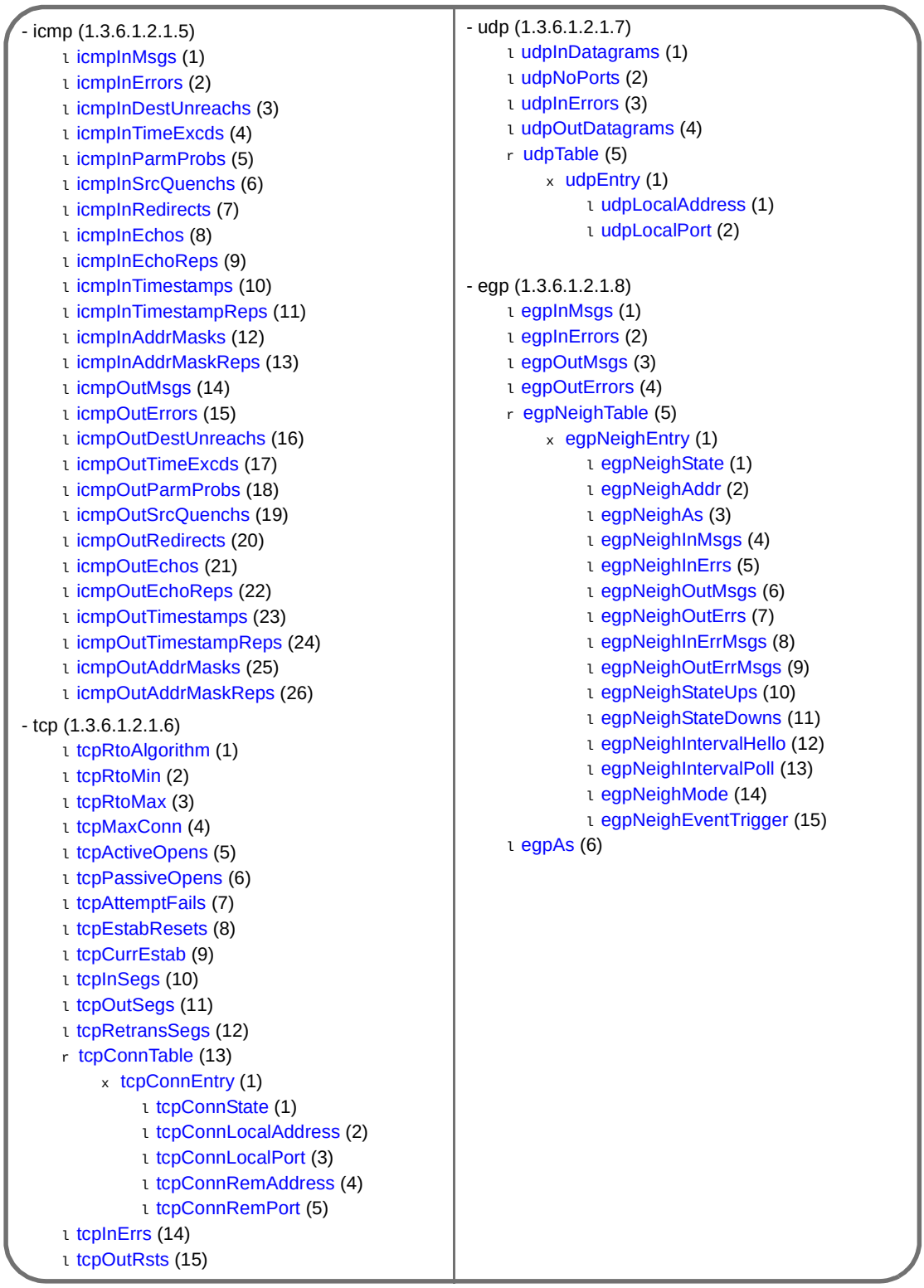


Figure 1-3 Tree Structure for MIB-II ICMP, TCP, UDP, and EGP Groups

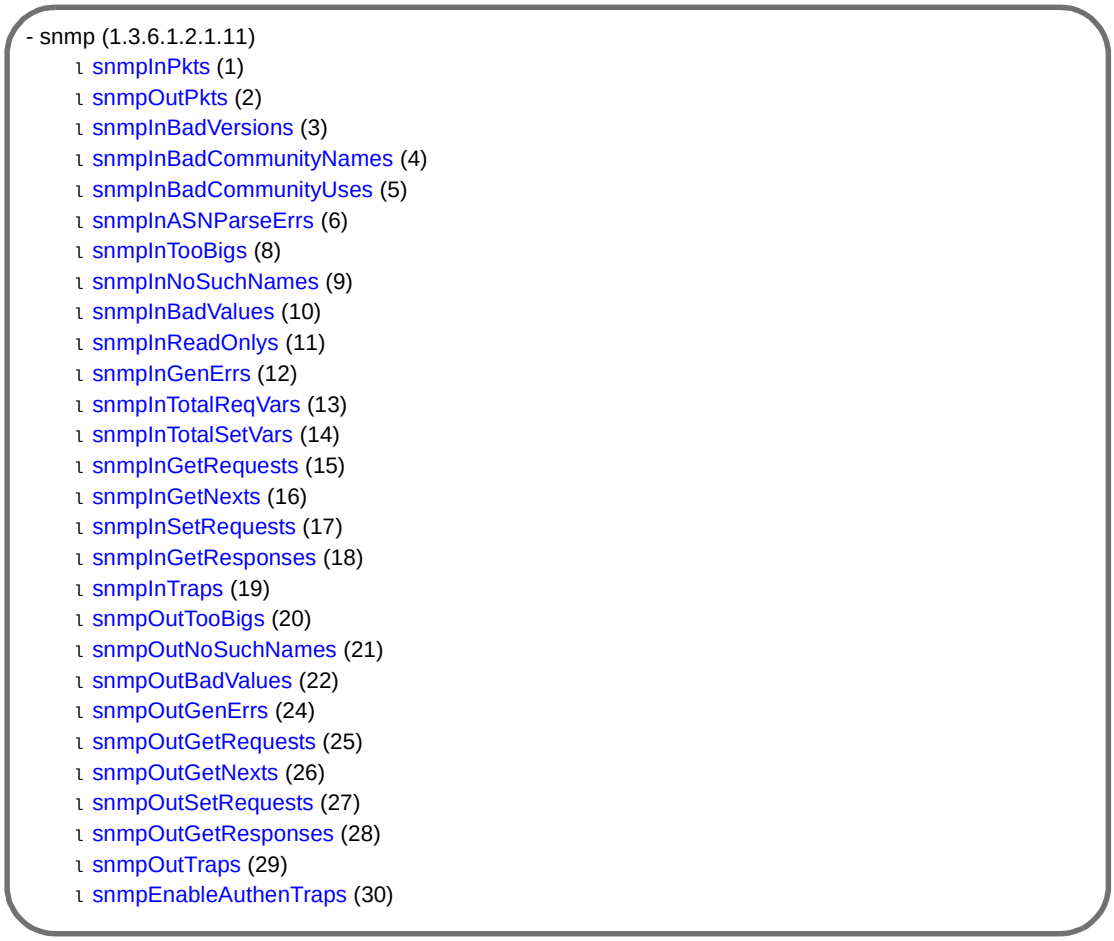


Figure 1-4 Tree Structure for MIB-II SNMP Group

Textual Conventions

Table 1-1 lists the textual conventions used for MIB-II.

Table 1-1 MIB-II Textual Conventions

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

Imports

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

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

System Group

Implementation of the System Group is mandatory for all systems. If an agent is not configured to have a value for any of the System Group variables, a string of length 0 is returned.

sysDescr

OID 1.3.6.1.2.1.1.1

Description A textual description of the entity.

Note: This value should include the full name and version identification of the hardware type, software operating system, and networking software. This must contain only printable ASCII characters.

Default Value = Fibre Channel Switch. Set this value using the **agtcfgSet** telnet command.

sysObjectID

OID 1.3.6.1.2.1.1.2

Description The vendor's authoritative identification of the network management subsystem contained in the entity.

Note: This value is allocated within the SMI enterprises subtree (1.3.6.1.4.1) and provides an easy and unambiguous means for determining what kind of box is being managed.

Example:
If vendor "Flintstones, Inc." was assigned the subtree 1.3.6.1.4.1.4242, it could assign the identifier 1.3.6.1.4.1.4242.1.1 to its "Fred Router".

Default value =
iso.org.dod.internet.private.enterprises.bcsi.commDev.fibrechannel.fcSwitch.sw

sysUpTime

OID 1.3.6.1.2.1.1.3

Description The time (in hundredths of a second) since the network management portion of the system was last re-initialized.

sysContact

OID 1.3.6.1.2.1.1.4

Description The textual identification of the contact person for this managed node, together with information on how to contact this person.

Note: Default value = Field Support. Set this value using the **agtcfgSet** telnet command.

sysName

OID 1.3.6.1.2.1.1.5

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

Note: Default value = *preassigned name of the switch.*

sysLocation

OID 1.3.6.1.2.1.1.6

Description The physical location of this node, (for example, telephone closet, 3rd floor).

Note: Default value = End User Premise. Set this value using the **agtcfgSet** telnet command.

sysServices

OID 1.3.6.1.2.1.1.7

Description A value that indicates the set of services that this entity primarily offers.

The value is a sum. This sum initially takes the value zero. Then, for each layer, L, in the range 1 through 7, for which this node performs transactions, 2 raised to (L - 1) is added to the sum. For example, a node that primarily performs routing functions has a value of 4 (2^{3-1}). In contrast, a node that is a host and offers application services, has a value of 72 ($2^{4-1} + 2^{7-1}$). Note that in the context of the Internet suite of protocols, values should be calculated accordingly:

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

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

Interfaces Group

Implementation of the Interfaces group is mandatory for all systems.

ifNumber

OID 1.3.6.1.2.1.2.1

Description The number of network interfaces (regardless of their current state) present on this system.

Note: When running FCIP, the return value is 7 for SilkWorm 12000 switches and 3 for SilkWorm 3900 switches. The value can be 2 or 3 for all other switch types.

Interfaces Table

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

ifTable

OID 1.3.6.1.2.1.2.2

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

Note: The ifDescr for SilkWorm 3900 switches includes the following: lo, eth0, eth1, fc0, fc1, eth0:1, and eth0:2. The ifDescr for SilkWorm 12000 switches includes the following: lo, eth0, and fc0.

ifEntry

OID 1.3.6.1.2.1.2.2.1

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

Index ifIndex

ifIndex

OID 1.3.6.1.2.1.2.2.1.1

Description A unique value for each interface.

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

For example, the number of entries inside the **SilkWorm 12000** switch: 1 to 3 for FCIP, otherwise the value is 1 or 2

ifDescr

OID 1.3.6.1.2.1.2.2.1.2

Description A textual string containing information about the interface.

Note: For example, **SilkWorm 12000**: fei0, lo0, fc0. Also, eth0 for Fabric OS v4.x.

ifType

OID 1.3.6.1.2.1.2.2.1.3

Description The type of interface, designated by the physical/link protocol(s) immediately below the network layer in the protocol stack.

Note: fei0 maps to 6 (ethernet-csmacd).

lo0 maps to 24 (softwareLoopback).

fc0 maps to 56.

ifMtu

OID 1.3.6.1.2.1.2.2.1.4

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

Note: For interfaces that are used to transmit network datagrams, the value is the size of the largest network datagram that can be sent on the interface (these values are different for Fabric OS v4.x).

fei0 returns 1500.

lo0 returns 3904.

fc0 returns 2024.

ifSpeed

OID 1.3.6.1.2.1.2.2.1.5

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

Note: For interfaces that do not vary in bandwidth or interfaces for which no accurate estimation can be made, this object should contain the nominal bandwidth. For Fabric OS v4.x, 2 GB returns.

fei0 returns 10^7.

lo0 returns 0.

fc0 returns 10^9.

ifPhysAddress

OID 1.3.6.1.2.1.2.2.1.6

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

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

fei0 returns MAC address of the Ethernet.

lo0 returns null.

fc0 returns MAC address of the Fibre Channel.

ifAdminStatus

OID 1.3.6.1.2.1.2.2.1.7

Description The desired state of the interface.

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

ifOperStatus

OID 1.3.6.1.2.1.2.2.1.8

Description The current operational state of the interface.

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

ifLastChange

OID 1.3.6.1.2.1.2.2.1.9

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

ifInOctets

OID 1.3.6.1.2.1.2.2.1.10

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

ifInUcastPkts

OID 1.3.6.1.2.1.2.2.1.11

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

ifInNUcastPkts

OID 1.3.6.1.2.1.2.2.1.12

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

ifInDiscards

OID 1.3.6.1.2.1.2.2.1.13

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

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

ifInErrors

OID 1.3.6.1.2.1.2.2.1.14

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

ifInUnknownProtos

OID 1.3.6.1.2.1.2.2.1.15

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

ifOutOctets

OID 1.3.6.1.2.1.2.2.1.16

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

ifOutUcastPkts

OID 1.3.6.1.2.1.2.2.1.17

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

ifOutNUcastPkts

OID 1.3.6.1.2.1.2.2.1.18

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

ifOutDiscards

OID 1.3.6.1.2.1.2.2.1.19

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

ifOutErrors

OID 1.3.6.1.2.1.2.2.1.20

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

ifOutQLen

OID 1.3.6.1.2.1.2.2.1.21

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

ifSpecific

OID 1.3.6.1.2.1.2.2.1.22

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

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

Note: fei0 returns null OID.

lo0 returns null OID.

fc0 returns null OID.

Address Translation Group

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

Address Translation Table

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

Examples of such translation tables are: for broadcast media where ARP is in use, the translation table is equivalent to the ARP cache; or, on an X.25 network where non-algorithmic translation to X.121 addresses is required, the translation table contains the NetworkAddress to X.121 address equivalences.

atTable

OID 1.3.6.1.2.1.3.1

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

atEntry

OID 1.3.6.1.2.1.3.1.1

Description Each entry contains one NetworkAddress to physical address equivalence.

Index atIfIndex, atNetAddress

atIfIndex

OID 1.3.6.1.2.1.3.1.1.1

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

atPhysAddress

OID 1.3.6.1.2.1.3.1.1.2

Description The media-dependent physical address.

atNetAddress

OID 1.3.6.1.2.1.3.1.1.3

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

IP Group

Implementation of the IP group is mandatory for all systems.

ipForwarding

OID 1.3.6.1.2.1.4.1

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

ipDefaultTTL

OID 1.3.6.1.2.1.4.2

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

ipInReceives

OID 1.3.6.1.2.1.4.3

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

ipInHdrErrors

OID 1.3.6.1.2.1.4.4

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

ipInAddrErrors

OID 1.3.6.1.2.1.4.5

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

ipForwDatagrams

OID 1.3.6.1.2.1.4.6

Description The number of input datagrams for which this entity was not their final IP destination, as a result of which an attempt was made to find a route to forward them to that final destination. In entities which do not act as IP Gateways, this counter will include only those packets which were Source-Routed via this entity, and the Source-Route option processing was successful.

ipInUnknownProtos

OID 1.3.6.1.2.1.4.7

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

ipInDiscards

OID 1.3.6.1.2.1.4.8

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

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

ipInDelivers

OID 1.3.6.1.2.1.4.9

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

ipOutRequests

OID 1.3.6.1.2.1.4.10

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

ipOutDiscards

OID 1.3.6.1.2.1.4.11

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

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

ipOutNoRoutes

OID 1.3.6.1.2.1.4.12

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

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

ipReasmTimeout

OID 1.3.6.1.2.1.4.13

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

ipReasmReqds

OID 1.3.6.1.2.1.4.14

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

ipReasmOKs

OID 1.3.6.1.2.1.4.15

Description The number of IP datagrams successfully re-assembled.

ipReasmFails

OID 1.3.6.1.2.1.4.16

Description The number of failures detected by the IP re-assembly algorithm (for whatever reason, timed out, errors, and so on).

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

---

ipFragOKs

OID 1.3.6.1.2.1.4.17

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

ipFragFails

OID 1.3.6.1.2.1.4.18

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

ipFragCreates

OID 1.3.6.1.2.1.4.19

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

IP Address Table

The IP address table contains this entity’s IP addressing information.

ipAddrTable

OID 1.3.6.1.2.1.4.20

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

ipAddrEntry

OID 1.3.6.1.2.1.4.20.1

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

Index ipAdEntAddr

ipAdEntAddr

OID 1.3.6.1.2.1.4.20.1.1

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

ipAdEntIfIndex

OID 1.3.6.1.2.1.4.20.1.2

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

ipAdEntNetMask

OID 1.3.6.1.2.1.4.20.1.3

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

ipAdEntBcastAddr

OID 1.3.6.1.2.1.4.20.1.4

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

ipAdEntReasmMaxSize

OID 1.3.6.1.2.1.4.20.1.5

Description The size of the largest IP datagram which this entity can re-assemble from incoming IP fragmented datagrams received on this interface.

IP Routing Table

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

ipRouteTable

OID 1.3.6.1.2.1.4.21

Description This entity's IP Routing table.

ipRouteEntry

OID 1.3.6.1.2.1.4.21.1

Description A route to a particular destination.

Index ipRouteDest

ipRouteDest

OID 1.3.6.1.2.1.4.21.1.1

Description The destination IP address of this route.

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

ipRouteIfIndex

OID 1.3.6.1.2.1.4.21.1.2

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

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

ipRouteMetric1

OID 1.3.6.1.2.1.4.21.1.3

Description The primary routing metric for this route.

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

ipRouteMetric2

OID 1.3.6.1.2.1.4.21.1.4

Description An alternate routing metric for this route.

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

ipRouteMetric3

OID 1.3.6.1.2.1.4.21.1.5

Description An alternate routing metric for this route.

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

ipRouteMetric4

OID 1.3.6.1.2.1.4.21.1.6

Description An alternate routing metric for this route.

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

ipRouteNextHop

OID 1.3.6.1.2.1.4.21.1.7

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

ipRouteType

OID 1.3.6.1.2.1.4.21.1.8

Description The type of route. Valid values are:

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

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

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

ipRouteProto

OID 1.3.6.1.2.1.4.21.1.9

Description The routing mechanism via which this route was learned.

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

ipRouteAge

OID 1.3.6.1.2.1.4.21.1.10

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

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

ipRouteMask

OID 1.3.6.1.2.1.4.21.1.11

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

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

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

Note: All IP routing subsystems implicitly use this mechanism.

ipRouteMetric5

OID 1.3.6.1.2.1.4.21.1.12

Description An alternate routing metric for this route.

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

ipRouteInfo

OID 1.3.6.1.2.1.4.21.1.13

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

IP Address Translation Table

The IP address translation table contains the IpAddress to physical address equivalences. Some interfaces do not use translation tables for determining address equivalences.

Example:

DDN-X.25 has an algorithmic method); if all interfaces are of this type, then the Address Translation table is empty, and therefore has zero entries.

ipNetToMediaTable

OID 1.3.6.1.2.1.4.22

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

ipNetToMediaEntry

OID 1.3.6.1.2.1.4.22.1

Description Each entry contains one IpAddress to physical address equivalence.

Index ipNetToMediaIfIndex, ipNetToMediaNetAddress

ipNetToMediaIfIndex

OID 1.3.6.1.2.1.4.22.1.1

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

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

ipNetToMediaPhysAddress

OID 1.3.6.1.2.1.4.22.1.2

Description The media-dependent physical address.

ipNetToMediaNetAddress

OID 1.3.6.1.2.1.4.22.1.3

Description The IpAddress corresponding to the media-dependent physical address.

ipNetToMediaType

OID 1.3.6.1.2.1.4.22.1.4

Description The type of mapping.

Additional IP Objects

ipRoutingDiscards

OID 1.3.6.1.2.1.4.23

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

ICMP Group

Implementation of the ICMP group is mandatory for all systems.

icmpInMsgs

OID 1.3.6.1.2.1.5.1

Description The total number of ICMP messages which the entity received.

Note: This counter includes all ICMP messages counted by icmpInErrors.

icmpInErrors

OID 1.3.6.1.2.1.5.2

Description The number of ICMP messages which the entity received but determined as having ICMP-specific errors (bad ICMP checksums, bad length, and so on).

icmpInDestUnreachs

OID 1.3.6.1.2.1.5.3

Description The number of ICMP Destination Unreachable messages received.

icmpInTimeExcds

OID 1.3.6.1.2.1.5.4

Description The number of ICMP Time Exceeded messages received.

icmpInParmProbs

OID 1.3.6.1.2.1.5.5

Description The number of ICMP Parameter Problem messages received.

icmpInSrcQuenchs

OID 1.3.6.1.2.1.5.6

Description The number of ICMP Source Quench messages received.

icmpInRedirects

OID 1.3.6.1.2.1.5.7

Description The number of ICMP Redirect messages received.

icmpInEchos

OID 1.3.6.1.2.1.5.8

Description The number of ICMP Echo (request) messages received.

icmpInEchoReps

OID 1.3.6.1.2.1.5.9

Description The number of ICMP Echo Reply messages received.

icmpInTimestamps

OID 1.3.6.1.2.1.5.10

Description The number of ICMP Timestamp (request) messages received.

icmpInTimestampReps

OID 1.3.6.1.2.1.5.11

Description The number of ICMP Timestamp Reply messages received.

icmpInAddrMasks

OID 1.3.6.1.2.1.5.12

Description The number of ICMP Address Mask Request messages received.

icmpInAddrMaskReps

OID 1.3.6.1.2.1.5.13

Description The number of ICMP Address Mask Reply messages received.

icmpOutMsgs

OID 1.3.6.1.2.1.5.14

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

Note: This counter includes all those counted by icmpOutErrors.

icmpOutErrors

OID 1.3.6.1.2.1.5.15

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

icmpOutDestUnreachs

OID 1.3.6.1.2.1.5.16

Description The number of ICMP Destination Unreachable messages sent.

icmpOutTimeExcds

OID 1.3.6.1.2.1.5.17

Description The number of ICMP Time Exceeded messages sent.

icmpOutParmProbs

OID 1.3.6.1.2.1.5.18

Description The number of ICMP Parameter Problem messages sent.

icmpOutSrcQuenchs

OID 1.3.6.1.2.1.5.19

Description The number of ICMP Source Quench messages sent.

icmpOutRedirects

OID 1.3.6.1.2.1.5.20

Description The number of ICMP Redirect messages sent. For a host, this object will always be zero, since hosts do not send redirects.

icmpOutEchos

OID 1.3.6.1.2.1.5.21

Description The number of ICMP Echo (request) messages sent.

icmpOutEchoReps

OID 1.3.6.1.2.1.5.22

Description The number of ICMP Echo Reply messages sent.

icmpOutTimestamps

OID 1.3.6.1.2.1.5.23

Description The number of ICMP Timestamp (request) messages sent.

icmpOutTimestampReps

OID 1.3.6.1.2.1.5.24

Description The number of ICMP Timestamp Reply messages sent.

icmpOutAddrMasks

OID 1.3.6.1.2.1.5.25

Description The number of ICMP Address Mask Request messages sent.

icmpOutAddrMaskReps

OID 1.3.6.1.2.1.5.26

Description The number of ICMP Address Mask Reply messages sent.

TCP Group

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

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

tcpRtoAlgorithm

OID 1.3.6.1.2.1.6.1

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

tcpRtoMin

OID 1.3.6.1.2.1.6.2

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

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

tcpRtoMax

OID 1.3.6.1.2.1.6.3

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

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

tcpMaxConn

OID 1.3.6.1.2.1.6.4

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

tcpActiveOpens

OID 1.3.6.1.2.1.6.5

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

tcpPassiveOpens

OID 1.3.6.1.2.1.6.6

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

tcpAttemptFails

OID 1.3.6.1.2.1.6.7

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

tcpEstabResets

OID 1.3.6.1.2.1.6.8

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

tcpCurrEstab

OID 1.3.6.1.2.1.6.9

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

tcpInSegs

OID 1.3.6.1.2.1.6.10

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

tcpOutSegs

OID 1.3.6.1.2.1.6.11

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

tcpRetransSegs

OID 1.3.6.1.2.1.6.12

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

TCP Connection Table

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

tcpConnTable

OID 1.3.6.1.2.1.6.13

Description A table containing TCP connection-specific information.

tcpConnEntry

OID 1.3.6.1.2.1.6.13.1

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

Index tcpConnLocalAddress, tcpConnLocalPort, tcpConnRemAddress, tcpConnRemPort

tcpConnState

OID 1.3.6.1.2.1.6.13.1.1

Description The state of this TCP connection. Possible values are:

closed (1)
listen (2)
synSent (3)
synReceived (4)
established (5)
finWait1 (6)
finWait2 (7)
closeWait (8)
lastAck (9)
closing (10)
timeWait (11)
deleteTCB (12)

Note: v3.1 and v4.x do not allow the SET operation on this variable.

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

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

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

tcpConnLocalAddress

OID 1.3.6.1.2.1.6.13.1.2

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

tcpConnLocalPort

OID 1.3.6.1.2.1.6.13.1.3

Description The local port number for this TCP connection.

tcpConnRemAddress

OID 1.3.6.1.2.1.6.13.1.4

Description The remote IP address for this TCP connection.

tcpConnRemPort

OID 1.3.6.1.2.1.6.13.1.5

Description The remote port number for this TCP connection.

Additional TCP Objects

tcpInErrs

OID 1.3.6.1.2.1.6.14

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

tcpOutRsts

OID 1.3.6.1.2.1.6.15

Description The number of TCP segments sent containing the RST flag.

UDP Group

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

udpInDatagrams

OID 1.3.6.1.2.1.7.1

Description The total number of UDP datagrams delivered to UDP users.

udpNoPorts

OID 1.3.6.1.2.1.7.2

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

udpInErrors

OID 1.3.6.1.2.1.7.3

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

udpOutDatagrams

OID 1.3.6.1.2.1.7.4

Description The total number of UDP datagrams sent from this entity.

UDP Listener Table

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

udpTable

OID 1.3.6.1.2.1.7.5

Description A table containing UDP listener information.

udpEntry

OID 1.3.6.1.2.1.7.5.1

Description Information about a particular current UDP listener.

Index udpLocalAddress, udpLocalPort

udpLocalAddress

OID 1.3.6.1.2.1.7.5.1.1

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

udpLocalPort

OID 1.3.6.1.2.1.7.5.1.2

Description The local port number for this UDP listener.

EGP Group

Implementation of the EGP group is mandatory for all systems which implement the EGP.

Note: Brocade does not support the EGP Group—this section is not applicable.

egpInMsgs

Note: Not Supported.

OID 1.3.6.1.2.1.8.1

Description The number of EGP messages received without error.

egpInErrors

Note: Not Supported.

OID 1.3.6.1.2.1.8.2

Description The number of EGP messages received that proved to be in error.

egpOutMsgs

Note: Not Supported.

OID 1.3.6.1.2.1.8.3

Description The total number of locally generated EGP messages.

egpOutErrors

Note: Not Supported.

OID 1.3.6.1.2.1.8.4

Description The number of locally generated EGP messages not sent due to resource limitations within an EGP entity.

EGP Neighbor Table

The EGP neighbor table contains information about this entity’s EGP neighbors.

egpNeighTable

Note: Not Supported.

OID 1.3.6.1.2.1.8.5

Description The EGP neighbor table.

egpNeighEntry

Note: Not Supported.

OID 1.3.6.1.2.1.8.5.1

Description Information about this entity's relationship with a particular EGP neighbor.

Index egpNeighAddr

egpNeighState

Note: Not Supported.

OID 1.3.6.1.2.1.8.5.1.1

Description The EGP state of the local system with respect to this entry's EGP neighbor. Each EGP state is represented by a value that is one greater than the numerical value associated with said state in RFC 904.

egpNeighAddr

Note: Not Supported.

OID 1.3.6.1.2.1.8.5.1.2

Description The IP address of this entry's EGP neighbor.

egpNeighAs

Note: Not Supported.

OID 1.3.6.1.2.1.8.5.1.3

Description The autonomous system of this EGP peer. Zero should be specified if the autonomous system number of the neighbor is not yet known.

egpNeighInMsgs

Note: Not Supported.

OID 1.3.6.1.2.1.8.5.1.4

Description The number of EGP messages received without error from this EGP peer.

egpNeighInErrs

Note: Not Supported.

OID 1.3.6.1.2.1.8.5.1.5

Description The number of EGP messages received from this EGP peer that proved to be in error (for example, bad EGP checksum).

egpNeighOutMsgs

Note: Not Supported.

OID 1.3.6.1.2.1.8.5.1.6

Description The number of locally generated EGP messages to this EGP peer.

egpNeighOutErrs

Note: Not Supported.

OID 1.3.6.1.2.1.8.5.1.7

Description The number of locally generated EGP messages not sent to this EGP peer due to resource limitations within an EGP entity.

egpNeighInErrMsgs

Note: Not Supported.

OID 1.3.6.1.2.1.8.5.1.8

Description The number of EGP-defined error messages received from this EGP peer.

egpNeighOutErrMsgs

Note: Not Supported.

OID 1.3.6.1.2.1.8.5.1.9

Description The number of EGP-defined error messages sent to this EGP peer.

egpNeighStateUps

Note: Not Supported.

OID 1.3.6.1.2.1.8.5.1.10

Description The number of EGP state transitions to the UP state with this EGP peer.

egpNeighStateDowns

Note: Not Supported.

OID 1.3.6.1.2.1.8.5.1.11

Description The number of EGP state transitions from the UP state to any other state with this EGP peer.

egpNeighIntervalHello

Note: Not Supported.

OID 1.3.6.1.2.1.8.5.1.12

Description The interval between EGP Hello command retransmissions (in hundredths of a second). This represents the t1 timer as defined in RFC 904.

egpNeighIntervalPoll

Note: Not Supported.

OID 1.3.6.1.2.1.8.5.1.13

Description The interval between EGP poll command retransmissions (in hundredths of a second). This represents the t3 timer as defined in RFC 904.

egpNeighMode

Note: Not Supported.

OID 1.3.6.1.2.1.8.5.1.14

Description The polling mode of this EGP entity, either active (1) or passive (2).

egpNeighEventTrigger

Note: Not Supported.

OID 1.3.6.1.2.1.8.5.1.15

Description A control variable used to trigger operator-initiated Start and Stop events. Possible values are:

start (1)
stop (2)

Note: When read, this variable always returns the most recent value that egpNeighEventTrigger was set to. If it has not been set since the last initialization of the network management subsystem on the node, it returns a value of stop.

When set, this variable causes a Start or Stop event on the specified neighbor, as specified in RFC 904. Briefly, a Start event causes an Idle peer to begin neighbor acquisition and a non-Idle peer to re-initiate neighbor acquisition. A stop event causes a non-Idle peer to return to the Idle state until a Start event occurs, either via egpNeighEventTrigger or otherwise.

Additional EGP Objects

egpAs

Note: Not Supported.

OID 1.3.6.1.2.1.8.6

Description The autonomous system number of this EGP entity.

Transmission Group

Based on the transmission media underlying each interface on a system, the corresponding portion of the Transmission group is mandatory for that system.

When Internet-standard definitions for managing transmission media are defined, the transmission group is used to provide a prefix for the names of those objects.

Typically, such definitions reside in the experimental portion of the MIB until they are proven, then as a part of the Internet standardization process, the definitions are accordingly elevated and a new object identifier, under the transmission group is defined. By convention, the name assigned is:

```
type Object Identifier ::= { transmission number }
```

where “type” is the symbolic value used for the media in the ifType column of the ifTable object, and “number” is the actual integer value corresponding to the symbol.

SNMP Group

Implementation of the SNMP group is mandatory for all systems which support an SNMP protocol entity. Some of the objects defined below will be 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 below refer to an SNMP entity, and there may be several SNMP entities residing on a managed node (for example, if the node is acting as a management station).

snmpInPkts

OID 1.3.6.1.2.1.11.1

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

snmpOutPkts

OID 1.3.6.1.2.1.11.2

Description The total number of SNMP Messages which were passed from the SNMP protocol entity to the transport service.

snmpInBadVersions

OID 1.3.6.1.2.1.11.3

Description The total number of SNMP Messages which were delivered to the SNMP protocol entity and were for an unsupported SNMP version.

snmpInBadCommunityNames

OID 1.3.6.1.2.1.11.4

Description The total number of SNMP Messages delivered to the SNMP protocol entity which used a SNMP community name not known to said entity.

snmpInBadCommunityUses

OID 1.3.6.1.2.1.11.5

Description The total number of SNMP Messages delivered to the SNMP protocol entity which represented an SNMP operation which was not allowed by the SNMP community named in the Message.

snmpInASNParseErrs

OID 1.3.6.1.2.1.11.6

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

Note: 1.3.6.1.2.1.11.7 is not used.

snmpInTooBigs

OID 1.3.6.1.2.1.11.8

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

snmpInNoSuchNames

OID 1.3.6.1.2.1.11.9

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

snmpInBadValues

OID 1.3.6.1.2.1.11.10

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

snmpInReadOnlys

OID 1.3.6.1.2.1.11.11

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

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

snmpInGenErrs

OID 1.3.6.1.2.1.11.12

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

snmpInTotalReqVars

OID 1.3.6.1.2.1.11.13

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

snmpInTotalSetVars

OID 1.3.6.1.2.1.11.14

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

snmpInGetRequests

OID 1.3.6.1.2.1.11.15

Status Mandatory

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

snmpInGetNexts

OID 1.3.6.1.2.1.11.16

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

snmpInSetRequests

OID 1.3.6.1.2.1.11.17

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

snmpInGetResponses

OID 1.3.6.1.2.1.11.18

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

snmpInTraps

OID 1.3.6.1.2.1.11.19

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

snmpOutTooBigs

OID 1.3.6.1.2.1.11.20

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

snmpOutNoSuchNames

OID 1.3.6.1.2.1.11.21

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

snmpOutBadValues

OID 1.3.6.1.2.1.11.22

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

Note: 1.3.6.1.2.1.11.23 is not used

snmpOutGenErrs

OID 1.3.6.1.2.1.11.24

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

snmpOutGetRequests

OID 1.3.6.1.2.1.11.25

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

snmpOutGetNexts

OID 1.3.6.1.2.1.11.26

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

snmpOutSetRequests

OID 1.3.6.1.2.1.11.27

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

snmpOutGetResponses

OID 1.3.6.1.2.1.11.28

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

snmpOutTraps

OID 1.3.6.1.2.1.11.29

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

snmpEnableAuthenTraps

OID 1.3.6.1.2.1.11.30

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

enabled (1)
disabled (2)

Note: This object is stored in non-volatile memory so that it remains constant between re-initializations of the switch. This value can be changed with the **agtcfgset** telnet command.

FE MIB Objects

Chapter 2

This chapter provides descriptions and other information specific to FE MIB object types and includes the following information:

Overview

Brocade supports two versions of the FE MIB:

- **FIBRE-CHANNEL-FE-MIB (RFC2837)** in the **mib-2** branch.
- **FCFABRIC-ELEMENT-MIB** in the **experimental** branch.

The version of the FE MIB supported depends on the version of the Fabric OS. Table 2-1 lists which FE MIB is supported in which Fabric OS version.

Table 2-1 FE MIBs and supported Fabric OS versions

MIB	4.1.x	4.0.x	3.1.x	3.0.x	2.6.x
FIBRE-CHANNEL-FE-MIB (mib-2 branch)	Yes	Yes	Yes	Yes	No
FCFABRIC-ELEMENT-MIB (experimental branch)	No	No	No	Yes	Yes

FIBRE-CHANNEL-FE-MIB (mib-2 branch)

Note: The FIBRE-CHANNEL-FE-MIB is supported only in Fabric OS v3.x and v4.x. It is not supported in Fabric OS v2.6.x.

This section contains descriptions and other information that is specific to FIBRE-CHANNEL-FE-MIB (*in the mib-2 branch*), including the following:

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

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

Note: E-port information is not provided in the FIBRE-CHANNEL-FE-MIB.

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

- Configuration
- Operational
- Error
- Accounting (Not supported in Fabric OS v3.x.)
- Capability

FIBRE-CHANNEL-FE-MIB Organization

Figure 2-1, Figure 2-2, and Figure 2-3 depict the organization and structure of FIBRE-CHANNEL-FE-MIB:

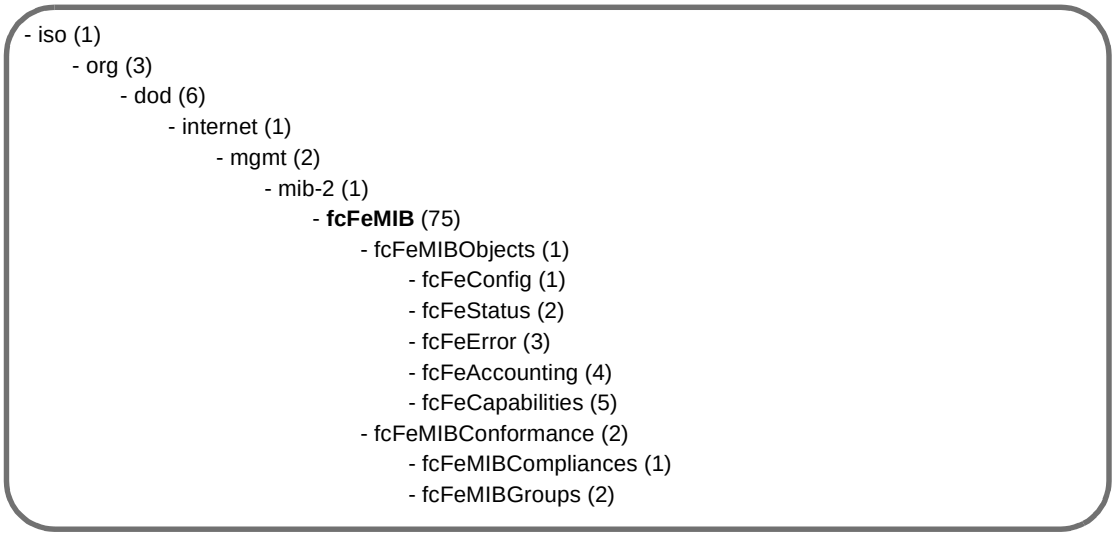


Figure 2-1 FIBRE-CHANNEL-FE-MIB Overall Tree Structure

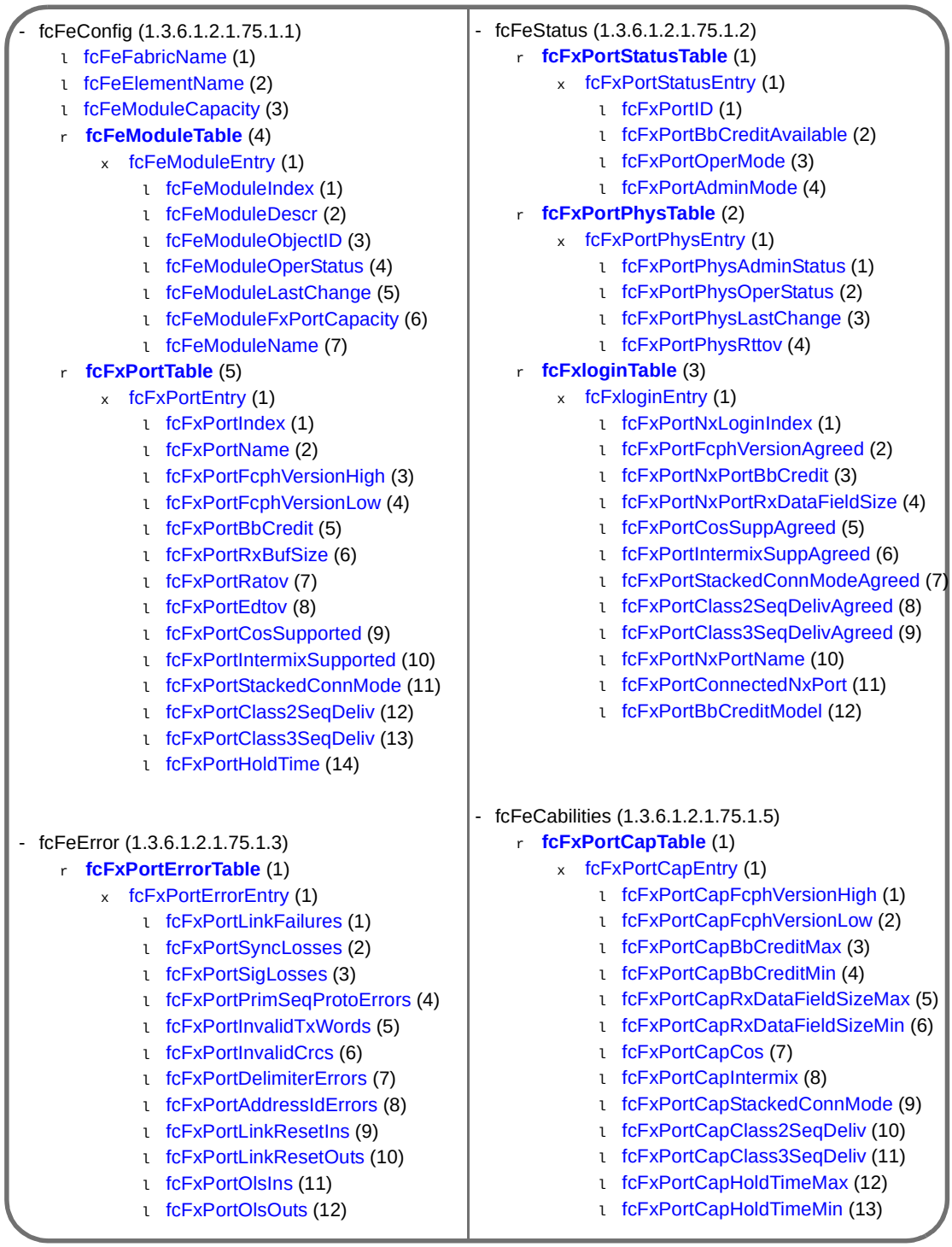


Figure 2-2 Tree Structure for fcFeConfig, fcFeStatus, fcFeError, and fcFeCapabilities Tables

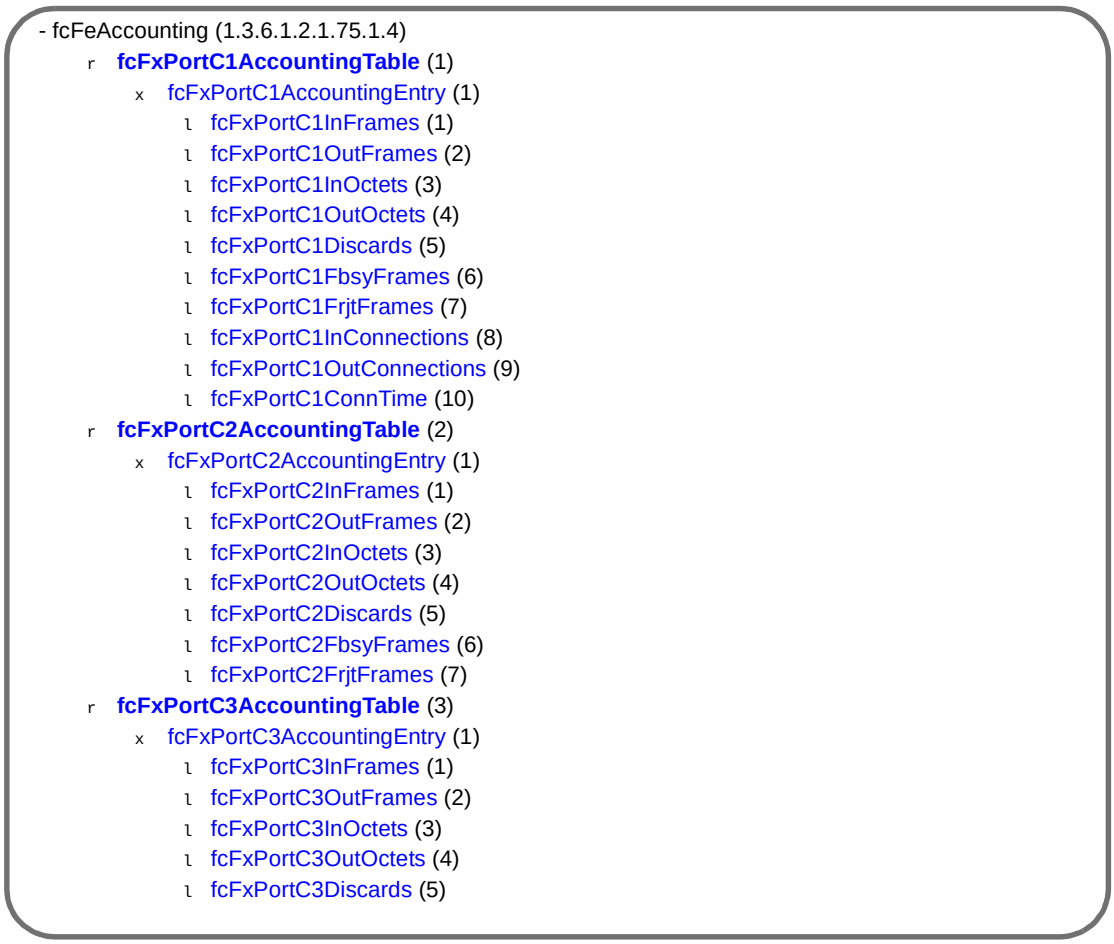


Figure 2-3 Tree Structure for fcFeAccounting Tables

Definitions for FIBRE-CHANNEL-FE-MIB

The following definitions are used for FIBRE-CHANNEL-FE-MIB.

Table 2-2 FIBRE-CHANNEL-FE-MIB Definitions

Type Definition	Value	Description
Display String	Octet String of size 0 to 255	
MilliSeconds	Integer from 0 to 2147383647	
MicroSeconds	Integer from 0 to 2147383647	
FcNameId	Octet String of size 8	Worldwide Name or Fibre Channel Name associated with an FC entity. It's a Network_Destination_ID or Network_Source_ID composed of a value up to 60 bits wide, occupying the remaining 8 bytes while the first nibble identifies the format of the Name_Identifier. Name_Identifier hex values: 0 (Ignored) 1 (IEEE 48-bit address) 2 (IEEE extended) 3 (Locally assigned) 4 (32-bit IP address)
FcNameId	Octet String of size 8	
FabricName FcNameId - The Name Identifier of a Fabric. Each Fabric provides a unique Fabric Name.	Octet String of size 8	IEEE48 Local
FabricName FcNameId - The Name Identifier associated with a port.	Octet String of size 8	IEEE48 IEEE extended Local
FcAddressId A 24-bit value unique within the address space of a Fabric	Octet String of size 8	IEEE48 IEEE extended Local
FcRxDataFieldSize	Integer from 128 to 2112	
FcBbCredit	Integer from 0 to 32767	
FcphVersion	Integer from 0 to 255	
FcStackedConnMode	Integer from 1 to 3	1 (none) 2 (transparent) 3 (lockedDown)

Table 2-2 FIBRE-CHANNEL-FE-MIB Definitions (Continued)

Type Definition	Value	Description
FcCosCap	Integer from 1 to 127	bit 0 (Class F) bit 1 (Class 1) bit 2 (Class 2) bit 3 (Class 3) bit 4 (Class 4) bit 5 (Class 5) bit 6 (Class 6) bit 7 (Reserved for future)
Fc0BaudRate	Integer according to FC-0 Baud Rates	1 (other): None of below 2 (oneEighth): 155 Mbaud (12.5MB/s) 4 (quarter): 266 Mbaud (25.0MB/s) 8 (half): 532 Mbaud (50.0MB/s) 16 (full): 1 Gbaud (100MB/s) 32 (double): 2 Gbaud (200MB/s) 64 (quadruple): 4 Gbaud (400MB/s)
Fc0BaudRateCap	Integer from 0 to 127	bit 0 (other) bit 1 (oneEighth) bit 2 (quarter) bit 3 (half) bit 4 (full) bit 5 (double) bit 6 (quadruple) bit 7 (Reserved for future)
Fc0MediaCap	Integer from 0 to 65535	bit 0 (unknown) bit 1 (single mode fibre (sm)) bit 2 (multi-mode fibre 50 micron (m5)) bit 3 (multi-mode fibre 62.5 micron (m6)) bit 4 (video cable (tv)) bit 5 (miniature cable (mi)) bit 6 (shielded twisted pair (stp)) bit 7 (twisted wire (tw)) bit 8 (long video (lv)) bits 9-15 (Reserved for future use)
Fc0Medium	Integer	1 (unknown) 2 (sm) 4 (m5) 8 (m6) 16 (tv) 32 (mi) 64 (stp) 128 (tw) 256 (lv)

Table 2-2 FIBRE-CHANNEL-FE-MIB Definitions (Continued)

Type Definition	Value	Description
Fc0TxType	Integer	1 (unknown) 2 (longWaveLaser (LL)) 3 (shortWaveLaser (SL)) 4 (longWaveLED (LE)) 5 (electrical (EL)) 6 (shortWaveLaser-noOFC (SN))
Fc0Distance	Integer	The FC-0 distance range associated with a port transmitter 1 (unknown) 2 (long) 3 (intermediate) 4 (short)
FcFeModuleCapacity	Integer from 1 to 256	Returns 1 for all devices.
FcFeFxPortCapacity	Integer from 1 to 256	
FcFeModuleIndex	Integer from 1 to 256	
FcFeFxPortIndex	Integer from 1 to 256	
FcFeNxPortIndex	Integer from 1 to 256	
FcFxPortMode	Integer	1 (unknown) 2 (fPort) 3 (flPort)
FcBbCreditModel	Integer	1 (regular) 2 (alternate)

Configuration Group

This group consists of scalar objects and tables. It contains the configuration and service parameters of the Fabric Element and the FxPorts.

The group represents a set of parameters associated with the Fabric Element or an FxPort to support its NxPorts.

fcFeFabricName

OID 1.3.6.1.2.1.75.1.1.1

Description The Name_Identifier of the fabric to which this fabric element belongs.

Note: Returns the WWN of the primary switch in the fabric.

fcFeElementName

OID 1.3.6.1.2.1.75.1.1.2

Description The Name_Identifier of the fabric element.

Note: Returns the WWN of the switch.

fcFeModuleCapacity

OID 1.3.6.1.2.1.75.1.1.3

Description The maximum number of modules in the Fabric Element, regardless of their current state.

Note: The valid value for Brocade switch:
SilkWorm 12000: 1

fc Fabric Element Module Table

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

fcFeModuleTable

OID 1.3.6.1.2.1.75.1.1.4

Description A table that contains, one entry for each module in the Fabric Element, information of the modules.

fcFeModuleEntry

OID 1.3.6.1.2.1.75.1.1.4.1

Description An entry containing the configuration parameters of a module.

Index fcFeModuleIndex

fcFeModuleIndex

OID 1.3.6.1.2.1.75.1.1.4.1.1

Description Identifies the module within the Fabric Element for which this entry contains information. This value is never greater than fcFeModuleCapacity.

fcFeModuleDescr

OID 1.3.6.1.2.1.75.1.1.4.1.2

Description A textual description of the module. This value should include the full name and version identification of the module. It should contain printable ASCII characters.

Note: See sysDescr in the *MIB-II (RFC1213-MIB)* on page 1-1.

fcFeModuleObjectID

OID 1.3.6.1.2.1.75.1.1.4.1.3

Description The vendor's authoritative identification of the module. This value may be allocated within the SMI enterprises subtree (1.3.6.1.4.1) and provides a straight-forward and unambiguous means for determining what kind of module is being managed.

For example, this object could take the value 1.3.6.1.4.1.99649.3.9 if vendor "Neufe Inc." was assigned the subtree 1.3.6.1.4.1.99649, and had assigned the identifier 1.3.6.1.4.1.99649.3.9 to its 'FeFiFo-16 PlugInCard.'

Note: See sysObjectID in the *MIB-II (RFC1213-MIB)* on page 1-1.

fcFeModuleOperStatus

OID 1.3.6.1.2.1.75.1.1.4.1.4

Description Indicates the operational status of the module. Possible values include:

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

fcFeModuleLastChange

OID 1.3.6.1.2.1.75.1.1.4.1.5

Description Contains the value of sysUpTime when the module entered its current operational status. A value of zero indicates that the operational status of the module has not changed since the agent last restarted.

fcFeModuleFxPortCapacity

OID 1.3.6.1.2.1.75.1.1.4.1.6

Description The number of FxPort that can be contained within the module. Within each module, the ports are uniquely numbered in the range from 1 to fcFeModuleFxPortCapacity inclusive. However, the numbers are not required to be contiguous.

Note: The valid value for Brocade switch:
SilkWorm 12000: 64

fcFeModuleName

OID 1.3.6.1.2.1.75.1.1.4.1.7

Description The Name_Identifier of the module.

Note: The return value is the WWN of the switch.

FxPort Table

This table contains, one entry for each FxPort, the configuration parameters of the ports.

fcFxPortTable

OID 1.3.6.1.2.1.75.1.1.5

Description A table that contains, one entry for each FxPort in the Fabric Element, configuration and service parameters of the FxPorts.

fcFxPortEntry

OID 1.3.6.1.2.1.75.1.1.5.1

Description An entry containing the configuration and service parameters of an FxPort.

Index fcFeModuleIndex
fcFxPortIndex

fcFxPortIndex

OID 1.3.6.1.2.1.75.1.1.5.1.1

Description Identifies the FxPort within the module. This number ranges from 1 to the value of fcFeModulePortCapacity for the associated module. The value remains constant for the identified FxPort until the module is re-initialized.

fcFxPortName

OID 1.3.6.1.2.1.75.1.1.5.1.2

Description The World Wide Name of this FxPort. Each FxPort has a unique port World Wide Name within the the fabric.

Note: The return value is the WWN of the port.

FxPort Common Service Parameters

fcFxPortFcphVersionHigh

OID 1.3.6.1.2.1.75.1.1.5.1.3

Description The highest or most recent version of FC-PH that the FxPort is configured to support.

fcFxPortFcphVersionLow

OID 1.3.6.1.2.1.75.1.1.5.1.4

Description The lowest or earliest version of FC-PH that the FxPort is configured to support.

fcFxPortBbCredit

OID 1.3.6.1.2.1.75.1.1.5.1.5

Description The total number of receive buffers available for holding Class 1 connect-request, Class 2 or 3 frames from the attached NxPort. It is for buffer-to-buffer flow control in the direction from the attached NxPort (if applicable) to FxPort.

fcFxPortRxBufSize

OID 1.3.6.1.2.1.75.1.1.5.1.6

Description The largest Data_Field Size (in octets) for an FT_1 frame that can be received by the FxPort.

fcFxPortRatov

OID 1.3.6.1.2.1.75.1.1.5.1.7

Description The Resource_Allocation_Timeout Value configured for the FxPort. This is used as the time-out value for determining when to reuse an NxPort resource such as a Recovery_Qualifier. It represents E_D_TOV (see next object) plus twice the maximum time that a frame may be delayed within the Fabric and still be delivered.

fcFxPortEdtov

OID 1.3.6.1.2.1.75.1.1.5.1.8

Description The E_D_TOV value configured for the FxPort. The Error_Detect_Timeout Value is used as the time-out value for detecting an error condition.

FxPort Class Service Parameters

fcFxPortCosSupported

OID 1.3.6.1.2.1.75.1.1.5.1.9

Description A value indicating the set of Classes of Service supported by the FxPort.

fcFxPortIntermixSupported

OID 1.3.6.1.2.1.75.1.1.5.1.10

Description A flag indicating whether the FxPort supports an Intermixed Dedicated Connection.

fcFxPortStackedConnMode

OID 1.3.6.1.2.1.75.1.1.5.1.11

Description A value indicating the mode of Stacked Connect supported by the FxPort.

fcFxPortClass2SeqDeliv

OID 1.3.6.1.2.1.75.1.1.5.1.12

Description A flag indicating whether Class 2 Sequential Delivery is supported by the FxPort.

fcFxPortClass3SeqDeliv

OID 1.3.6.1.2.1.75.1.1.5.1.13

Description A flag indicating whether Class 3 Sequential Delivery is supported by the FxPort.

Other FxPort Parameters

fcFxPortHoldTime

OID 1.3.6.1.2.1.75.1.1.5.1.14

Description The maximum time (in microseconds) that the FxPort shall hold a frame before discarding the frame if it is unable to deliver the frame. The value 0 means that the FxPort does not support this parameter.

Status Group

This group consists of tables that contain operational status and established service parameters for the Fabric Element and the attached NxPorts.

FxPort Status Table

This table contains one entry for each FxPort, the operational status, and parameters of the FxPorts.

fcFxPortStatusTable

OID 1.3.6.1.2.1.75.1.2.1

Description A table that contains, one entry for each FxPort in the Fabric Element, operational status and parameters of the FxPorts.

fcFxPortStatusEntry

OID 1.3.6.1.2.1.75.1.2.1.1

Description An entry containing operational status and parameters of an FxPort.

Index fcFeModuleIndex
fcFxPortIndex

fcFxPortID

OID 1.3.6.1.2.1.75.1.2.1.1.1

Description The address identifier by which this FxPort is identified within the Fabric. The FxPort may assign its address identifier to its attached NxPort(s) during Fabric Login.

fcFxPortBbCreditAvailable

OID 1.3.6.1.2.1.75.1.2.1.1.2

Description The number of buffers currently available for receiving frames from the attached port in the buffer-to-buffer flow control. The value should be less than or equal to fcFxPortBbCredit.

fcFxPortOperMode

OID 1.3.6.1.2.1.75.1.2.1.1.3

Description The current operational mode of the FxPort:

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

fcFxPortAdminMode

OID 1.3.6.1.2.1.75.1.2.1.1.4

Description The desired operational mode of the FxPort.

FxPort Physical Level Table

This table contains, one entry for each FxPort in the Fabric Element, the physical level status and parameters of the FxPorts.

fcFxPortPhysTable

OID 1.3.6.1.2.1.75.1.2.2

Description A table that contains, one entry for each FxPort in the Fabric Element, physical level status and parameters of the FxPorts.

fcFxPortPhysEntry

OID 1.3.6.1.2.1.75.1.2.2.1

Description An entry containing physical level status and parameters of an FxPort.

Index fcFeModuleIndex
fcFxPortIndex

fcFxPortPhysAdminStatus

OID 1.3.6.1.2.1.75.1.2.2.1.1

Description The desired state of the FxPort. A management station may place the FxPort in a desired state by setting this object accordingly. Possible values are:

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

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

fcFxPortPhysOperStatus

OID 1.3.6.1.2.1.75.1.2.2.1.2

Description The current operational status of the FxPort. Possibles values are:

online (1):	Login may proceed.
offline (2):	Login cannot proceed.
testing (3):	Port is under test.
linkFailure (4):	Failure after online/testing.

The testing (3) state indicates that no operational frames can be passed. If fcFxPortPhysAdminStatus is offline (2) then fcFxPortPhysOperStatus should be offline (2). If fcFxPortPhysAdminStatus is changed to online (1) then fcFxPortPhysOperStatus should change to online (1) if the FxPort is ready to accept Fabric Login request from the attached NxPort; it should proceed and remain in the linkFailure (4) state if and only if there is a fault that prevents it from going to the online (1) state.

fcFxPortPhysLastChange

OID 1.3.6.1.2.1.75.1.2.2.1.3

Description The value of sysUpTime at the time the FxPort entered its current operational status. A value of zero indicates that the FxPort's operational status has not changed since the agent last restarted.

fcFxPortPhysRttov

OID 1.3.6.1.2.1.75.1.2.2.1.4

Description The Receiver_Transmitter_Timeout value of the FxPort. This is used by the receiver logic to detect Loss of Synchronization.

Note: This object is read only. It is listed in the MIB definition as read-write (which is incorrect).

FxPort Fabric Login Table

This table contains, one entry for each FxPort in the Fabric Element and the Service Parameters that have been established from the most recent Fabric Login, whether implicit or explicit.

fcFxloginTable

OID 1.3.6.1.2.1.75.1.2.3

Description A table that contains, one entry for each FxPort in the Fabric Element, services parameters established from the most recent Fabric Login, explicit or implicit.

fcFxloginEntry

OID 1.3.6.1.2.1.75.1.2.3.1

Description An entry containing service parameters established from a successful Fabric Login.

Index fcFxloginModuleIndex, fcFxloginFxPortIndex, fcFxloginNxPortIndex

fcFxPortNxLoginIndex

OID 1.3.6.1.2.1.75.1.2.3.1.1

Description The associated NxPort in the attachment for which the entry contains information.

fcFxPortFcphVersionAgreed

OID 1.3.6.1.2.1.75.1.2.3.1.2

Description The version of FC-PH that the FxPort has agreed to support from the Fabric Login.

fcFxPortNxPortBbCredit

OID 1.3.6.1.2.1.75.1.2.3.1.3

Description The total number of buffers available for holding Class 1 connect-request, Class 2 or Class 3 frames to be transmitted to the attached NxPort. It is for buffer-to-buffer flow control in the direction from FxPort to NxPort. The buffer-to-buffer flow control mechanism is indicated in the respective fcFxPortBbCreditModel.

fcFxPortNxPortRxDataFieldSize

OID 1.3.6.1.2.1.75.1.2.3.1.4

Description The Receive Data Field Size of the attached NxPort. This is a binary value that specifies the largest Data Field Size for an FT_1 frame that can be received by the NxPort. The value is in number of bytes and ranges from 128 to 2112 inclusive.

fcFxPortCosSuppAgreed

OID 1.3.6.1.2.1.75.1.2.3.1.5

Description Indicates that the attached NxPort has requested the FxPort for the support of classes of services and the FxPort has granted the request.

fcFxPortIntermixSuppAgreed

OID 1.3.6.1.2.1.75.1.2.3.1.6

Description A variable indicating that the attached NxPort has requested the FxPort for the support of Intermix, and the FxPort has granted the request. This flag is only valid if Class 1 service is supported. Possible values are:

- yes (1): The attached NxPort has requested the FxPort for the support of Intermix, and the FxPort has granted the request.
- no (2): The attached NxPort has not requested the FxPort for the support of Intermix.

fcFxPortStackedConnModeAgreed

OID 1.3.6.1.2.1.75.1.2.3.1.7

Description Indicates whether the FxPort has agreed to support stacked connect from the Fabric Login. This is only meaningful if Class 1 service has been agreed to.

fcFxPortClass2SeqDelivAgreed

OID 1.3.6.1.2.1.75.1.2.3.1.8

Description A variable indicating whether the FxPort has agreed to support Class 2 sequential delivery from the Fabric Login. This is only meaningful if Class 2 service has been agreed. Possible values are:

- yes (1): The FxPort has agreed to support Class 2 sequential delivery from the Fabric Login.
- no (2): The FxPort has not agreed to support Class 2 sequential delivery from the Fabric Login.

fcFxPortClass3SeqDelivAgreed

OID 1.3.6.1.2.1.75.1.2.3.1.9

Description A flag indicating whether the FxPort has agreed to support Class 3 sequential delivery from the Fabric Login. This is only meaningful if Class 3 service has been agreed. Possible values are:

- yes (1): The FxPort has agreed to support Class 3 sequential delivery from the Fabric Login.
- no (2): The FxPort has not agreed to support Class 3 sequential delivery from the Fabric Login.

fcFxPortNxPortName

OID 1.3.6.1.2.1.75.1.2.3.1.10

Description The port name of the attached NxPort, if applicable. If the value of this object is ‘0000000000000000’H, this FxPort has no NxPort attached to it.

fcFxPortConnectedNxPort

OID 1.3.6.1.2.1.75.1.2.3.1.11

Description The address identifier of the destination FxPort with which this FxPort is currently engaged in a either a Class 1 or loop connection. If the value of this object is ‘000000’H, this FxPort is not engaged in a connection.

fcFxPortBbCreditModel

OID 1.3.6.1.2.1.75.1.2.3.1.12

Description Identifies the BB_Credit model used by the FxPort. The regular model refers to the buffer-to-buffer flow control mechanism defined in FC-PH [1] is used between the F_Port and the N_Port. For FL_Ports, the Alternate Buffer-to-Buffer flow control mechanism as defined in FC-AL [4] is used between the FL_Port and any attached NL_Ports.

Error Group

This group consists of tables that contain information about the various types of errors detected. The management station may use the information in this group to determine the quality of the link between the FxPort and its attached NxPort.

Implementation of this group is optional.

FxPort Error Table

This table contains, one entry for each FxPort in the Fabric Element and counters recording numbers of errors detected since the management agent re-initialized.

Note: The first 6 columnar objects after the port index correspond to the counters in the Link ErrorStatus Block.

fcFxPortErrorTable

OID 1.3.6.1.2.1.75.1.3.1

Description A table that contains, one entry for each FxPort, counters that record the numbers of errors detected.

fcFxPortErrorEntry

OID 1.3.6.1.2.1.75.1.3.1.1

Description An entry containing error counters of a FxPort.

Index fcFxPortErrorModuleIndex, fcFxPortErrorFxPortIndex

fcFxPortLinkFailures

OID 1.3.6.1.2.1.75.1.3.1.1.1

Description The number of link failures detected by this FxPort.

fcFxPortSyncLosses

OID 1.3.6.1.2.1.75.1.3.1.1.2

Description The number of loss of synchronization detected by the FxPort.

fcFxPortSigLosses

OID 1.3.6.1.2.1.75.1.3.1.1.3

Description The number of loss of signal detected by the FxPort.

fcFxPortPrimSeqProtoErrors

OID 1.3.6.1.2.1.75.1.3.1.1.4

Description The number of primitive sequence protocol errors detected by the FxPort.

fcFxPortInvalidTxWords

OID 1.3.6.1.2.1.75.1.3.1.1.5

Description The number of invalid transmission word detected by the FxPort.

fcFxPortInvalidCrcs

OID 1.3.6.1.2.1.75.1.3.1.1.6

Description The number of invalid Cyclic Redundancy Checks (CRCs) detected by this FxPort.

fcFxPortDelimiterErrors

OID 1.3.6.1.2.1.75.1.3.1.1.7

Description The number of Delimiter Errors detected by this FxPort.

fcFxPortAddressIdErrors

OID 1.3.6.1.2.1.75.1.3.1.1.8

Description The number of address identifier errors detected by this FxPort.

fcFxPortLinkResetIns

OID 1.3.6.1.2.1.75.1.3.1.1.9

Description The number of Link Reset Protocol received by this FxPort from the attached NxPort.

fcFxPortLinkResetOuts

OID 1.3.6.1.2.1.75.1.3.1.1.10

Description The number of Link Reset Protocol issued by this FxPort to the attached NxPort.

fcFxPortOlsIns

OID 1.3.6.1.2.1.75.1.3.1.1.11

Description The number of Offline Sequence received by this FxPort.

fcFxPortOlsOuts

OID 1.3.6.1.2.1.75.1.3.1.1.12

Description The number of Offline Sequence issued by this FxPort.

Accounting Group

The Accounting group is supported only in Fabric OS v4.x. It is not supported in Fabric OS v3.x.

The Accounting group consists of the following tables:

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

Each table contains accounting information for the FxPorts in the Fabric Element.

Class 1 Accounting Table

fcFxPortC1AccountingTable

OID 1.3.6.1.2.1.75.1.4.1

Description A table that contains, one entry for each FxPort in the Fabric Element, Class 1 accounting information recorded since the management agent has re-initialized.

Note: This object is supported only in Fabric OS v4.x.

fcFxPortC1AccountingEntry

OID 1.3.6.1.2.1.75.1.4.1.1

Description An entry containing Class 1 accounting information for each FxPort.

Index fcFeModuleIndex
fcFePortIndex

Note: This object is supported only in Fabric OS v4.x.

fcFxPortC1InFrames

OID 1.3.6.1.2.1.75.1.4.1.1.1

Description The number of Class 1 frames (other than Class 1 connect-request) received by this FxPort from its attached NxPort.

Note: This object is supported only in Fabric OS v4.x.

fcFxPortC1OutFrames

OID 1.3.6.1.2.1.75.1.4.1.1.2

Description The number of Class 1 frames (other than Class 1 connect- request) delivered through this FxPort to its attached NxPort.

Note: This object is supported only in Fabric OS v4.x.

fcFxPortC1InOctets

OID 1.3.6.1.2.1.75.1.4.1.1.3

Description The number of Class 1 frame octets, including the frame delimiters, received by this FxPort from its attached NxPort.

Note: This object is supported only in Fabric OS v4.x.

fcFxPortC1OutOctets

OID 1.3.6.1.2.1.75.1.4.1.1.4

Description The number of Class 1 frame octets, including the frame delimiters, delivered through this FxPort its attached NxPort.

Note: This object is supported only in Fabric OS v4.x.

fcFxPortC1Discards

OID 1.3.6.1.2.1.75.1.4.1.1.5

Description The number of Class 1 frames discarded by this FxPort.

Note: This object is supported only in Fabric OS v4.x.

fcFxPortC1FbsyFrames

OID 1.3.6.1.2.1.75.1.4.1.1.6

Description The number of F_BSY frames generated by this FxPort against Class 1 connect-request.

Note: This object is supported only in Fabric OS v4.x.

fcFxPortC1FrjtFrames

OID 1.3.6.1.2.1.75.1.4.1.1.7

Description The number of F_RJT frames generated by this FxPort against Class 1 connect-request.

Note: This object is supported only in Fabric OS v4.x.

fcFxPortC1InConnections

OID 1.3.6.1.2.1.75.1.4.1.1.8

Description The number of Class 1 connections successfully established in which the attached NxPort is the source of the connect- request.

Note: This object is supported only in Fabric OS v4.x.

fcFxPortC1OutConnections

OID 1.3.6.1.2.1.75.1.4.1.1.9

Description The number of Class 1 connections successfully established in which the attached NxPort is the destination of the connect-request.

Note: This object is supported only in Fabric OS v4.x.

fcFxPortC1ConnTime

OID 1.3.6.1.2.1.75.1.4.1.1.10

Description The cumulative time that this FxPort has been engaged in Class 1 connection. The amount of time is counted from after a connect-request has been accepted until the connection is disengaged, either by an EOFdt or Link Reset.

Class 2 Accounting Table

fcFxPortC2AccountingTable

OID 1.3.6.1.2.1.75.1.4.2

Description A table that contains, one entry for each FxPort in the Fabric Element, Class 2 accounting information recorded since the management agent has re-initialized.

Note: This object is supported only in Fabric OS v4.x.

fcFxPortC2AccountingEntry

OID 1.3.6.1.2.1.75.1.4.2.1

Description An entry containing Class 2 accounting information for each FxPort.

Index fcFeModuleIndex
fcFePortIndex

Note: This object is supported only in Fabric OS v4.x.

fcFxPortC2InFrames

OID 1.3.6.1.2.1.75.1.4.2.1.1

Description The number of Class 2 frames received by this FxPort from its attached NxPort.

Note: This object is supported only in Fabric OS v4.x.

fcFxPortC2OutFrames

OID 1.3.6.1.2.1.75.1.4.2.1.2

Description The number of Class 2 frames delivered through this FxPort to its attached NxPort.

Note: This object is supported only in Fabric OS v4.x.

fcFxPortC2InOctets

OID 1.3.6.1.2.1.75.1.4.2.1.3

Description The number of Class 2 frame octets, including the frame delimiters, received by this FxPort from its attached NxPort.

Note: This object is supported only in Fabric OS v4.x.

fcFxPortC2OutOctets

OID 1.3.6.1.2.1.75.1.4.2.1.4

Description The number of Class 2 frame octets, including the frame delimiters, delivered through this FxPort to its attached NxPort.

Note: This object is supported only in Fabric OS v4.x.

fcFxPortC2Discards

OID 1.3.6.1.2.1.75.1.4.2.1.5

Description The number of Class 2 frames discarded by this FxPort.

Note: This object is supported only in Fabric OS v4.x.

fcFxPortC2FbsyFrames

OID 1.3.6.1.2.1.75.1.4.2.1.6

Description The number of F_BSY frames generated by this FxPort against Class 2 frames.

Note: This object is supported only in Fabric OS v4.x.

fcFxPortC2FrjtFrames

OID 1.3.6.1.2.1.75.1.4.2.1.7

Description The number of F_RJT frames generated by this FxPort against Class 2 frames.

Note: This object is supported only in Fabric OS v4.x.

Class 3 Accounting Table

fcFxPortC3AccountingTable

OID 1.3.6.1.2.1.75.1.4.3

Description A table that contains, one entry for each FxPort in the Fabric Element, Class 3 accounting information recorded since the management agent has re-initialized.

Note: This object is supported only in Fabric OS v4.x.

fcFxPortC3AccountingEntry

OID 1.3.6.1.2.1.75.1.4.3.1

Description An entry containing Class 3 accounting information for each FxPort.

Index fcFeModuleIndex
fcFePortIndex

Note: This object is supported only in Fabric OS v4.x.

fcFxPortC3InFrames

OID 1.3.6.1.2.1.75.1.4.3.1.1

Description The number of Class 3 frames received by this FxPort from its attached NxPort.

Note: This object is supported only in Fabric OS v4.x.

fcFxPortC3OutFrames

OID 1.3.6.1.2.1.75.1.4.3.1.2

Description The number of Class 3 frames delivered through this FxPort to its attached NxPort.

Note: This object is supported only in Fabric OS v4.x.

fcFxPortC3InOctets

OID 1.3.6.1.2.1.75.1.4.3.1.3

Description The number of Class 3 frame octets, including the frame delimiters, received by this FxPort from its attached NxPort.

Note: This object is supported only in Fabric OS v4.x.

fcFxPortC3OutOctets

OID 1.3.6.1.2.1.75.1.4.3.1.4

Description The number of Class 3 frame octets, including the frame delimiters, delivered through this FxPort to its attached NxPort.

Note: This object is supported only in Fabric OS v4.x.

fcFxPortC3Discards

OID 1.3.6.1.2.1.75.1.4.3.1.5

Description The number of Class 3 frames discarded by this FxPort.

Note: This object is supported only in Fabric OS v4.x.

Capability Group

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

Implementation of this group is optional.

FxPort Capability Table

fcFxPortCapTable

OID 1.3.6.1.2.1.75.1.5.1

Description A table that contains, one entry for each FxPort, the capabilities of the port within the Fabric Element.

fcFxPortCapEntry

OID 1.3.6.1.2.1.75.1.5.1.1

Description An entry containing the capabilities of a FxPort.

Index fcFxPortCapModuleIndex, fcFxPortCapFxPortIndex

fcFxPortCapFcphVersionHigh

OID 1.3.6.1.2.1.75.1.5.1.1.1

Description The highest or most recent version of FC-PH that the FxPort is capable of supporting.

fcFxPortCapFcphVersionLow

OID 1.3.6.1.2.1.75.1.5.1.1.2

Description The lowest or earliest version of FC-PH that the FxPort is capable of supporting.

fcFxPortCapBbCreditMax

OID 1.3.6.1.2.1.75.1.5.1.1.3

Description The maximum number of receive buffers available for holding Class 1 connect-request, Class 2 or Class 3 frames from the attached NxPort.

fcFxPortCapBbCreditMin

OID 1.3.6.1.2.1.75.1.5.1.1.4

Description The minimum number of receive buffers available for holding Class 1 connect-request, Class 2 or Class 3 frames from the attached NxPort.

fcFxPortCapRxDataFieldSizeMax

OID 1.3.6.1.2.1.75.1.5.1.1.5

Description The maximum size in bytes of the Data Field in a frame that the FxPort is capable of receiving from its attached NxPort.

fcFxPortCapRxDataFieldSizeMin

OID 1.3.6.1.2.1.75.1.5.1.1.6

Description The minimum size in bytes of the Data Field in a frame that the FxPort is capable of receiving from its attached NxPort.

fcFxPortCapCos

OID 1.3.6.1.2.1.75.1.5.1.1.7

Description A value indicating the set of Classes of Service that the FxPort is capable of supporting.

fcFxPortCapIntermix

OID 1.3.6.1.2.1.75.1.5.1.1.8

Description A flag indicating whether the FxPort is capable of supporting the intermixing of Class 2 and Class 3 frames during a Class 1 connection. This flag is only valid if the port is capable of supporting Class 1 service. Possible values are:

- yes (1): The FxPort is capable of supporting the intermixing of Class 2 and Class 3 frames during a Class 1 connection.
- no (2): The FxPort is not capable of supporting the intermixing of Class 2 and Class 3 frames during a Class 1 connection.

fcFxPortCapStackedConnMode

OID 1.3.6.1.2.1.75.1.5.1.1.9

Description A value indicating the mode of Stacked Connect request that the FxPort is capable of supporting.

fcFxPortCapClass2SeqDeliv

OID 1.3.6.1.2.1.75.1.5.1.1.10

Description A flag indicating whether the FxPort is capable of supporting Class 2 Sequential Delivery. Possible values are:

yes (1): The FxPort is capable of supporting Class 2 Sequential Delivery.
no (2): The FxPort is not capable of supporting Class 2 Sequential Delivery.

fcFxPortCapClass3SeqDeliv

OID 1.3.6.1.2.1.75.1.5.1.1.11

Description A flag indicating whether the FxPort is capable of supporting Class 3 Sequential Delivery. Possible values are:

yes (1): The FxPort is capable of supporting Class 3 Sequential Delivery.
no (2): The FxPort is not capable of supporting Class 3 Sequential Delivery.

fcFxPortCapHoldTimeMax

OID 1.3.6.1.2.1.75.1.5.1.1.12

Description The maximum holding time (in microseconds) that the FxPort is capable of supporting.

fcFxPortCapHoldTimeMin

OID 1.3.6.1.2.1.75.1.5.1.1.13

Description The minimum holding time (in microseconds) that the FxPort is capable of supporting.

FCFABRIC-ELEMENT-MIB (experimental branch)

Note: The FCFABRIC-ELEMENT-MIB is supported only in Fabric OS v2.6.x and v3.0.x. It is not supported in Fabric OS v3.1.x and v4.x.

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

Overview

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

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

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

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

FCFABRIC-ELEMENT-MIB Organization

Figure 2-4 through Figure 2-6 depict the organization and structure of FCFABRIC-ELEMENT-MIB.

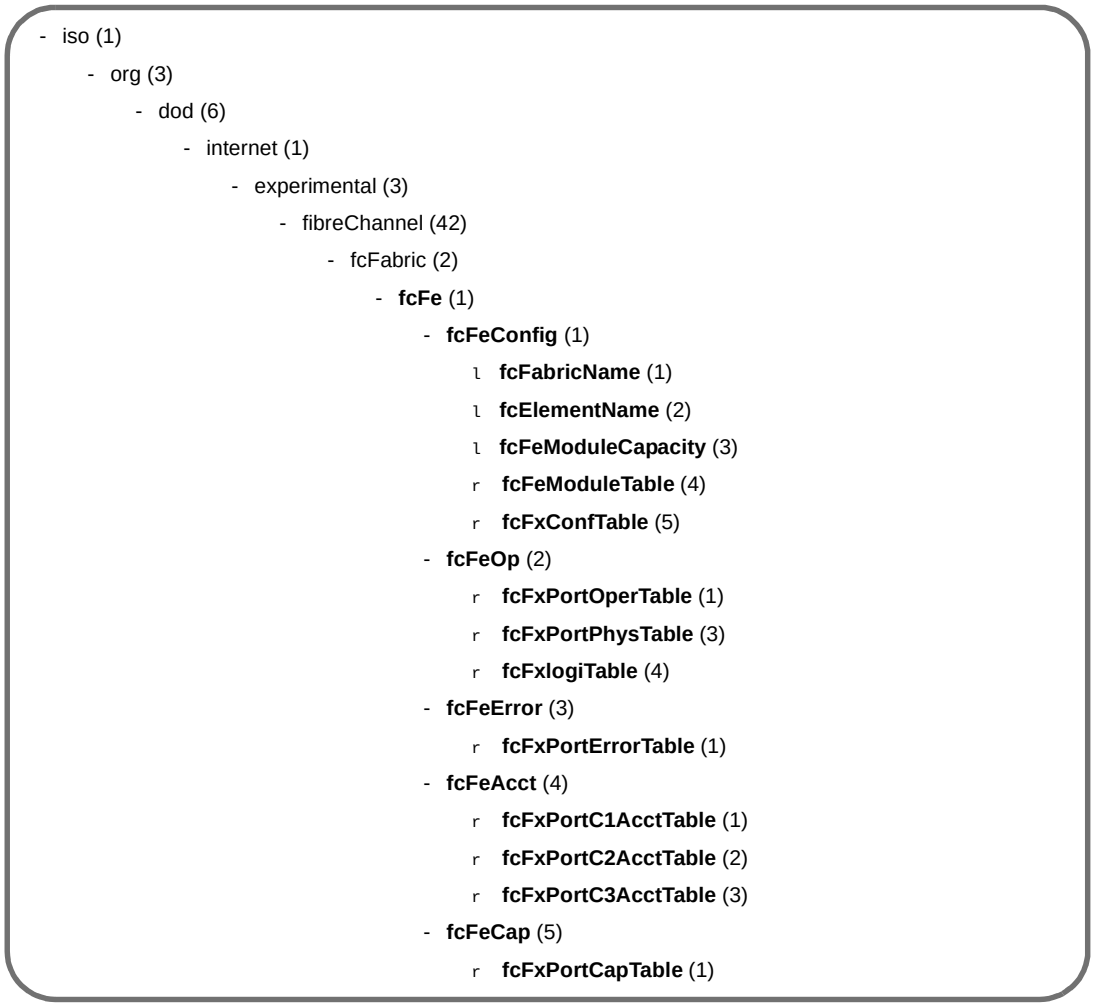


Figure 2-4 FCFABRIC-ELEMENT-MIB Overall Tree Structure

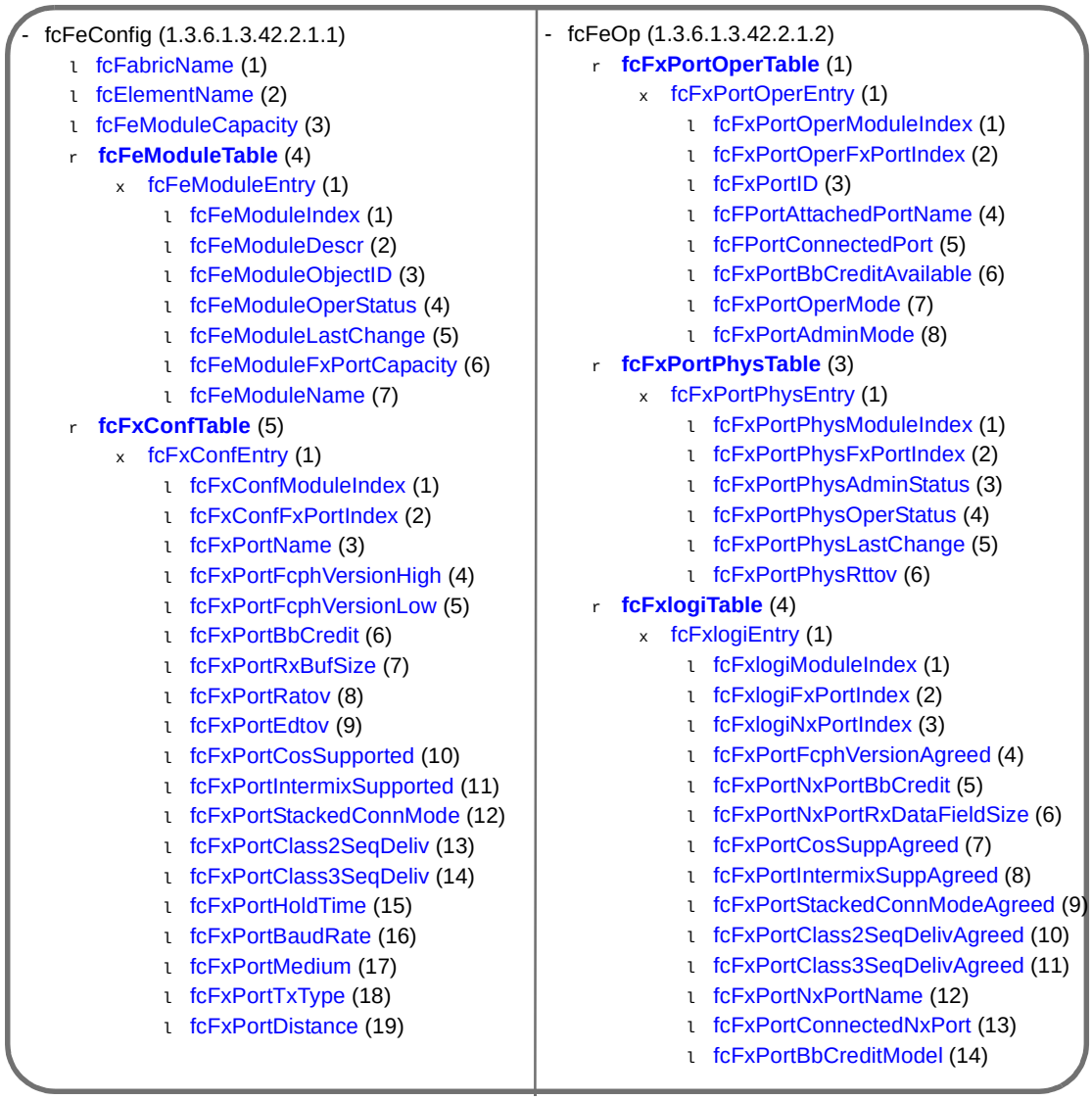


Figure 2-5 Tree Structure for fcFeConfig and fcFeOpTables

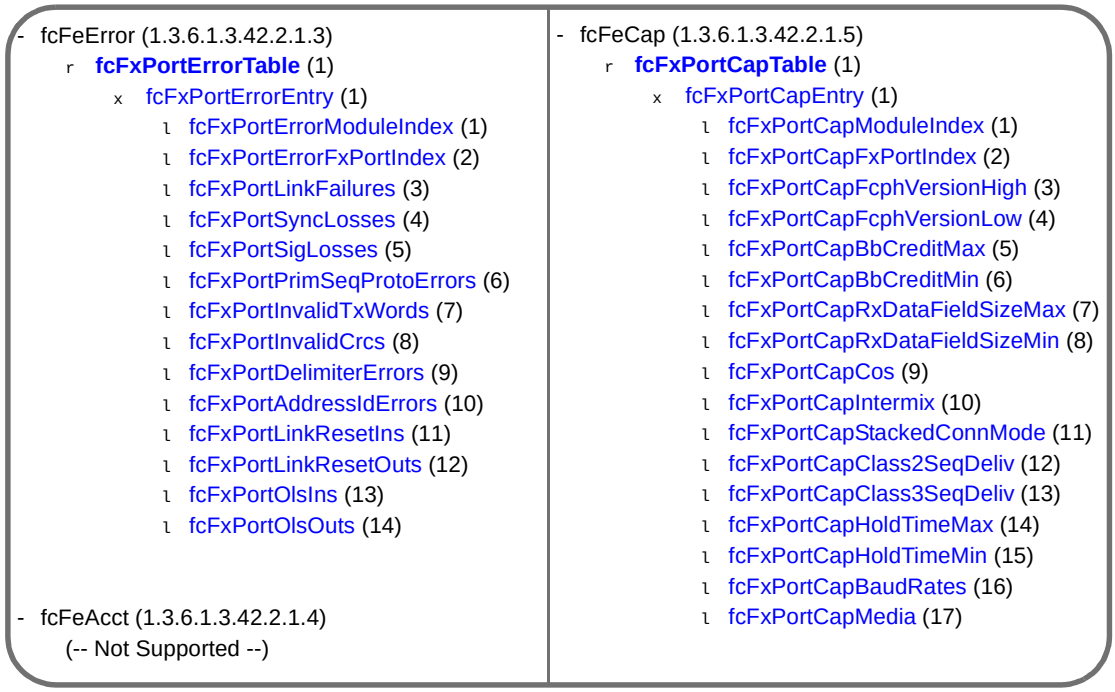


Figure 2-6 Tree Structure for fcFeError, fcFeAcct, and fcFeCap Tables

Definitions for FCFABRIC-ELEMENT-MIB

The following definitions are used for FCFABRIC-ELEMENT-MIB.

Table 2-3 FCFABRIC-ELEMENT-MIB Definitions

Type Definition	Value	Description
Display String	Octet String of size 0 to 255	
MilliSeconds	Integer from 0 to 2147383647	
MicroSeconds	Integer from 0 to 2147383647	
FcNameId	Octet String of size 8	World Wide Name or Fibre Channel name associated with an FC entry. This is a Network_Destination_ID or Network_Source_ID composed of a value up to 60 bits wide, occupying the remaining 8 bytes while the first nibble identifies the format of the Name_Identifier. Name_Identifier hex values: 0 (Ignored) 1 (IEEE 48-bit address) 2 (IEEE extended) 3 (Locally assigned) 4 (32-bit IP address)

Table 2-3 FCFABRIC-ELEMENT-MIB Definitions (Continued)

Type Definition	Value	Description
FabricName	FcNameId	The Name Identifier of a fabric. Each fabric provides a unique fabric name. Only the following formats are allowed: IEEE48 Local
FcPortName	FcNameId	The Name Identifier associated with a port. Only the following formats are allowed: IEEE48 IEEE extended Local
FcAddressId	Octet String of size 3	A 24-bit value unique within the address space of a fabric.
FcRxDataFieldSize	Integer from 128 to 2112	Receive Data_Field size.
FcBbCredit	Integer from 0 to 32767	Buffer-to-buffer credit.
FcphVersion	Integer from 0 to 255	
FcStackedConnMode	Integer from 1 to 3	1 (none) 2 (transparent) 3 (lockedDown)
FcCosCap	Integer from 1 to 127	bit 0 (Class F) bit 1 (Class 1) bit 2 (Class 2) bit 3 (Class 3) bit 4 (Class 4) bit 5 (Class 5) bit 6 (Class 6) bit 7 (Reserved for future)
Fc0BaudRate	Integer according to FC-0 Baud Rates	1 (other): None of below 2 (oneEighth) 155 Mbaud (12.5MB/s) 4 (quarter) 266 Mbaud (25.0MB/s) 8 (half) 532 Mbaud (50.0MB/s) 16 (full) 1 Gbaud (100MB/s) 32 (double) 2 Gbaud (200MB/s) 64 (quadruple) 4 Gbaud (400MB/s)
Fc0BaudRateCap	Integer from 0 to 127	bit 0 (other) bit 1 (oneEighth) bit 2 (quarter) bit 3 (half) bit 4 (full) bit 5 (double) bit 6 (quadruple) bit 7 (Reserved for future)

Table 2-3 FCFABRIC-ELEMENT-MIB Definitions (Continued)

Type Definition	Value	Description
Fc0MediaCap	Integer from 0 to 65535	bit 0 (unknown) bit 1 (single mode fibre (sm)) bit 2 (multi-mode fibre 50 micron (m5)) bit 3 (multi-mode fibre 62.5 micron (m6)) bit 4 (video cable (tv)) bit 5 (miniature cable (mi)) bit 6 (shielded twisted pair (stp)) bit 7 (twisted wire (tw)) bit 8 (long video (lv)) bits 9-15 (Reserved for future use)
Fc0Medium	Integer	1 (unknown) 2 (sm) 4 (m5) 8 (m6) 16 (tv) 32 (mi) 64 (stp) 128 (tw) 256 (lv)
Fc0TxType	Integer	1 (unknown) 2 (longWaveLaser (LL)) 3 (shortWaveLaser (SL)) 4 (longWaveLED (LE)) 5 (electrical (EL)) 6 (shortWaveLaser-noOFC (SN))
Fc0Distance	Integer	The FC-0 distance range associated with a port transmitter 1 (unknown) 2 (long) 3 (intermediate) 4 (short)
FcFeModuleCapacity	Integer from 1 to 256	
FcFeFxPortCapacity	Integer from 1 to 256	
FcFeModuleIndex	Integer from 1 to 256	
FcFeFxPortIndex	Integer from 1 to 256	
FcFeNxPortIndex	Integer from 1 to 256	
FcFxPortMode	Integer	1 (unknown) 2 (fPort) 3 (flPort)
FcBbCreditModel	Integer	1 (regular) 2 (alternate)

Configuration Group

This group consists of scalar objects and tables. It contains the configuration and service parameters of the Fabric Element and the FxPorts.

The group represents a set of parameters associated with the Fabric Element or an FxPort to support its NxPorts.

Implementation of this group is mandatory.

fcFabricName

OID 1.3.6.1.3.42.2.1.1.1

Description The Name_Identifier of the fabric to which this fabric element belongs.

Note: Returns the WWN of the primary switch in the fabric.

fcElementName

OID 1.3.6.1.3.42.2.1.1.2

Description The Name_Identifier of the fabric element.

Note: Returns the WWN of the switch.

fcFeModuleCapacity

OID 1.3.6.1.3.42.2.1.1.3

Description The maximum number of modules in the Fabric Element, regardless of their current state.

Note: The SilkWorm 12000 switch does not support this MIB variable.

fc Fabric Element Module Table

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

fcFeModuleTable

OID 1.3.6.1.3.42.2.1.1.4

Description A table that contains, one entry for each module in the Fabric Element, information of the modules.

fcFeModuleEntry

OID 1.3.6.1.3.42.2.1.1.4.1

Status Mandatory

Description An entry containing the configuration parameters of a module.

Index fcFeModuleIndex

fcFeModuleIndex

OID 1.3.6.1.3.42.2.1.1.4.1.1

Description Identifies the module within the Fabric Element for which this entry contains information. This value is never greater than fcFeModuleCapacity.

fcFeModuleDescr

OID 1.3.6.1.3.42.2.1.1.4.1.2

Description A textual description of the module. This value should include the full name and version identification of the module. It should contain printable ASCII characters.

Note: See sysDescr in the *MIB-II (RFC1213-MIB)* on page 1-1.

fcFeModuleObjectID

OID 1.3.6.1.3.42.2.1.1.4.1.3

Description The vendor's authoritative identification of the module. This value may be allocated within the SMI enterprises subtree (1.3.6.1.4.1) and provides a straight-forward and unambiguous means for determining what kind of module is being managed.

For example, this object could take the value 1.3.6.1.4.1.99649.3.9 if vendor "Neufe Inc." was assigned the subtree 1.3.6.1.4.1.99649, and had assigned the identifier 1.3.6.1.4.1.99649.3.9 to its 'FeFiFo-16 PlugInCard.'

Note: See sysObjectID in the *MIB-II (RFC1213-MIB)* on page 1-1.

fcFeModuleOperStatus

OID 1.3.6.1.3.42.2.1.1.4.1.4

Description Indicates the operational status of the module. Possible values are:

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

fcFeModuleLastChange

OID 1.3.6.1.3.42.2.1.1.4.1.5

Description Contains the value of sysUpTime when the module entered its current operational status. A value of zero indicates that the operational status of the module has not changed since the agent last restarted.

fcFeModuleFxPortCapacity

OID 1.3.6.1.3.42.2.1.1.4.1.6

Description The number of FxPort that can be contained within the module. Within each module, the ports are uniquely numbered in the range from 1 to fcFeModuleFxPortCapacity inclusive. However, the numbers are not required to be contiguous.

Note: The SilkWorm 12000 switch does not support this MIB variable.

fcFeModuleName

OID 1.3.6.1.3.42.2.1.1.4.1.7

Description The Name_Identifier of the module.

Note: The return value is the WWN of the switch.

FxPort Configuration Table

This table contains, one entry for each FxPort, the configuration parameters of the ports.

fcFxConfTable

OID 1.3.6.1.3.42.2.1.1.5

Description A table that contains, one entry for each FxPort in the Fabric Element, configuration and service parameters of the FxPorts.

fcFxConfEntry

OID 1.3.6.1.3.42.2.1.1.5.1

Description An entry containing the configuration and service parameters of an FxPort.

Index FcFxConfModuleIndex, fcFxConfFxPortIndex

fcFxConfModuleIndex

OID 1.3.6.1.3.42.2.1.1.5.1.1

Description Identifies the module containing the FxPort for which this entry contains information.

fcFxConfFxPortIndex

OID 1.3.6.1.3.42.2.1.1.5.1.2

Description Identifies the FxPort within the module. This number ranges from 1 to the value of fcFeModulePortCapacity for the associated module. The value remains constant for the identified FxPort until the module is re-initialized.

fcFxPortName

OID 1.3.6.1.3.42.2.1.1.5.1.3

Description The name identifier of this FxPort. Each FxPort has a unique port name within the address space of the fabric.

Note: The return value is the WWN of the port.

fcFxPortFcphVersionHigh

OID 1.3.6.1.3.42.2.1.1.5.1.4

Description The highest or most recent version of FC-PH that the FxPort is configured to support.

fcFxPortFcphVersionLow

OID 1.3.6.1.3.42.2.1.1.5.1.5

Description The lowest or earliest version of FC-PH that the FxPort is configured to support.

fcFxPortBbCredit

OID 1.3.6.1.3.42.2.1.1.5.1.6

Description The total number of receive buffers available for holding Class 1 connect-request, Class 2 or 3 frames from the attached NxPort. It is for buffer-to-buffer flow control in the direction from the attached NxPort (if applicable) to FxPort.

fcFxPortRxBufSize

OID 1.3.6.1.3.42.2.1.1.5.1.7

Description The largest Data_Field Size (in octets) for an FT_1 frame that can be received by the FxPort.

fcFxPortRatov

OID 1.3.6.1.3.42.2.1.1.5.1.8

Description The Resource_Allocation_Timeout Value configured for the FxPort. This is used as the time-out value for determining when to reuse an NxPort resource such as a Recovery_Qualifier. It represents E_D_TOV (see next object) plus twice the maximum time that a frame may be delayed within the Fabric and still be delivered.

fcFxPortEdtov

OID 1.3.6.1.3.42.2.1.1.5.1.9

Description The E_D_TOV value configured for the FxPort. The Error_Detect_Timeout Value is used as the time-out value for detecting an error condition.

fcFxPortCosSupported

OID 1.3.6.1.3.42.2.1.1.5.1.10

Description A value indicating the set of Classes of Service supported by the FxPort.

fcFxPortIntermixSupported

OID 1.3.6.1.3.42.2.1.1.5.1.11

Description A flag indicating whether the FxPort supports an Intermixed Dedicated Connection. Possible values are:

- yes (1): FxPort supports an Intermixed Dedicated Connection
- no (2): FxPort does not support an Intermixed Dedicated Connection.

fcFxPortStackedConnMode

OID 1.3.6.1.3.42.2.1.1.5.1.12

Description A value indicating the mode of Stacked Connect supported by the FxPort.

fcFxPortClass2SeqDeliv

OID 1.3.6.1.3.42.2.1.1.5.1.13

Description A flag indicating whether Class 2 Sequential Delivery is supported by the FxPort. Possible values are:

- yes (1): Class 2 Sequential Delivery is supported by the FxPort
- no (2): Class 2 Sequential Delivery is not supported by the FxPort.

fcFxPortClass3SeqDeliv

OID 1.3.6.1.3.42.2.1.1.5.1.14

Description A flag indicating whether Class 3 Sequential Delivery is supported by the FxPort. Possible values are:

- yes (1): Class 3 Sequential Delivery is supported by the FxPort.
- no (2): Class 3 Sequential Delivery is not supported by the FxPort.

fcFxPortHoldTime

OID 1.3.6.1.3.42.2.1.1.5.1.15

Description The maximum time (in microseconds) that the FxPort shall hold a frame before discarding the frame if it is unable to deliver the frame. The value 0 means that the FxPort does not support this parameter.

fcFxPortBaudRate

OID 1.3.6.1.3.42.2.1.1.5.1.16

Description The FC-0 baud rate of the FxPort.

Note: The SilkWorm 12000 switch does not support this MIB variable.

fcFxPortMedium

OID 1.3.6.1.3.42.2.1.1.5.1.17

Description The FC-0 medium of the FxPort.

fcFxPortTxType

OID 1.3.6.1.3.42.2.1.1.5.1.18

Description The FC-0 transmitter type of the FxPort.

fcFxPortDistance

OID 1.3.6.1.3.42.2.1.1.5.1.19

Description The FC-0 distance range of the FxPort transmitter.

Operation Group

This group consists of tables that contain operational status and established service parameters for the Fabric Element and the attached NxPorts.

Note: Implementation of this group is mandatory.

FxPort Operation Table

This table contains one entry for each FxPort, the operational status, and parameters of the FxPorts.

fcFxPortOperTable

OID 1.3.6.1.3.42.2.1.2.1

Description A table that contains one entry for each FxPort in the Fabric Element, operational status, and parameters of the FxPorts.

fcFxPortOperEntry

OID 1.3.6.1.3.42.2.1.2.1.1

Description An entry containing operational status and parameters of an FxPort.

Index fcFxPortOperModuleIndex, fcFxPortOperFxPortIndex

fcFxPortOperModuleIndex

OID 1.3.6.1.3.42.2.1.2.1.1.1

Description Identifies the module containing the FxPort for which this entry contains information.

fcFxPortOperFxPortIndex

OID 1.3.6.1.3.42.2.1.2.1.1.2

Description Identifies the FxPort within the module. This number ranges from 1 to the value of fcFeModulePortCapacity for the associated module. The value remains constant for the identified FxPort until the module is re-initialized.

fcFxPortID

OID 1.3.6.1.3.42.2.1.2.1.1.3

Description The address identifier by which this FxPort is identified within the Fabric. The FxPort may assign its address identifier to its attached NxPort(s) during Fabric Login.

fcFPortAttachedPortName

OID 1.3.6.1.3.42.2.1.2.1.1.4

Description The port name of the attached N_Port, if applicable. If the value of this object is ‘0000000000000000’H, this FxPort has no NxPort attached to it. This variable has been deprecated and may be implemented for backward compatibility.

fcFPortConnectedPort

OID 1.3.6.1.3.42.2.1.2.1.1.5

Description The address identifier of the destination FxPort with which this FxPort is currently engaged in either a Class 1 or loop connection. If the value of this object is ‘000000’H, this FxPort is not engaged in a connection. This variable has been deprecated and may be implemented for backward compatibility.

fcFxPortBbCreditAvailable

OID 1.3.6.1.3.42.2.1.2.1.1.6

Description The number of buffers currently available for receiving frames from the attached port in the buffer-to-buffer flow control. The value should be less than or equal to fcFxPortBbCredit.

fcFxPortOperMode

OID 1.3.6.1.3.42.2.1.2.1.1.7

Description The current operational mode of the FxPort.

fcFxPortAdminMode

OID 1.3.6.1.3.42.2.1.2.1.1.8

Description The desired operational mode of the FxPort.

FxPort Physical Level Table

This table contains one entry for each FxPort in the Fabric Element, and the physical level status and parameters of the FxPorts.

fcFxPortPhysTable

OID 1.3.6.1.3.42.2.1.2.3

Description A table that contains, one entry for each FxPort in the Fabric Element, physical level status and parameters of the FxPorts.

fcFxPortPhysEntry

OID 1.3.6.1.3.42.2.1.2.3.1

Description An entry containing physical level status and parameters of a FxPort.

Index fcFxPortPhysModuleIndex, fcFxPortPhysFxPortIndex

fcFxPortPhysModuleIndex

OID 1.3.6.1.3.42.2.1.2.3.1.1

Description Identifies the module containing the FxPort for which this entry contains information.

fcFxPortPhysFxPortIndex

OID 1.3.6.1.3.42.2.1.2.3.1.2

Description Identifies the FxPort within the module. This number ranges from 1 to the value of fcFeModulePortCapacity for the associated module. The value remains constant for the identified FxPort until the module is re-initialized.

fcFxPortPhysAdminStatus

OID 1.3.6.1.3.42.2.1.2.3.1.3

Description The desired state of the FxPort. Possible values are:

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

A management station may place the FxPort in a desired state by setting this object accordingly. The testing (3) state indicates that no operational frames can be passed. When a Fabric Element initializes, all FxPorts start with fcFxPortPhysAdminStatus in the offline (2) state. As the result of either explicit management action or per configuration information accessible by the Fabric Element, fcFxPortPhysAdminStatus is then changed to either the online (1) or testing (3) states, or remains in the offline (2) state.

fcFxPortPhysOperStatus

OID 1.3.6.1.3.42.2.1.2.3.1.4

Description The current operational status of the FxPort. Possible values are:

online (1):	Login may proceed.
offline (2):	Login cannot proceed.
testing (3):	Port is under test.
link-failure (4):	Failure after online/testing.

The testing (3) indicates that no operational frames can be passed. If fcFxPortPhysAdminStatus is offline (2) then fcFxPortPhysOperStatus should be offline (2). If fcFxPortPhysAdminStatus is changed to online (1) then fcFxPortPhysOperStatus should change to 1 (online) if the FxPort is ready to accept Fabric Login request from the attached NxPort; it should proceed and remain in the link-failure (4) state if and only if there is a fault that prevents it from going to the online (1) state.

fcFxPortPhysLastChange

OID 1.3.6.1.3.42.2.1.2.3.1.5

Description The value of sysUpTime at the time the FxPort entered its current operational status. A value of zero indicates that the FxPort's operational status has not changed since the agent last restarted.

fcFxPortPhysRttov

OID 1.3.6.1.3.42.2.1.2.3.1.6

Description The Receiver_Transmitter_Timeout value of the FxPort. This is used by the receiver logic to detect Loss of Synchronization.

FxPort Fabric Login Table

This table contains one entry for each FxPort in the Fabric Element, and the Service Parameters that have been established from the most recent Fabric Login, whether implicit or explicit.

fcFxlogiTable

OID 1.3.6.1.3.42.2.1.2.4

Description A table that contains, one entry for each FxPort in the Fabric Element, services parameters established from the most recent Fabric Login, explicit or implicit.

fcFxlogiEntry

OID 1.3.6.1.3.42.2.1.2.4.1

Description An entry containing service parameters established from a successful Fabric Login.

Index fcFxloginModuleIndex, fcFxloginFxPortIndex, fcFxloginNxPortIndex

fcFxlogiModuleIndex

OID 1.3.6.1.3.42.2.1.2.4.1.1

Description Identifies the module containing the FxPort for which this entry contains information.

fcFxlogiFxPortIndex

OID 1.3.6.1.3.42.2.1.2.4.1.2

Description Identifies the FxPort within the module. This number ranges from 1 to the value of fcFeModulePortCapacity for the associated module. The value remains constant for the identified FxPort until the module is re-initialized.

fcFxlogiNxPortIndex

OID 1.3.6.1.3.42.2.1.2.4.1.3

Description The object identifies the associated NxPort in the attachment for which the entry contains information.

fcFxPortFcphVersionAgreed

OID 1.3.6.1.3.42.2.1.2.4.1.4

Description The version of FC-PH that the FxPort has agreed to support from the Fabric Login.

fcFxPortNxPortBbCredit

OID 1.3.6.1.3.42.2.1.2.4.1.5

Description The total number of buffers available for holding Class 1 connect-request, Class 2 or Class 3 frames to be transmitted to the attached NxPort. It is for buffer-to-buffer flow control in the direction from FxPort to NxPort. The buffer-to-buffer flow control mechanism is indicated in the respective fcFxPortBbCreditModel.

fcFxPortNxPortRxDataFieldSize

OID 1.3.6.1.3.42.2.1.2.4.1.6

Description The Receive Data Field Size of the attached NxPort. This is a binary value that specifies the largest Data Field Size for an FT_1 frame that can be received by the NxPort. The value is in number of bytes and ranges from 128 to 2112 inclusive.

fcFxPortCosSuppAgreed

OID 1.3.6.1.3.42.2.1.2.4.1.7

Description Indicates that the attached NxPort has requested the FxPort for the support of classes of services and the FxPort has granted the request.

fcFxPortIntermixSuppAgreed

OID 1.3.6.1.3.42.2.1.2.4.1.8

Description A variable indicating that the attached NxPort has requested the FxPort for the support of Intermix and the FxPort has granted the request. This flag is only valid if Class 1 service is supported. Possible values are:

- yes (1): The attached NxPort has requested the FxPort for the support of Intermix, and the FxPort has granted the request.
- no (2): The attached NxPort has not requested the FxPort for the support of Intermix.

fcFxPortStackedConnModeAgreed

OID 1.3.6.1.3.42.2.1.2.4.1.9

Description Indicates whether the FxPort has agreed to support stacked connect from the Fabric Login. This is only meaningful if Class 1 service has been agreed to.

fcFxPortClass2SeqDelivAgreed

OID 1.3.6.1.3.42.2.1.2.4.1.10

Description A variable indicating whether the FxPort has agreed to support Class 2 sequential delivery from the Fabric Login. This is only meaningful if Class 2 service has been agreed. Possible values are:

- yes (1): The FxPort has agreed to support Class 2 sequential delivery from the Fabric Login.
- no (2): The FxPort has not agreed to support Class 2 sequential delivery from the Fabric Login.

fcFxPortClass3SeqDelivAgreed

OID 1.3.6.1.3.42.2.1.2.4.1.11

Description A flag indicating whether the FxPort has agreed to support Class 3 sequential delivery from the Fabric Login. This is only meaningful if Class 3 service has been agreed. Possible values are:

- yes (1): The FxPort has agreed to support Class 3 sequential delivery from the Fabric Login.
- no (2): The FxPort has not agreed to support Class 3 sequential delivery from the Fabric Login.

fcFxPortNxPortName

OID 1.3.6.1.3.42.2.1.2.4.1.12

Description The port name of the attached NxPort, if applicable. If the value of this object is ‘0000000000000000’H, this FxPort has no NxPort attached to it.

fcFxPortConnectedNxPort

OID 1.3.6.1.3.42.2.1.2.4.1.13

Description The address identifier of the destination FxPort with which this FxPort is currently engaged in a either a Class 1 or loop connection. If the value of this object is '000000'H, this FxPort is not engaged in a connection.

fcFxPortBbCreditModel

OID 1.3.6.1.3.42.2.1.2.4.1.14

Description Identifies the BB_Credit model used by the FxPort. The regular model refers to the buffer-to-buffer flow control mechanism defined in FC-PH [1] is used between the F_Port and the N_Port. For FL_Ports, the Alternate Buffer-to-Buffer flow control mechanism as defined in FC-AL [4] is used between the FL_Port and any attached NL_Ports.

Error Group

This group consists of tables that contain information about the various types of errors detected. The management station may use the information in this group to determine the quality of the link between the FxPort and its attached NxPort.

Implementation of this group is optional.

FxPort Error Table

This table contains one entry for each FxPort in the Fabric Element, and counters recording numbers of errors detected since the management agent re-initialized.

The first 6 columnar objects after the port index correspond to the counters in the Link ErrorStatus Block.

fcFxPortErrorTable

OID 1.3.6.1.3.42.2.1.3.1

Description A table that contains one entry for each FxPort, and counters that record the numbers of errors detected since the management agent re-initialized.

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

fcFxPortErrorEntry

OID 1.3.6.1.3.42.2.1.3.1.1

Description An entry containing error counters of a FxPort.

Index fcFxPortErrorModuleIndex, fcFxPortErrorFxPortIndex

fcFxPortErrorModuleIndex

OID 1.3.6.1.3.42.2.1.3.1.1.1

Description Identifies the module containing the FxPort for which this entry contains information.

fcFxPortErrorFxPortIndex

OID 1.3.6.1.3.42.2.1.3.1.1.2

Description Identifies the FxPort within the module. This number ranges from 1 to the value of fcFeModulePortCapacity for the associated module. The value remains constant for the identified FxPort until the module is re-initialized.

fcFxPortLinkFailures

OID 1.3.6.1.3.42.2.1.3.1.1.3

Description The number of link failures detected by this FxPort.

fcFxPortSyncLosses

OID 1.3.6.1.3.42.2.1.3.1.1.4

Description The number of loss of synchronization detected by the FxPort.

fcFxPortSigLosses

OID 1.3.6.1.3.42.2.1.3.1.1.5

Description The number of loss of signal detected by the FxPort.

fcFxPortPrimSeqProtoErrors

OID 1.3.6.1.3.42.2.1.3.1.1.6

Description The number of primitive sequence protocol errors detected by the FxPort.

fcFxPortInvalidTxWords

OID 1.3.6.1.3.42.2.1.3.1.1.7

Description The number of invalid transmission word detected by the FxPort.

fcFxPortInvalidCrcs

OID 1.3.6.1.3.42.2.1.3.1.1.8

Description The number of invalid Cyclic Redundancy Checks (CRCs) detected by this FxPort.

fcFxPortDelimiterErrors

OID 1.3.6.1.3.42.2.1.3.1.1.9

Description The number of Delimiter Errors detected by this FxPort.

fcFxPortAddressIdErrors

OID 1.3.6.1.3.42.2.1.3.1.1.10

Description The number of address identifier errors detected by this FxPort.

fcFxPortLinkResetIns

OID 1.3.6.1.3.42.2.1.3.1.1.11

Description The number of Link Reset Protocol received by this FxPort from the attached NxPort.

fcFxPortLinkResetOuts

OID 1.3.6.1.3.42.2.1.3.1.1.12

Description The number of Link Reset Protocol issued by this FxPort to the attached NxPort.

fcFxPortOlsIns

OID 1.3.6.1.3.42.2.1.3.1.1.13

Description The number of Offline Sequence received by this FxPort.

fcFxPortOlsOuts

OID 1.3.6.1.3.42.2.1.3.1.1.14

Description The number of Offline Sequence issued by this FxPort.

Accounting Group

Brocade does not support Accounting tables, this section is not applicable

Capability Group

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

Implementation of this group is optional.

FxPort Capability Table

fcFxPortCapTable

OID 1.3.6.1.3.42.2.1.5.1

Description A table that contains one entry for each FxPort, and the capabilities of the port within the Fabric Element.

fcFxPortCapEntry

OID 1.3.6.1.3.42.2.1.5.1.1

Description An entry containing the capabilities of a FxPort.

Index fcFxPortCapModuleIndex, fcFxPortCapFxPortIndex

fcFxPortCapModuleIndex

OID 1.3.6.1.3.42.2.1.5.1.1.1

Description Identifies the module containing the FxPort for which this entry contains information.

fcFxPortCapFxPortIndex

OID 1.3.6.1.3.42.2.1.5.1.1.2

Description Identifies the FxPort within the module. This number ranges from 1 to the value of fcFeModulePortCapacity for the associated module. The value remains constant for the identified FxPort until the module is re-initialized.

fcFxPortCapFcphVersionHigh

OID 1.3.6.1.3.42.2.1.5.1.1.3

Description The highest or most recent version of FC-PH that the FxPort is capable of supporting.

fcFxPortCapFcphVersionLow

OID 1.3.6.1.3.42.2.1.5.1.1.4

Description The lowest or earliest version of FC-PH that the FxPort is capable of supporting.

fcFxPortCapBbCreditMax

OID 1.3.6.1.3.42.2.1.5.1.1.5

Description The maximum number of receive buffers available for holding Class 1 connect-request, Class 2 or Class 3 frames from the attached NxPort.

fcFxPortCapBbCreditMin

OID 1.3.6.1.3.42.2.1.5.1.1.6

Description The minimum number of receive buffers available for holding Class 1 connect-request, Class 2 or Class 3 frames from the attached NxPort.

fcFxPortCapRxDataFieldSizeMax

OID 1.3.6.1.3.42.2.1.5.1.1.7

Description The maximum size in bytes of the Data Field in a frame that the FxPort is capable of receiving from its attached NxPort.

fcFxPortCapRxDataFieldSizeMin

OID 1.3.6.1.3.42.2.1.5.1.1.8

Description The minimum size in bytes of the Data Field in a frame that the FxPort is capable of receiving from its attached NxPort.

fcFxPortCapCos

OID 1.3.6.1.3.42.2.1.5.1.1.9

Description A value indicating the set of Classes of Service that the FxPort is capable of supporting.

fcFxPortCapIntermix

OID 1.3.6.1.3.42.2.1.5.1.1.10

Description A flag indicating whether the FxPort is capable of supporting the intermixing of Class 2 and Class 3 frames during a Class 1 connection. This flag is only valid if the port is capable of supporting Class 1 service. Possible values are:

- yes (1): The FxPort is capable of supporting the intermixing of Class 2 and Class 3 frames during a Class 1 connection.
- no (2): The FxPort is not capable of supporting the intermixing of Class 2 and Class 3 frames during a Class 1 connection.

fcFxPortCapStackedConnMode

OID 1.3.6.1.3.42.2.1.5.1.1.11

Description A value indicating the mode of Stacked Connect request that the FxPort is capable of supporting.

fcFxPortCapClass2SeqDeliv

OID 1.3.6.1.3.42.2.1.5.1.1.12

Description A flag indicating whether the FxPort is capable of supporting Class 2 Sequential Delivery. Possible values are:

- yes (1): The FxPort is capable of supporting Class 2 Sequential Delivery.
- no (2): The FxPort is not capable of supporting Class 2 Sequential Delivery.

fcFxPortCapClass3SeqDeliv

OID 1.3.6.1.3.42.2.1.5.1.1.13

Description A flag indicating whether the FxPort is capable of supporting Class 3 Sequential Delivery. Possible values are:

- yes (1): The FxPort is capable of supporting Class 3 Sequential Delivery.
- no (2): The FxPort is not capable of supporting Class 3 Sequential Delivery.

fcFxPortCapHoldTimeMax

OID 1.3.6.1.3.42.2.1.5.1.1.14

Description The maximum holding time (in microseconds) that the FxPort is capable of supporting.

fcFxPortCapHoldTimeMin

OID 1.3.6.1.3.42.2.1.5.1.1.15

Description The minimum holding time (in microseconds) that the FxPort is capable of supporting.

fcFxPortCapBaudRates

OID 1.3.6.1.3.42.2.1.5.1.1.16

Description A value indicating the set of baud rates that the FxPort is capable of supporting. This variable has been deprecated and may be implemented for backward compatibility.

fcFxPortCapMedia

OID 1.3.6.1.3.42.2.1.5.1.1.17

Description A value indicating the set of media that the FxPort is capable of supporting. This variable has been deprecated and may be implemented for backward compatibility.

Entity MIB Objects

Chapter 3

This chapter provides descriptions and other information specific to Entity MIB object types and includes the following information:

Overview

The entityMIB is the MIB module for representing multiple logical entities supported by a single SNMP agent. This MIB is supported only in Fabric OS v4.*x* and is not supported in Fabric OS v3.*x* or Fabric OS v2.6.1.

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

The object types in entityMIB are organized into the following groupings:

- *Entity MIB Objects*
- *Entity MIB Traps*
- *Entity Conformance Groups*

Entity MIB System Organization of MIB Objects

Figure 3-1 through Figure 3-2 depict the organization and structure of the entityMIB file system.

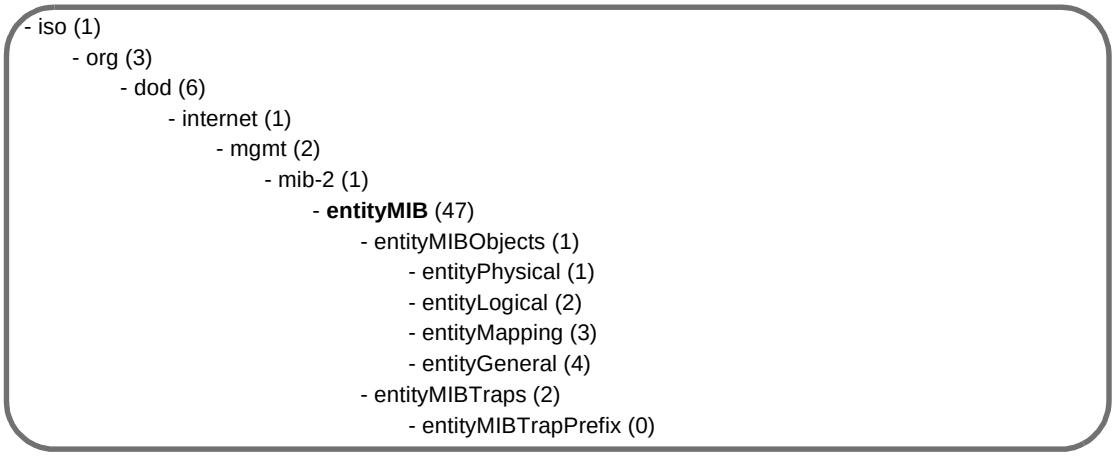


Figure 3-1 Overall Tree Structure for entityMIB

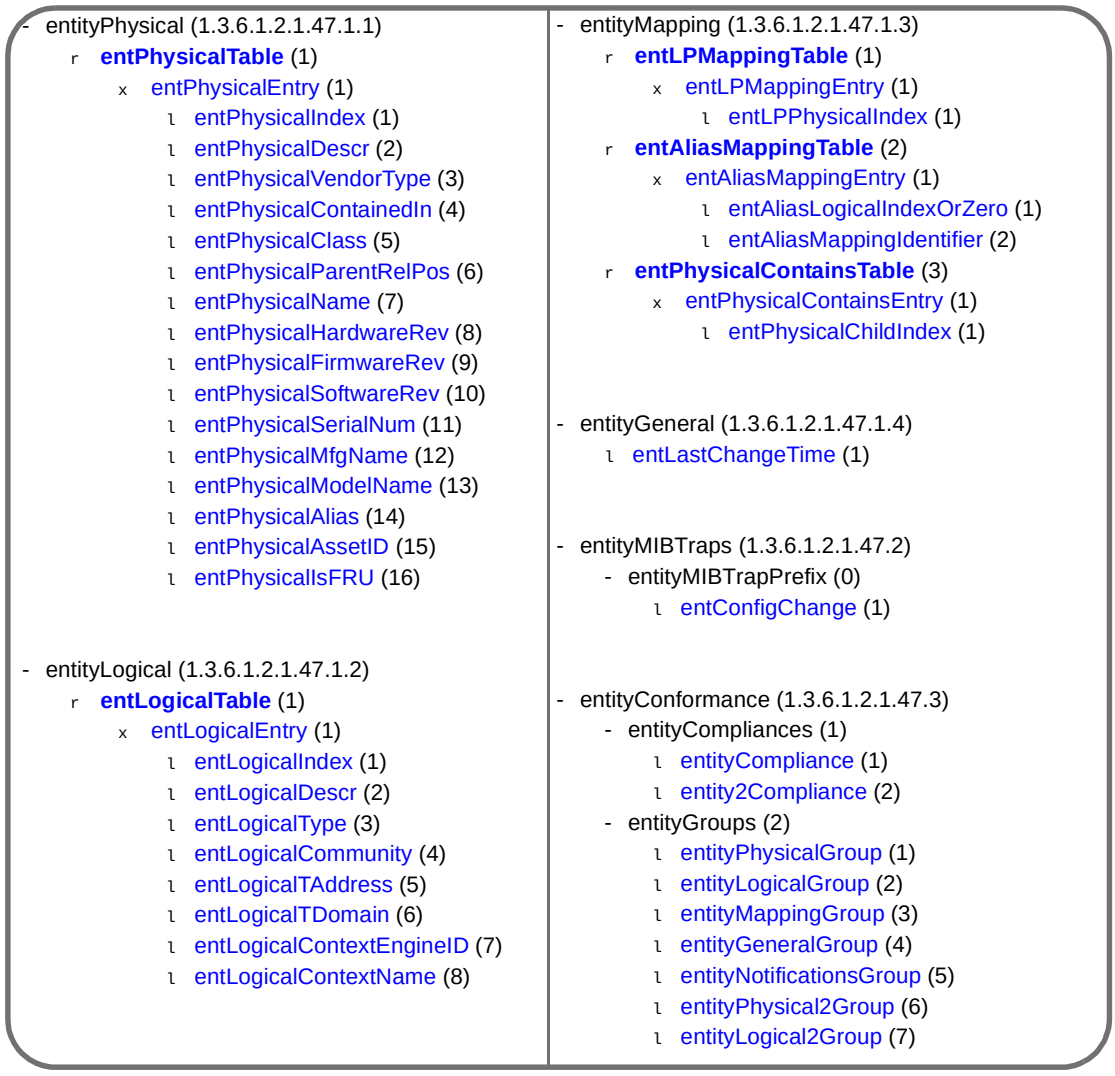


Figure 3-2 Structure for entityMIB Objects

Definitions for Entity MIB

Table 3-1 lists the objects or definitions that are imported into the entityMIB, and the modules from which they are imported.

Table 3-1 Objects Imported into the entityMIB

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

Textual Conventions

PhysicalIndex

Status Current

Description 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

Status Current

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

Syntax Integer

Table 3-2 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 may be contained within a chassis, and a chassis may 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 may model a backplane as a single physical entity, which is actually implemented as multiple discrete physical components (within a chassis or stack).
container (5)	The physical entity class is capable of containing one ore more removable physical entities, possibly of different types (such as a chassis slot or daughter-card holder). For example, each (empty or full) slot in a chassis will be modeled as a container. Note that all removable physical entities should be modeled within a container entity, such as field-replaceable modules, fans, or power supplies. Note that all known containers, including empty containers, should be modeled by the agent.
powerSupply (6)	The physical entity class is a power-supplying component.
fan (7)	The physical entity class is a fan or other heat-reduction component.
sensor (8)	The physical entity class is a sensor, such as a temperature sensor within a router chassis.
module (9)	The physical entity class is a self-contained sub-system (such as a plug-in card or daughter-card). If it is removable, then it should be modeled within a container entity, otherwise it should be modeled directly within another physical entity (for example, a chassis or another module).
port (10)	The physical entity class is a networking port, capable of receiving or transmitting networking traffic.
stack (11)	The physical entity class is a super-container (possibly virtual), intended to group together multiple chassis entities (such as a stack of multiple chassis entities). A stack may be realized by a virtual cable, a real interconnect cable attached to multiple chassis, or may be comprised of multiple interconnect cables. A stack should not be modeled within any other physical entities, but a stack may be contained within another stack. Only chassis entities should be contained within a stack.

SnmpEngineIdOrNone

Status	Current	
Description	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 (see RFC 2571 [RFC2571]). If an instance of an object with syntax SnmpEngineIdOrNone contains a zero-length string, then no appropriate SnmpEngineID is associated with the logical entity (that is, SNMPv3 not supported).	
Syntax	OCTET STRING (SIZE(0..32))	Empty string or SnmpEngineID

Entity MIB Objects

The entityMib objects are divided into the following groups:

- Physical Entity Group
- Logical Entity Group
- Entity Mapping Group
- General Group

The following sections list the MIBs in each group.

Physical Entity Group

entPhysicalTable

OID	1.3.6.1.2.1.47.1.1.1
Status	Current
Description	This table contains one row per physical entity (see Figure 3-3). The table always contains at least one row for an “overall” physical entity.

Note: This object implemented for Fabric OS v4.1 only.

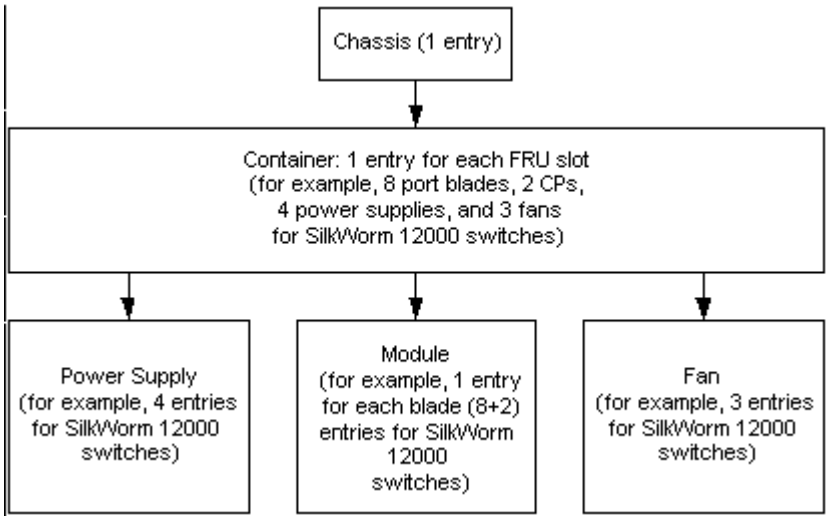


Figure 3-3 entPhysicalTable Containment Hierarchy (entPhysicalContainsTable)

entPhysicalEntry

OID	1.3.6.1.2.1.47.1.1.1.1
Status	Current
Description	Information about a particular physical entity. Each entry provides objects (entPhysicalDescr, entPhysicalVendorType, and entPhysicalClass) to help an NMS identify and characterize the entry, and objects (entPhysicalContainedIn and entPhysicalParentRelPos) to help an NMS relate the particular entry to other entries in this table.
Index	entPhysicalIndex

entPhysicalIndex

OID	1.3.6.1.2.1.47.1.1.1.1.1
Status	Current
Description	Unique identifier of the physical entity.

entPhysicalDescr

OID 1.3.6.1.2.1.47.1.1.1.1.2

Status Current

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

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

entPhysicalVendorType

OID 1.3.6.1.2.1.47.1.1.1.1.3

Status Current

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

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

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

Note: Currently, NULL OID { 0, 0 } is returned.

entPhysicalContainedIn

OID 1.3.6.1.2.1.47.1.1.1.1.4

Status Current

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

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

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

entPhysicalClass

OID 1.3.6.1.2.1.47.1.1.1.1.5

Status Current

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

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

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

Note: SilkWorm 12000 switches can have the following hierarchy of physical objects:
Chassis: 1 entry (1 row)
Container: 1 entry for each FRU slot (8 port blades + 2 CPs + 4 power supplies + 3 fans)
Module: 8 entries for port blades, 2 entries for CPs, 4 entries for power supplies, and 3 entries for fans.

SilkWorm 3900 switches can have the following hierarchy of physical objects:
Chassis: 1 entry (1 row)
Container: 1 entry for each FRU slot (1 switch blade + 2 power supplies + 6 fans)
Module: 1 entry for switch blade, 0-2 entries for power supplies, and 0-6 entries for fans.

---

entPhysicalParentRelPos

OID 1.3.6.1.2.1.47.1.1.1.1.6

Status Current

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

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

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

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

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

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

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

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

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

entPhysicalName

OID 1.3.6.1.2.1.47.1.1.1.1.7

Status Current

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

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

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

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

entPhysicalHardwareRev

OID 1.3.6.1.2.1.47.1.1.1.1.8

Status Current

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

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

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

Note: Set to empty string.

entPhysicalFirmwareRev

OID 1.3.6.1.2.1.47.1.1.1.1.9

Status Current

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

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

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

Note: Set to empty string.

entPhysicalSoftwareRev

OID 1.3.6.1.2.1.47.1.1.1.1.10

Status Current

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

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

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

Note: Set to empty string.

entPhysicalSerialNum

OID 1.3.6.1.2.1.47.1.1.1.1.11

Status Current

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

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

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

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

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

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

entPhysicalMfgName

OID 1.3.6.1.2.1.47.1.1.1.1.12

Status Current

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

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

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

Note: Set to empty string.

entPhysicalModelName

OID 1.3.6.1.2.1.47.1.1.1.1.13

Status Current

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

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

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

entPhysicalAlias

OID 1.3.6.1.2.1.47.1.1.1.1.14

Status Current

Description This object is an alias name for the physical entity as specified by a network manager, and provides a non-volatile handle for the physical entity.

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

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

Note: Set to empty string.

entPhysicalAssetID

OID 1.3.6.1.2.1.47.1.1.1.1.15

Status Current

Description This object is a user-assigned asset tracking identifier for the physical entity as specified by a network manager, and provides non-volatile storage of this information.

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

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

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

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

Note: Set to empty string.

entPhysicalIsFRU

OID 1.3.6.1.2.1.47.1.1.1.1.16

Status Current

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

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

entPhysicalContainsTable

OID 1.3.6.1.2.1.47.1.1.1.1.16

Status Current

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

Logical Entity Group

This section lists the entityLogical MIBs.

entLogicalTable

OID 1.3.6.1.2.1.47.1.2.1

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

entLogicalEntry

OID 1.3.6.1.2.1.47.1.2.1.1

Description Information about a particular logical entity. Entities may be managed by this agent or other SNMP agents (possibly) in the same chassis.

Index entLogicalIndex

entLogicalIndex

OID 1.3.6.1.2.1.47.1.2.1.1.1

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

entLogicalDescr

OID 1.3.6.1.2.1.47.1.2.1.1.2

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

entLogicalType

OID 1.3.6.1.2.1.47.1.2.1.1.3

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

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

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

entLogicalCommunity

OID 1.3.6.1.2.1.47.1.2.1.1.4

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

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

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

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

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

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

entLogicalTAddress

OID 1.3.6.1.2.1.47.1.2.1.1.5

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

For snmpUDPDomain, a TAddress is 6 octets long, the initial 4 octets containing the IP-address in network-byte order and the last 2 containing the UDP port in network-byte order. Consult *Transport Mappings for Version 2 of the Simple Network Management Protocol* (RFC 1906 [RFC1906]) for further information on snmpUDPDomain.

entLogicalTDomain

OID 1.3.6.1.2.1.47.1.2.1.1.6

Description Indicates the kind of transport service by which the logical entity receives network management traffic. Possible values for this object are presently found in the *Transport Mappings for SNMPv2* document (RFC 1906 [RFC1906]).

entLogicalContextEngineID

OID 1.3.6.1.2.1.47.1.2.1.1.7

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

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

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

entLogicalContextName

OID 1.3.6.1.2.1.47.1.2.1.1.8

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

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

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

Entity Mapping Group

This section lists the entityMapping MIBs.

entLPMappingTable

OID 1.3.6.1.2.1.47.1.3.1

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

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

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

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

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

entLPMappingEntry

OID 1.3.6.1.2.1.47.1.3.1.1

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

Index entLogicalIndex
entLPPhysicalIndex

entLPPhysicalIndex

OID 1.3.6.1.2.1.47.1.3.1.1.1

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

entAliasMappingTable

OID 1.3.6.1.2.1.47.1.3.2

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

entAliasMappingEntry

OID 1.3.6.1.2.1.47.1.3.2.1

Description Information about a particular physical equipment, logical entity to external identifier binding. Each logical entity/physical component pair may be associated with one alias mapping. The logical entity index may also be used as a wildcard (refer to the entAliasLogicalIndexOrZero object description for details.)

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

Index entPhysicalIndex
entAliasLogicalIndexOrZero

entAliasLogicalIndexOrZero

OID 1.3.6.1.2.1.47.1.3.2.1.1

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

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

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

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

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

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

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

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

entAliasMappingIdentifier

OID 1.3.6.1.2.1.47.1.3.2.1.2

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

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

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

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

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

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

entPhysicalContainsTable

OID 1.3.6.1.2.1.47.1.3.3

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

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

entPhysicalContainsEntry

OID 1.3.6.1.2.1.47.1.3.3.1

Description A single container/“containee” relationship.

Index entPhysicalIndex
entPhysicalChildIndex

entPhysicalChildIndex

OID 1.3.6.1.2.1.47.1.3.3.1.1

Description The value of entPhysicalIndex for the contained physical entity. Through this the containment hierarchy of the physical entities is displayed (see Figure 3-3).

General Group

This section lists the entityGeneral MIB.

entLastChangeTime

OID 1.3.6.1.2.1.47.1.4.1

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

- entPhysicalTable
- entLogicalTable
- entLPMappingTable
- entAliasMappingTable
- entPhysicalContainsTable

Entity MIB Trap

This section lists the entityMIBTrap objects. Figure 3-2 on page 3-3 shows the structure of the entityMIBTraps group.

entConfigChange

OID 1.3.6.1.2.1.47.2.0.1

Status Current

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

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

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

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

Entity MIB Conformance Information

This section lists the entityConformance MIBs. Figure 3-2 on page 3-3 shows the structure of the entityConformance group.

entityCompliance

OID 1.3.6.1.2.1.47.3.1.1

Status Deprecated

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

Module This module

```
MANDATORY-GROUPS {
    entityPhysicalGroup,
    entityLogicalGroup,
    entityMappingGroup,
    entityGeneralGroup,
    entityNotificationsGroup
}
```

entity2Compliance

OID	1.3.6.1.2.1.47.3.1.2
Status	Current
Description	The compliance statement for SNMP entities that implement version 2 of the Entity MIB.
Module	This module

	MANDATORY-GROUPS {
	entityPhysicalGroup,
	entityPhysical2Group,
	entityGeneralGroup,
	entityNotificationsGroup
	}

Group	entityLogical2Group
Description	Implementation of this group is not mandatory for agents that model all MIB object instances within a single naming scope.
Group	entityMappingGroup
Description	Implementation of the entPhysicalContainsTable is mandatory for all agents. Implementation of the entLPMappingTable and entAliasMappingTables are not mandatory for agents that model all MIB object instances within a single naming scope. Note that the entAliasMappingTable may be useful for all agents, however implementation of the entityLogicalGroup or entityLogical2Group is required to support this table.
Object	entPhysicalSerialNum
Access	Not-accessible
Description	Read and write access is not required for agents that cannot identify serial number information for physical entities, or cannot provide non-volatile storage for NMS-assigned serial numbers. Write access is not required for agents that can identify serial number information for physical entities, but cannot provide non-volatile storage for NMS-assigned serial numbers. Write access is not required for physical entities for which the associated value of the entPhysicalIsFRU object is equal to “false(2)”.
Object	entPhysicalAlias
Access	Read-only
Description	Write access is required only if the associated entPhysicalClass value is equal to “chassis(3)”.

Object	entPhysicalAssetID
Access	Not-accessible
Description	Read and write access is not required for agents that cannot provide non-volatile storage for NMS-assigned asset identifiers. Write access is not required for physical entities for which the associated value of entPhysicalIsFRU is equal to “false(2)”.

entityPhysicalGroup

OID	1.3.6.1.2.1.47.3.2.1
Objects	entPhysicalDescr, entPhysicalVendorType, entPhysicalContainedIn, entPhysicalClass, entPhysicalParentRelPos, entPhysicalName
Status	Current
Description	The collection of objects that are used to represent physical system components, for which a single agent provides management information.

entityLogicalGroup

OID	1.3.6.1.2.1.47.3.2.2
Objects	entLogicalDescr, entLogicalType, entLogicalCommunity, entLogicalTAddress, entLogicalTDomain
Status	Deprecated
Description	The collection of objects that are used to represent the list of logical entities for which a single agent provides management information.

entityMappingGroup

OID	1.3.6.1.2.1.47.3.2.3
Objects	entLPPhysicalIndex, entAliasMappingIdentifier, entPhysicalChildIndex
Status	Current
Description	The collection of objects that are used to represent the associations between multiple logical entities, physical components, interfaces, and port identifiers for which a single agent provides management information.

entityGeneralGroup

OID	1.3.6.1.2.1.47.3.2.4
Objects	entLastChangeTime
Status	Current
Description	The collection of objects that are used to represent general entity information for which a single agent provides management information.

entityNotificationsGroup

OID	1.3.6.1.2.1.47.3.2.5
Notifications	entConfigChange
Status	Current
Description	The collection of notifications used to indicate Entity MIB data consistency and general status information.

entityPhysical2Group

OID	1.3.6.1.2.1.47.3.2.6
Objects	entPhysicalHardwareRev, entPhysicalFirmwareRev, entPhysicalSoftwareRev, entPhysicalSerialNum, entPhysicalMfgName, entPhysicalModelName, entPhysicalAlias, entPhysicalAssetID, entPhysicalIsFRU
Status	Current
Description	The collection of objects that are used to represent physical system components, for which a single agent provides management information. This group augments the objects contained in the entityPhysicalGroup.

entityLogical2Group

OID	1.3.6.1.2.1.47.3.2.7
Objects	entLogicalDescr, entLogicalType, entLogicalTAddress, entLogicalTDomain, entLogicalContextEngineID, entLogicalContextName
Status	Current
Description	The collection of objects that are used to represent the list of logical entities for which a single SNMP entity provides management information.

Section

II

Brocade Proprietary MIBs

This section provides information about Brocade MIB files and proprietary MIBs. Refer to the following chapters within this section for information about Brocade proprietary MIBs:

- Chapter 4, *SW-MIB Objects*
- Chapter 5, *High Availability MIB Objects*

The MIBs that correspond to the different versions of the Brocade Fabric OS are listed below:

Fabric OS v4.1	Fabric OS v3.1.0	Fabric OS v2.6.1
BRCD_v5_0.mib	BRCD_v5_0.mib	BRCD_v5_0.mib
SW_v5_0.mib	SW_v5_0.mib	SW_v5_0.mib
FA_v3_0.mib	FA_v3_0.mib	FA_v2_2.mib
FE_RFC2837.mib	FE_RFC2837.mib	FE_EXP.mib
HA_v5_0.mib		
ENTITY_RFC2737.mib		

Note: The FA_v3_0.mib obsoletes the use of the connUnitPortStatFabricTable used in the FA_v2_2.mib. It now uses the connUnitPortStatTable for port statistics. The FA_v3_0.mib and the FA_v2_2.mib can not be loaded concurrently on the same SNMP Management station.

Note: The FE_RFC2837.mib and the FE_EXP.mib can be loaded concurrently on the same SNMP Management station. The FE_EXP.mib was listed in the experimental OID section. The FE_RFC2837.mib has subsequently been ratified by the standards bodies.

Before loading Brocade MIB files, ensure the following:

MIB File to be Loaded	Required MIB Files
ENTITY_RFC2737.mib	SNMP-FRAMEWORK-MIB (RFC 2571)
FE_RFC2837.mib	SNMP-FRAMEWORK-MIB (RFC 2571)
SW_v5_0.mib	SNMP-FRAMEWORK-MIB (RFC 2571) and BRCD_v5_0.mib
HA_v5_0.mib	SW_v5_0.mib and ENTITY_RFC2737.mib

Chapter

4

SW-MIB Objects

This chapter contains descriptions and other information that is specific to FC Switch MIB (SW-MIB) object types. This chapter provides information on:

Overview

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

SW-MIB System Organization of MIB Objects

Figure 4-1 through Figure 4-5 depict the organization and structure of SW-MIB.

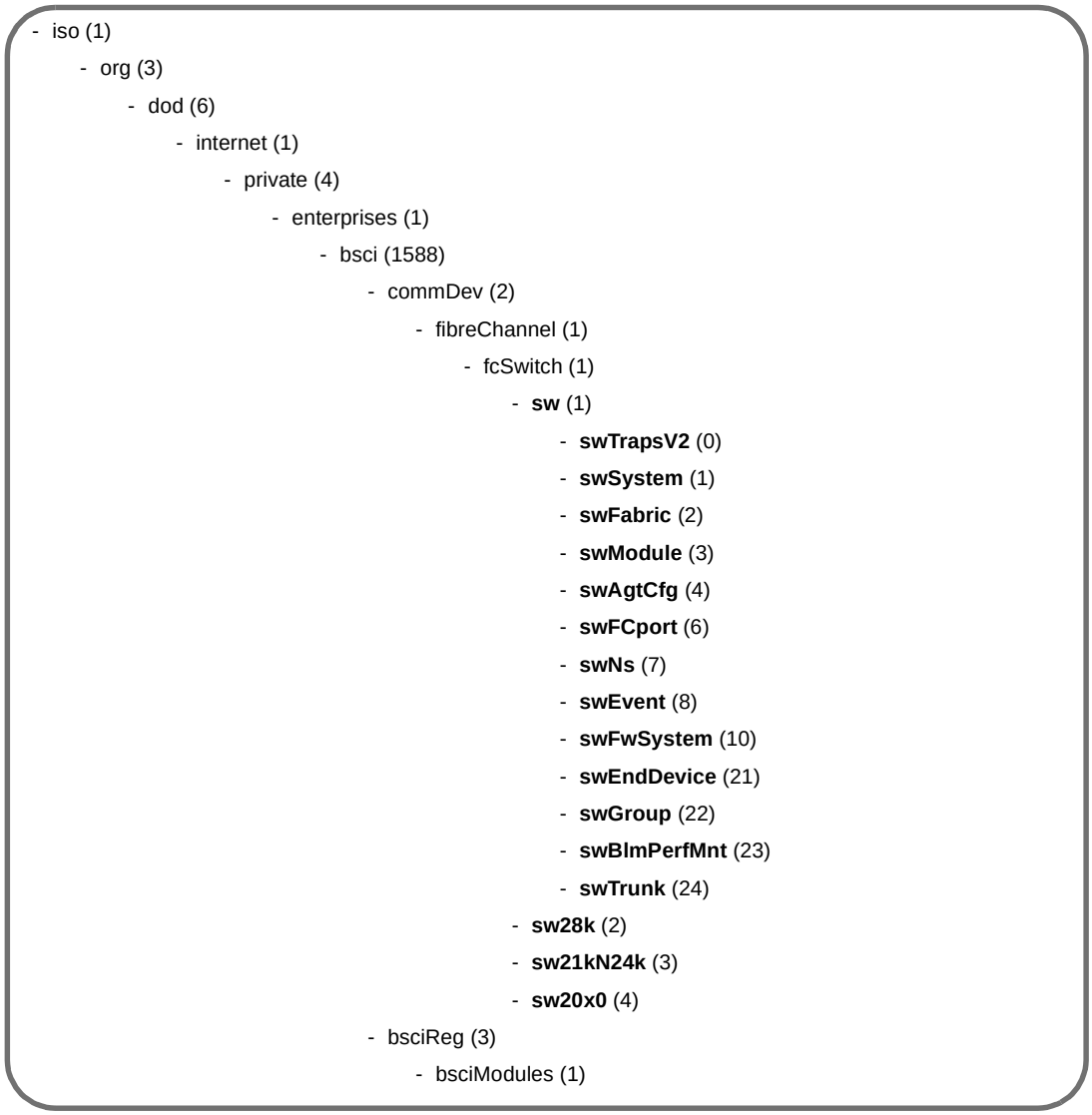


Figure 4-1 SW-MIB Overall Tree Structure

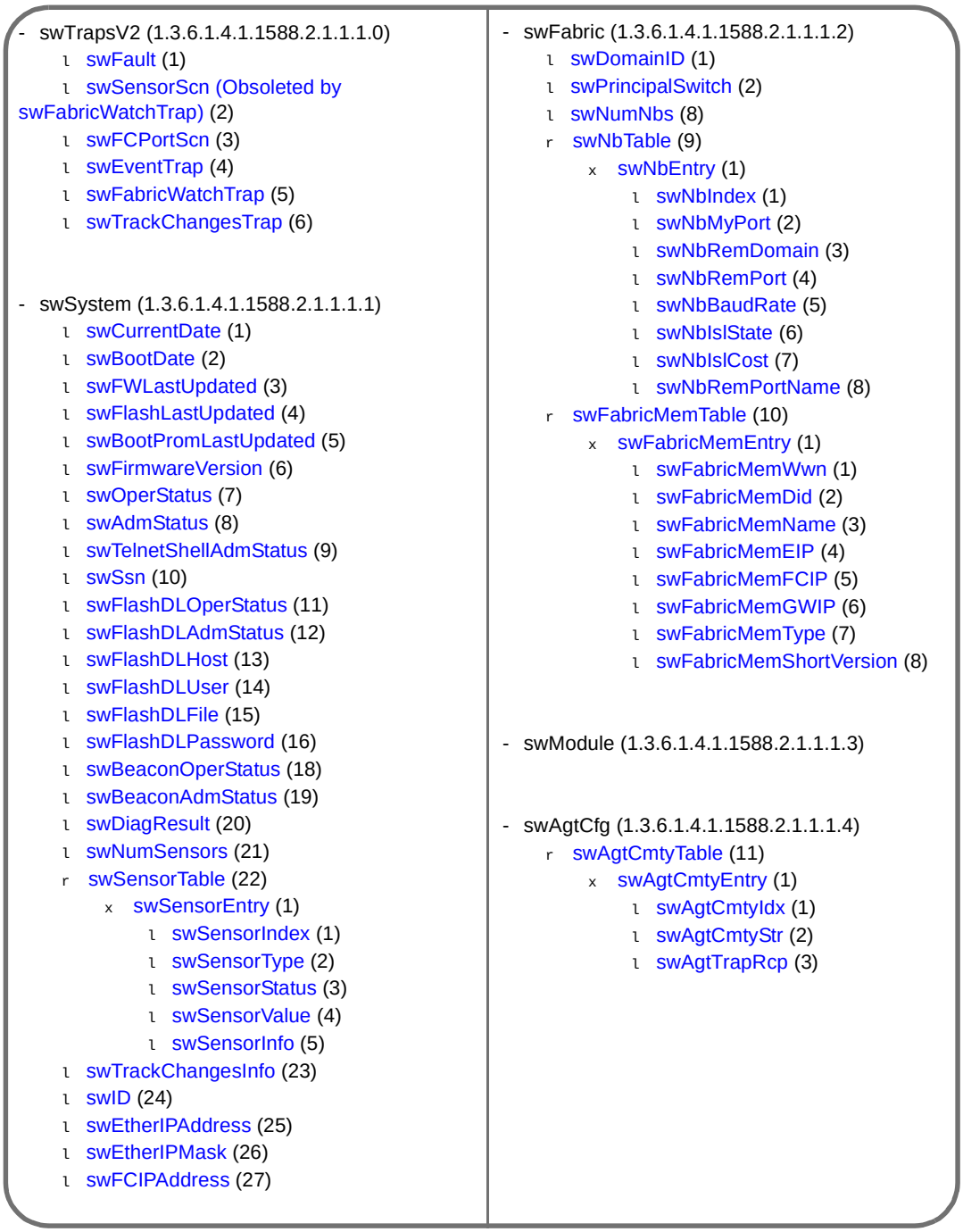


Figure 4-2 Tree Structure for swTrapsV2, swSystem, swFabric, swModule, and swAgtCfg

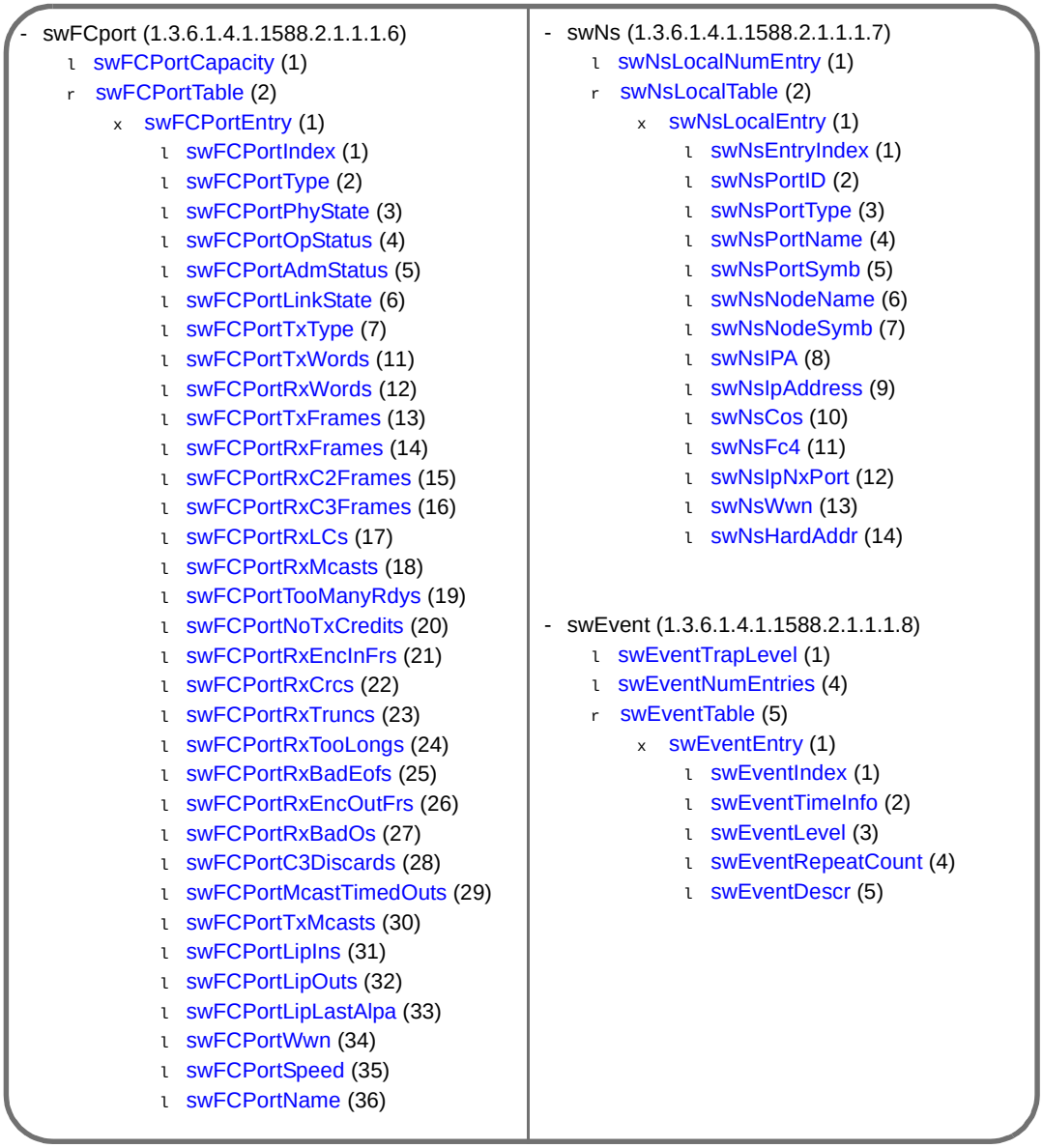


Figure 4-3 Tree Structure for swFCport, swNs, and swEvent Groups

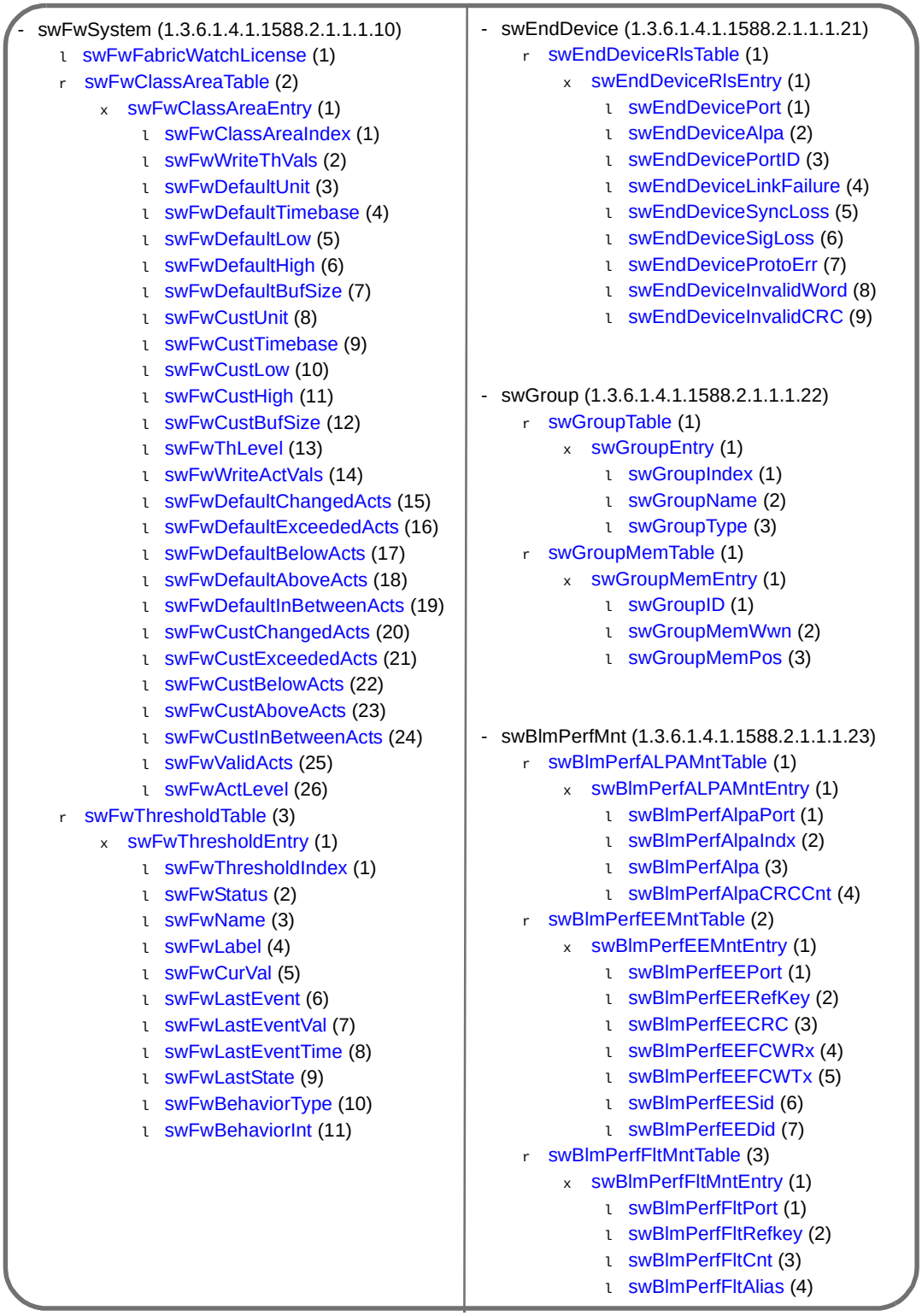


Figure 4-4 Tree Structure for swFwSystem, swEndDevice, swGroup, and swBlmPerfMnt

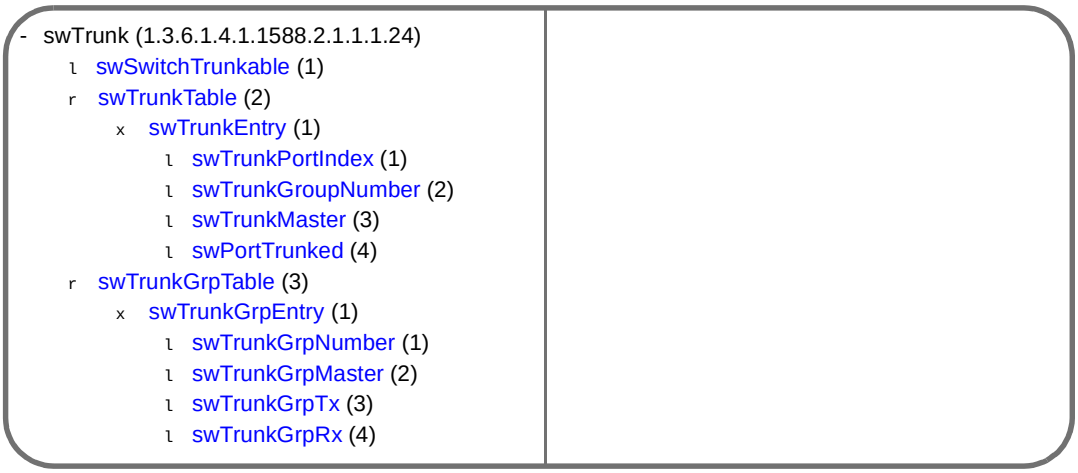


Figure 4-5 Tree Structure for the swTrunk Group

Textual Conventions for SW-MIB

The following textual conventions are used for SW-MIB.

Table 4-1 SW-MIB Textual Conventions

Type Definition	Value	Description
FcWwn	Octet String of size 8	The World Wide Name (WWN) of Brocade-specific products and ports.
SwDomainIndex	Integer of size 1 to 239	Fibre Channel domain ID of the switch.
SwNbIndex	Integer of size 1 to 2048	Index of the neighbor 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.
SwFwActs	Integer	Valid action matrix: 0 swFwNoAction 1 swFwErrlog 2 swFwSnmptrap 3 swFwErrlogSnmptrap 4 swFwPortloglock 5 swFwErrlogPortloglock 6 swFwSnmptrapPortloglock 7 swFwErrlogSnmptrapPortloglock 8 swFwRn 9 swFwElRn 10 swFwStRn 11 swFwElStRn 12 swFwPlRn 13 swFwElPlRn 14 swFwStPlRn 15 swFwElStPlRn 16 swFwMailAlert 17 swFwMailAlertErrlog 18 swFwMailAlertSnmptrap 19 swFwMailAlertErrlogSnmptrap 20 swFwMailAlertPortloglock 21 swFwMailAlertErrlogPortloglock 22 swFwMailAlertSnmptrapPortloglock 23 swFwMailAlertErrlogSnmptrapPortloglock 24 swFwMailAlertRn 25 swFwElMailAlertRn 26 swFwMailAlertStRn 27 swFwMailAlertElStRn 28 swFwMailAlertPlRn 29 swFwMailAlertElPlRn 30 swFwMailAlertStPlRn 31 swFwMailAlertElStPlRn

Table 4-1 SW-MIB Textual Conventions (Continued)

Type Definition	Value	Description	
SwFwLevels	Integer	Threshold values or action matrix level: 1 swFwReserved 2 swFwDefault 3 swFwCustom	
SwFwClassesAreas	Integer	Classes and area index: 1 swFwEnvTemp 2 swFwEnvFan 3 swFwEnvPs 4 swFwTransceiverTemp 5 swFwTransceiverRxp 6 swFwTransceiverTxp 7 swFwTransceiverCurrent 8 swFwPortLink 9 swFwPortSync 10 swFwPortSignal 11 swFwPortPe 12 swFwPortWords 13 swFwPortCrcs 14 swFwPortRXPerf 15 swFwPortTXPerf 16 swFwPortState 17 swFwFabricEd 18 swFwFabricFr 19 swFwFabricDi 20 swFwFabricSc 21 swFwFabricZc 22 swFwFabricFq 23 swFwFabricFl 24 swFwFabricGs 25 swFwEPortLink 26 swFwEPortSync 27 swFwEPortSignal 28 swFwEPortPe 29 swFwEPortWords 30 swFwEPortCrcs 31 swFwEPortRXPerf 32 swFwEPortTXPerf 33 swFwEPortState 34 swFwFCUPortLink 35 swFwFCUPortSync 36 swFwFCUPortSignal 37 swFwFCUPortPe 38 swFwFCUPortWords 39 swFwPortCrcs 40 swFwFCUPortRXPerf 41 swFwFCUPortTXPerf	42 swFwFCUPortState 43 swFwFOPPortLink 44 swFwFOPPortSync 45 swFwFOPPortSignal 46 swFwFOPPortPe 47 swFwFOPPortWords 48 swFwFOPPortCrcs 49 swFwFOPPortRXPerf 50 swFwFOPPortTXPerf 51 swFwFOPPortState 52 swFwPerfALPACRC 53 swFwPerfEToECRC 54 swFwPerfEToERxCnt 55 swFwPerfEToETxCnt 56 swFwPerffltCusDef 57 swFwTransceiverVoltage 58 swFwSecTelnetViolations 59 swFwSecHTTPViolations 60 swFwSecAPIViolations 61 swFwSecRSNMPViolations 62 swFwSecWSNMPViolations 63 swFwSecSESViolations 64 swFwSecMSViolations 65 swFwSecSerialViolations 66 swFwSecFPViolations 67 swFwSecSCCViolations 68 swFwSecDCCViolations 69 swFwSecLoginViolations 70 swFwSecInvaledTS 71 swFwSecInvalidSign 72 swFwSecInvalidCert 73 swFwSecSlapFail 74 swFwSecSlapBadPkt 75 swFwSecTSOutSync 76 swFwSecNoFcs 77 swFwSecIncompDB 78 swFwSecIllegalCmd 79 swFwSAMTotalDownTime 80 swFwSAMTotalUpTime 81 swFwSAMDurationOfOccur 82 swFwSAMFreqOfOccur

Table 4-1 SW-MIB Textual Conventions (Continued)

Type Definition	Value	Description
SwFwWriteVals	Integer	Write-only variable for applying or canceling values or action matrix changes: 1 swFwCancelWrite 2 swFwApplyWrite
SwFwTimebase	Integer	Timebase for thresholds: 1 swFwTbNone 2 swFwTbSec 3 swFwTbMin 4 swFwTbHour 5 swFwTbDay
SwFwStatus	Integer	Status for thresholds: 1 disabled 2 enabled
SwFwEvent	Integer	Possible events available: 1 started 2 changed 3 exceeded 4 below 5 above 6 inBetween
SwFwBehavior	Integer	Behavior type for thresholds: 1 triggered 2 continuous
SwFwState	Integer	State type for last events: 1 swFwInformative 2 swFwNormal 3 swFwfaulty
SwFwLicense	Integer	License state: 1 swFwLicensed 2 swFwNotLicensed

sw Traps

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

Note: The swSsn variable is optional in trap messages. The swGroupName, swGroupType, and swGroupMemPos variables are optional in trap messages in v2.6.x. Each of these optional variables can be set ON/OFF with the snmpMibCapSet command.

swFault

Trap #	1
OID	1.3.6.1.4.1.1588.2.1.1.1.0.1
Enterprise	sw
Variables	*swDiagResult*, *swSsn*
Description	A swFault (1) is generated whenever the diagnostics detect a fault with the switch.
	Example Diagnostics:

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

swSensorScn (Obsoleted by swFabricWatchTrap)

Trap # 2

OID 1.3.6.1.4.1.1588.2.1.1.1.0.2

Enterprise sw

Variables *swSensorStatus*, *swSensorIndex*, *swSensorType*, *swSensorValue*, *swSensorInfo*, *swSsn*

Description 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 shall contain the corresponding instance of the sensor status, sensor index, sensor type, sensor value (reading) and sensor information. Note that the sensor information contains the type of sensor and its number in textual format.

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

swFCPortScn

Trap # 3

OID 1.3.6.1.4.1.1588.2.1.1.1.0.3

Enterprise sw

Variables *swFCPortOpStatus*, *swFCPortIndex*, *swFCPortName*, *swSsn*

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

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

swEventTrap

Trap # 4

OID 1.3.6.1.4.1.1588.2.1.1.1.0.4

Enterprise sw

Variables *swEventIndex*, *swEventTimeInfo*, *swEventLevel*, *swEventRepeatCount*, *swEventDescr*, *swSsn*

Description This trap is generated when an event occurs, with a level that is at or below *swEventTrapLevel*.

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

Note: The trap will be generated when an entry is created in Error Log.

swFabricWatchTrap

Trap # 5

OID 1.3.6.1.4.1.1588.2.1.1.1.0.5

Enterprise sw

Variables *swFwClassAreaIndex*, *swFwThresholdIndex*, *swFwName*, *swFwLabel*, *swFwLastEvent*, *swFwLastEventVal*, *swFwLastEventTime*, *swFwLastState*, swSsn

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

#TYPE	Fabric Watch has generated an event.
#SUMMARY	Threshold %s in Class/Area %d at index %d has generated event %d with %d on %s. This event is %d and SSN is #%s
#ARGUMENTS	2, 0, 1, 6, 4, 5, 7, 8
#SEVERITY	Warning
#TIMEINDEX	1
#STATE	Operational

swTrackChangesTrap

Trap # 6

OID 1.3.6.1.4.1.1588.2.1.1.1.0.6

Enterprise sw

Variables *swTrackChangesInfo*, *swSsn*

Description Trap to be sent for tracking login/logout/configuration changes.

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

System Group

swCurrentDate

OID 1.3.6.1.4.1.1588.2.1.1.1.1.1

Description The current date and time.

Note: The return string is displayed 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

Example:

Thu Aug 17 15:16:09 2000

swBootDate

OID 1.3.6.1.4.1.1588.2.1.1.1.1.2

Description The date and time when the system last booted.

Note: The return string is displayed 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

Example:

Thu Aug 17 15:16:09 2002

swFWLastUpdated

OID 1.3.6.1.4.1.1588.2.1.1.1.1.3

Description The date and time when the firmware was last loaded to the switch.

Note: The return string is displayed 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

Example:

Thu Aug 17 15:16:09 2000

swFlashLastUpdated

OID 1.3.6.1.4.1.1588.2.1.1.1.1.4

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

Note: The return string is displayed 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

Example:

Thu Aug 17 15:16:09 2000

swBootPromLastUpdated

OID 1.3.6.1.4.1.1588.2.1.1.1.1.5

Description The date and time when the BootPROM was last updated.

Note: The return string is displayed 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

Example:

Thu Aug 17 15:16:09 2000

swFirmwareVersion

OID 1.3.6.1.4.1.1588.2.1.1.1.1.6

Description The current version of the firmware.

Note: The return value is displayed using the following format:

vM.m.f

Where:

v = The deployment indicator
M = Major version
m = Minor version
f = Software maintenance version

Example:

v2.2.1 (indicating FOS version 2.2.1)

swOperStatus

OID 1.3.6.1.4.1.1588.2.1.1.1.1.7

Description The current operational status of the switch. Possible values are:

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

swAdmStatus

OID 1.3.6.1.4.1.1588.2.1.1.1.1.8

Description The desired administrative status of the switch. A management station may place the switch in a desired state by setting this object accordingly. Possible values are:

online (1):	Set the switch to be accessible by an external fibre channel port.
offline (2):	Set the switch to be inaccessible.
testing (3):	Set the switch to run the built-in test.
faulty (4):	Set the switch to a “soft” faulty condition.
reboot (5):	Set the chassis to reboot in 1 second.
fastboot (6):	Set the chassis to fastboot in 1 second. Fastboot causes the chassis to boot but skip over the POST.
switchReboot (7):	Set the current switch to reboot in 1 second.

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

The testing (3), faulty (4), and switchReboot (7) values are not applicable with the SilkWorm 3900.

The switchReboot (7) value only applies to the SilkWorm 12000.

swTelnetShellAdmStatus

Note: Applicable to Brocade Fabric OS v2.x and v3.x only (not supported in v4.x).

OID 1.3.6.1.4.1.1588.2.1.1.1.1.9

Description The desired administrative status of the telnet shell. Possible values are:

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

Note: **v2.x, v3.x:** 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.
v4.x: Not Supported.

swSsn

OID 1.3.6.1.4.1.1588.2.1.1.1.1.10

Description The soft serial number of the switch.

Note: By default, the return value is the WWN of the switch.

Flash Administration

The next six objects are related to firmware or configuration file management. The underlying method in the transfer of the firmware or configuration file is based on either FTP or remote shell. If a password is provided, then FTP is used. If NO password is provided, then remote shell is used.

Use one of the two following methods to manage the firmware or switch configuration file in the switch Flash.

Method 1:

Set swFlashDLHost.0, swFlashDLUser.0 and swFlashDLFile.0 to appropriate host IP address in user dot notation (for example, 192.168.1.7), user name (for example, administrator), and file name of the firmware or configuration file (for example, /home/fcswh/v2.2) respectively.

Method 2:

1. Set swFlashDLPassword.0 to an appropriate value (for example, secret) if FTP is the desired method of transfer.
2. Set swFlashDLAdmStatus.0 to 3 (swCfUpload) or 4 (swCfDownload) accordingly.

swFlashDLOperStatus

OID 1.3.6.1.4.1.1588.2.1.1.1.1.11

Description The operational status of the Flash. Possible values are:

unknown (0):

swCurrent (1):	The Flash contains the current firmware image or configuration file.
swFwUpgraded (2):	The Flash contains the image upgraded from the swFlashDLHost.0.
swCfUploaded (3):	The switch configuration file has been uploaded to the host.
swCfDownloaded (4):	The switch configuration file has been downloaded from the host.
swFwCorrupted (5):	The firmware in the Flash of the switch is corrupted.

swFlashDLAdmStatus

Note: Supported in v2.x and v3.x only.

OID 1.3.6.1.4.1.1588.2.1.1.1.1.12

Description The desired state of the Flash.

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

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

Note: For more information about the following commands, refer to the *Brocade Fabric OS Reference*:

- **configUpload**
- **configDownload**

swFlashDLHost

OID 1.3.6.1.4.1.1588.2.1.1.1.1.13

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

swFlashDLUser

OID 1.3.6.1.4.1.1588.2.1.1.1.1.14

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

swFlashDLFile

OID 1.3.6.1.4.1.1588.2.1.1.1.1.15

Description The name of the file to be downloaded or uploaded.

swFlashDLPassword

OID 1.3.6.1.4.1.1588.2.1.1.1.1.16

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

swBeaconOperStatus

OID 1.3.6.1.4.1.1588.2.1.1.1.1.18

Description The current operational status of the switch beacon. When the beacon is on, the LEDs on the front panel of the switch run alternately from left to right and right to left. In this state, the color of the LED is yellow. When the beacon is off, each LED will be in their its regular status indicating color and state. Possible values are:

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

swBeaconAdmStatus

OID 1.3.6.1.4.1.1588.2.1.1.1.1.19

Description The desired status of the switch beacon. When the beacon is set to on, the LEDs on the front panel of the switch run alternately from left to right and right to left. The color is yellow. When the beacon is set to off, each LED will be in its regular status indicating color and state. Possible values are:

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

swDiagResult

OID 1.3.6.1.4.1.1588.2.1.1.1.1.20

Description The result of the power-on startup (POST) diagnostics. Possible values are:

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

swNumSensors

OID 1.3.6.1.4.1.1588.2.1.1.1.1.21

Description The number of sensors inside the switch.

Note: For example, the SilkWorm 3800 value is between 1 and 13 (temperature = 6, fan = 3, power supply = 4). The value may vary depending on the switch model. For Fabric OS v4.x, if no sensor is available, this variable is assigned the value -1.

swSensorTable

OID 1.3.6.1.4.1.1588.2.1.1.1.1.22

Description Table of sensor entries.

swSensorEntry

OID 1.3.6.1.4.1.1588.2.1.1.1.1.22.1

Description An entry of the sensor information.

Index swSensorIndex

swSensorIndex

OID 1.3.6.1.4.1.1588.2.1.1.1.1.22.1.1

Description The index of the sensor.

Note: The values are 1 through the value in swNumSensors.

swSensorType

OID 1.3.6.1.4.1.1588.2.1.1.1.1.22.1.2

Description The type of sensor.

swSensorStatus

OID 1.3.6.1.4.1.1588.2.1.1.1.1.22.1.3

Description The current status of the sensor. Possible values are:

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

Note: See the following list for valid values:

- For Temperature, valid values include 3 (below-min), 4 (above-max), and 4 (nominal).
- 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

OID 1.3.6.1.4.1.1588.2.1.1.1.1.22.1.4

Description The current value (reading) of the sensor.

The value, -2147483648, represents an unknown quantity.

It also means that the sensor does not have the capability to measure the actual value. In V2.0, the temperature sensor value will be in Celsius; the fan value will be in RPM (revolution per minute); and the power supply sensor reading will be unknown.

Note: The unknown value of -2147483648, indicates the maximum value of integer value 2^32.

swSensorInfo

OID 1.3.6.1.4.1.1588.2.1.1.1.1.22.1.5

Description Additional display able information on the sensor. It contains the sensor type and number in textual format. For example, Temp 3 or Fan 6.

SilkWorm 3800:

- For swSensorIndex 1 through 5, valid return values include:
  - Temp #1
  - Temp #2
  - Temp #3
  - Temp #4
  - Temp #5
- For swSensorIndex 6 through 11, valid return values include:
  - Fan #1
  - Fan #2
  - Fan #3
  - Fan #4
  - Fan #5
  - Fan #6
- For swSensorIndex 12 and 13, valid return values include:
  - Power Supply #1
  - Power Supply #2

SilkWorm 12000:

- Return values for the SilkWorm 12000 depend entirely upon the configuration of your system.

swTrackChangesInfo

OID 1.3.6.1.4.1.1588.2.1.1.1.1.23

Description Track changes string. For trap only.

Note: If there are no events to track, the default return value is “No event so far”.
If there are events to track, the following are valid return values:

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

---

swID

OID 1.3.6.1.4.1.1588.2.1.1.1.1.24

Description The number of the logical switch (either 0 or 1).

swEtherIPAddress

OID 1.3.6.1.4.1.1588.2.1.1.1.1.25

Description The IP address of the Ethernet interface of this logical switch.

swEtherIPMask

OID 1.3.6.1.4.1.1588.2.1.1.1.1.26

Description The IP Mask of the Ethernet interface of this logical switch.

swFCIPAddress

OID 1.3.6.1.4.1.1588.2.1.1.1.1.27

Description The IP address of the FC interface of this logical switch.

swFCIPMask

OID 1.3.6.1.4.1.1588.2.1.1.1.1.28

Description The IP Mask of the FC interface of this logical switch.

Fabric Group

swDomainID

OID 1.3.6.1.4.1.1588.2.1.1.1.2.1

Description The current fibre channel domain ID of the switch. To set a new value, the switch (swAdmStatus) must be in offline or testing state.

swPrincipalSwitch

OID 1.3.6.1.4.1.1588.2.1.1.1.2.2

Description Indicates whether the switch is the Principal switch as per FC-SW. Possible values are:

yes (1)	This is the principal switch for FC-SW.
no (2)	This is not the principal switch for FC-SW.

swNumNbs

OID 1.3.6.1.4.1.1588.2.1.1.1.2.8

Description The number of Inter-Switch Links in the (immediate) neighborhood.

swNbTable

OID 1.3.6.1.4.1.1588.2.1.1.1.2.9

Description This table contains the ISLs in the immediate neighborhood of the switch.

swNbEntry

OID 1.3.6.1.4.1.1588.2.1.1.1.2.9.1

Description An entry containing each neighbor ISL parameters.

Index swNbIndex

swNbIndex

OID 1.3.6.1.4.1.1588.2.1.1.1.2.9.1.1

Description The index for neighborhood entry.

swNbMyPort

OID 1.3.6.1.4.1.1588.2.1.1.1.2.9.1.2

Description This is the port that has an ISL to another switch.

Note: This value is the same as the physical port number of the local switch +1.

The valid values for Brocade switch:
SilkWorm 12000: 1 through maximum number of ports.

---

swNbRemDomain

OID 1.3.6.1.4.1.1588.2.1.1.1.2.9.1.3

Description This is the fibre channel domain on the other end of the ISL.

Note: This is the domain ID of the remote switch.Valid values are 1 through 239 as defined by FCS-SW.

---

swNbRemPort

OID 1.3.6.1.4.1.1588.2.1.1.1.2.9.1.4

Description This is the port index on the other end of the ISL.

Note: The physical port number of the remote switch, plus one.

The valid values for Brocade switch:
SilkWorm 12000: 0 through maximum number of ports.

---

swNbBaudRate

OID 1.3.6.1.4.1.1588.2.1.1.1.2.9.1.5

Description The baud rate of the ISL. Possible values are:

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

Note: The valid values for Brocade switch:
SilkWorm 12000: 16 (full), 32 (double)

swNbIslState

OID 1.3.6.1.4.1.1588.2.1.1.1.2.9.1.6

Description The current state of the ISL.

swNbIslCost

OID 1.3.6.1.4.1.1588.2.1.1.1.2.9.1.7

Description The current link cost of the ISL. In other words, the cost of a link to control the routing algorithm.

swNbRemPortName

OID 1.3.6.1.4.1.1588.2.1.1.1.2.9.1.8

Description The WWN of the remote port.

swFabricMemTable

OID 1.3.6.1.4.1.1588.2.1.1.1.2.10

Description This table contains information on the member switches of a fabric. This may not be available on all versions of Fabric OS.

Note: Available on v2.6.1

swFabricMemEntry

OID 1.3.6.1.4.1.1588.2.1.1.1.2.10.1

Description An entry containing each switch in the fabric.

Index swFabricMemWwn

swFabricMemWwn

OID 1.3.6.1.4.1.1588.2.1.1.1.2.10.1.1

Description This object identifies the World Wide Name of the member switch.

swFabricMemDid

OID 1.3.6.1.4.1.1588.2.1.1.1.2.10.1.2

Description This object identifies the domain ID of the member switch.

swFabricMemName

OID 1.3.6.1.4.1.1588.2.1.1.1.2.10.1.3

Description This object identifies the name of the member switch.

swFabricMemEIP

OID 1.3.6.1.4.1.1588.2.1.1.1.2.10.1.4

Description This object identifies the Ethernet IP address of the member switch.

swFabricMemFCIP

OID 1.3.6.1.4.1.1588.2.1.1.1.2.10.1.5

Description This object identifies the Fibre Channel IP address of the member switch.

swFabricMemGWIP

OID 1.3.6.1.4.1.1588.2.1.1.1.2.10.1.6

Description This object identifies the Gateway IP address of the member switch.

swFabricMemType

OID 1.3.6.1.4.1.1588.2.1.1.1.2.10.1.7

Description This object identifies the member switch type.

swFabricMemShortVersion

OID 1.3.6.1.4.1.1588.2.1.1.1.2.10.1.8

Description This object identifies the Fabric OS version of the member switch.

Note: Short version of Fabric OS. It gives v260 for Fabric OS v2.6.x.

SW Agent Configuration Group

swAgtCmtyTable

OID 1.3.6.1.4.1.1588.2.1.1.1.4.11

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

Note: The table shows 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.

Note: In Secure Fabric OS, the community strings can only be modified on the primary switch.

swAgtCmtyEntry

OID 1.3.6.1.4.1.1588.2.1.1.1.4.11.1

Description An entry containing the Community parameters.

Index swAgtCmtyIdx

swAgtCmtyIdx

OID 1.3.6.1.4.1.1588.2.1.1.1.4.11.1.1

Description The SNMPv1 Community entry.

Note: The return value for this entry is 1 through 6.

swAgtCmtyStr

OID 1.3.6.1.4.1.1588.2.1.1.1.4.11.1.2

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

Note: Default values for communities are as follows:

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

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

You can change the Community setting using the agtcfgSet telnet command.

swAgtTrapRcp

OID 1.3.6.1.4.1.1588.2.1.1.1.4.11.1.3

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

Note: 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.

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 6. If no trap recipient is configured, no traps are sent.

The trap recipient IP address should be part of the Access Control List for Fabric OS v2.6.1, v3.1, and v4.x (see the agtCfgSet command).

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.

Example:

F_Port, E_Port, U_Port, FL_Port.

swFCPortCapacity

OID 1.3.6.1.4.1.1588.2.1.1.1.6.1

Description The maximum number of fibre channel ports on this switch. It includes U_Port, F_Port, FL_Port and any other types of fibre channel port.

Note: The valid values for Brocade SilkWorm 12000 switch vary, according to the configuration of the switch. For example, one of the values could be 64.

swFCPortTable

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2

Description A table that contains, one entry for each switch port, configuration and service parameters of the port.

swFCPortEntry

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1

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

Index swFCPortIndex

swFCPortIndex

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.1

Description The switch port index.

Note: The physical port number of the switch, plus one. The valid value for Brocade switch:
SilkWorm 12000: 0 through maximum number of ports.

---

swFCPortType

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.2

Description The type of ASIC for the switch port. Possible values are:

stitch (1)	
flannel (2)	
loom (3)	(SilkWorm 2000 Series)
bloom (4)	(SilkWorm 3000 Series)
rdbloom (5)	
wormhole (6)	

Note: The valid value for Brocade switch:
SilkWorm 12000: 4

---

swFCPortPhyState

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.3

Description The physical state of the port. Possible values are:

noCard (1)	No card is present in this switch slot.
noTransceiver (2)	No Transceiver module in this port (Transceiver is the generic name for GBIC, SFP, etc.).
laserFault (3)	The module is signaling a laser fault (defective GBIC)
noLight (4)	The module is not receiving light.
noSync (5)	The module is receiving light but is out of sync.
inSync (6)	The module is receiving light and is in sync.
portFault (7)	The port is marked faulty (defective GBIC, cable, or device).
diagFault (8)	The port failed diagnostics (defective G_Port or FL_Port card or motherboard.
lockRef (9)	Port is locking to the reference signal.

swFCPortOpStatus

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.4

Description The operational status of the port. Possible values are:

unknown (0)	The port module is physically absent.
online (1)	User frames can be passed.
offline (2)	No user frames can be passed.
testing (3)	No user frames can be passed.
faulty (4)	The port module is physically faulty.

swFCPortAdmStatus

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.5

Description The desired state of the port. A management station may place the port in a desired state by setting this object accordingly. Possible values are:

online (1)	User frames can be passed.
offline (2)	No user frames can be passed.
testing (3)	No user frames can be passed.
faulty (4)	No user frames can be passed.

v3.x:
The 3 (testing) state indicates that no user frames can be passed. As the result of either explicit management action or per configuration information accessible by the switch, swFCPortAdmStatus is then changed to either the 1 (online) or 3 (testing) states, or remains in the 2 (offline) state.
v4.x:
The 3 (testing) state is not supported.

swFCPortLinkState

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.6

Description Indicates the link state of the port.

enabled (1)	The port is allowed to participate in the FC-PH protocol with its attached port (or ports if it is in an FC-AL loop).
disabled (2)	The port is not allowed to participate in the FC-PH protocol with its attached ports.
loopback (3)	The port may transmit frames through an internal path to verify the health of the transmitter and receiver path.

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

swFCPortTxType

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.7

Description Indicates the media transmitter type of the port. Possible values are:

unknown (1)	Cannot determine the port driver.
lw (2)	Long wave laser.
sw (3)	Short wave laser.
ld (4)	Long wave LED.
cu (5)	Copper (electrical).

swFCPortTxWords

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.11

Description Counts the number of fibre channel words that the port has transmitted.

swFCPortRxWords

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.12

Description Counts the number of fibre channel words that the port has received.

swFCPortTxFrames

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.13

Description Counts the number of fibre channel frames that the port has transmitted.

swFCPortRxFrames

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.14

Description Counts the number of fibre channel frames that the port has received.

swFCPortRxC2Frames

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.15

Description Counts the number of Class 2 frames that the port has received.

swFCPortRxC3Frames

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.16

Description Counts the number of Class 3 frames that the port has received.

swFCPortRxLCs

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.17

Description Counts the number of Link Control frames that the port has received.

swFCPortRxMcasts

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.18

Description Counts the number of Multicast frames that the port has received.

swFCPortTooManyRdys

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.19

Description Counts the number of times when RDYs exceeds the frames received.

swFCPortNoTxCredits

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.20

Description Counts the number of times when the transmit credit has reached zero.

swFCPortRxEncInFrs

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.21

Description Counts the number of encoding error or disparity error inside frames received.

swFCPortRxCrcs

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.22

Description Counts the number of CRC errors detected for frames received.

swFCPortRxTruncs

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.23

Description Counts the number of truncated frames that the port has received.

swFCPortRxTooLongs

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.24

Description Counts the number of received frames that are too long.

swFCPortRxBadEofs

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.25

Description Counts the number of received frames that have bad EOF delimiter.

swFCPortRxEncOutFrs

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.26

Description Counts the number of encoding error or disparity error outside frames received.

swFCPortRxBadOs

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.27

Description Counts the number of invalid Ordered Sets received.

swFCPortC3Discards

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.28

Description Counts the number of Class 3 frames that the port has discarded.

swFCPortMcastTimedOuts

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.29

Description Counts the number of multicast frames that has been timed out.

swFCPortTxMcasts

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.30

Description Counts the number of multicast frames that has been transmitted.

swFCPortLipIns

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.31

Description Counts the number of loop initializations that has been initiated by loop devices attached.

swFCPortLipOuts

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.32

Description Counts the number of loop initializations that has been initiated by the port.

swFCPortLipLastAlpa

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.33

Description Indicates the Physical Address (AL_PA) of the loop device that initiated the last Loop Initialization.

swFCPortWwn

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.34

Description The WWN of the fibre channel port. The contents of an instance are in the IEEE extended format as specified in FC-PH.

swFCPortSpeed

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.35

Description The desired baud rate for the port.

The default baud rate is 1GB or 2GB.

swFCPortName

Note: Supported in Fabric OS v3.1 and v4.1 only.

OID 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.36

Description A string that indicates the name of the addressed port.

The names should be persistent across switch reboots. Port names do not have to be unique within a switch or within a fabric.

Name Server Database Group

swNsLocalNumEntry

OID 1.3.6.1.4.1.1588.2.1.1.1.7.1

Description The number of local Name Server entries.

swNsLocalTable

OID 1.3.6.1.4.1.1588.2.1.1.1.7.2

Description The table of local Name Server entries.

swNsLocalEntry

OID 1.3.6.1.4.1.1588.2.1.1.1.7.2.1

Description An entry from the local Name Server database.

Index swNsEntryIndex

swNsEntryIndex

OID 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.1

Description The index of the Name Server database entry.

swNsPortID

OID 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.2

Description The fibre channel port address ID of the entry.

swNsPortType

OID 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.3

Description The type of port for this entry. Possible values are:

unknown (0)	The type is defined in FC-GS-2.
nPort (1)	The type is defined in FC-GS-2.
nlPort (2)	The type is defined in FC-GS-2.

swNsPortName

OID 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.4

Description The fibre channel WWN of the port entry.

swNsPortSymb

OID 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.5

Description 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

OID 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.6

Description The fibre channel WWN of the associated node as defined in FC-GS-2.

swNsNodeSymb

OID 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.7

Description The contents of a Symbolic Name of the node associated with the entry. In FC-GS-2, a Symbolic Name consists of a byte array of 1 through 256 bytes, and the first byte of the array specifies the length of its contents. This object variable corresponds to the contents of the Symbolic Name, with the first byte removed.

swNsIPA

OID 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.8

Description The Initial Process Associators of the node for the entry as defined in FC-GS-2.

swNsIpAddress

OID 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.9

Description The IP address of the node for the entry as defined in FC-GS-2. The format of the address is in IPv6.

swNsCos

OID 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.10

Description The class of services supported by the port.

swNsFc4

OID 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.11

Description The FC-4s supported by the port as defined in FC-GS-2.

swNsIpNxPort

OID 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.12

Description The object identifies IpAddress of the Nx_port for the entry.

swNsWwn

OID 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.13

Description The object identifies the World Wide Name (WWN) of the Fx_port for the entry.

swNsHardAddr

OID 1.3.6.1.4.1.1588.2.1.1.1.7.2.1.14

Description The object identifies the 24-bit hard address of the node for the entry.

Event Group

Note: Logically, the swEventTable is separate from the error log since it is essentially a view of the error log within a particular time window. The value of swEventIndex indicates the number of events that have occurred since the switch booted. The values range from 1 through 2048 entries.

swEventTrapLevel

OID 1.3.6.1.4.1.1588.2.1.1.1.8.1

Description Specifies the swEventTrap level in conjunction with an event's severity level. When an event occurs, if its severity level is at or below the specified numeric value, the agent sends the associated swEventTrap to the configured recipients. Possible values are:

none (0)
critical (1)
error (2)
warning (3)
informational (4)
debug (5)

Example:

If this variable is set to 3 (warning), all error logs of severity 1 (critical), 2 (error), and 3 (warning) are sent as an SNMP Trap of swEventTrap as shown in *swEventTrap*.

swEventNumEntries

OID 1.3.6.1.4.1.1588.2.1.1.1.8.4

Description The number of entries in the Event Table. Valid values vary for each Fabric OS (the values range from 1 through 2048 entries).

swEventTable

OID 1.3.6.1.4.1.1588.2.1.1.1.8.5

Description The table of event entries.

swEventEntry

OID 1.3.6.1.4.1.1588.2.1.1.1.8.5.1

Description An entry of the event table.

Index swEventIndex

swEventIndex

OID 1.3.6.1.4.1.1588.2.1.1.1.8.5.1.1

Description The index of the event entry.

See the note at the top of page 4-36.

Note: For Fabric OS v3.x and v2.6.x, the maximum number of events is 64

swEventTimeInfo

OID 1.3.6.1.4.1.1588.2.1.1.1.8.5.1.2

Description The date and time when this event occurred.

The return string is displayed using the following format:

MMM DD hh:mm:ss

Where:

MMM = Month
DD = Date
hh = Hour
mm = Minute
ss = Seconds

Example: (Brocade Fabric OS v3.0 only)

Aug 17 15:16:09.

swEventLevel

OID 1.3.6.1.4.1.1588.2.1.1.1.8.5.1.3

Description The severity level of this event entry. Possible values are:

critical (1)
error (2)
warning (3)
informational (4)
debug (5)

swEventRepeatCount

OID 1.3.6.1.4.1.1588.2.1.1.1.8.5.1.4

Description If the most recent event is the same as the previous, this number increments by one, and is the count of consecutive times this particular event has occurred.

swEventDescr

OID 1.3.6.1.4.1.1588.2.1.1.1.8.5.1.5

Description A textual description of the event.

For more information on error messages, refer to Brocade's *Fabric OS Reference*, *Appendix A*.

Fabric Watch Group

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

- The license scalar, swFwFabricWatchLicense, is used to tell is if the switch has proper license for Fabric Watch.
- One table, *swFwClassAreaTable* on page 4-38, contains classArea information such as threshold unit string, time base, low thresholds, and so forth. SwFwClassAreaEntry contains control information for a particular class/area's thresholds.
- The other table, *swFwThresholdTable* on page 4-43, contains individual threshold information such as name, label, last event, and so forth. The thresholds are contained in SwFwThresholdEntry.

swFwFabricWatchLicense

OID 1.3.6.1.4.1.1588.2.1.1.1.10.1

Description If the license key is installed on the switch for the Fabric Watch, the return value is swFwLicensed. Otherwise the value is swFwNotLicensed.

swFwClassAreaTable

OID 1.3.6.1.4.1.1588.2.1.1.1.10.2

Description The table of classes and areas.

swFwClassAreaEntry

OID 1.3.6.1.4.1.1588.2.1.1.1.10.2.1

Description An entry of the classes and areas.

Index swFwClassAreaIndex

swFwClassAreaIndex

OID 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.1

Description This index represents the Fabric Watch classArea combination.

swFwWriteThVals

OID 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.2

Description This applies or cancels the configuration value changes.

Note: For a read operation, the return value is always swFwCancelWrite.
The following are the custom configuration variables that can be modified:

- swFwCustUnit
- swFwCustTimebase
- swFwCustLow
- swFwCustHigh
- swFwCustBufSize

Changes to these custom configuration variables can be saved by setting this variable to swFwApplyWrite, and they can be removed by setting this variable to swFwCancelWrite.

---

swFwDefaultUnit

OID 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.3

Description A default unit string name, used to identify the unit of measure for a Fabric Watch classArea combination.

Example:

- C = environment (class), temperature (area).
- RPM = environment (class), fan (area).

swFwDefaultTimebase

OID 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.4

Description A default polling period for the Fabric Watch classArea combination.

Example:

- swFwTbMin = port (class), link loss (area).
- swFwTbNone = environment (class), temperature (area).

swFwDefaultLow

OID 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.5

Description A default low threshold value.

swFwDefaultHigh

OID 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.6

Description A default high threshold value.

swFwDefaultBufSize

OID 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.7

Description A default buffer size value.

swFwCustUnit

OID 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.8

Description A customizable unit string name, used to identify the unit of measure for a Fabric Watch classArea combination.

Example:

- C = environment (class), temperature (area).
- RPM = environment (class), fan (area).

swFwCustTimebase

OID 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.9

Description A customizable polling period for the Fabric Watch classArea combination. For example:

- swFwTbMin = port (class), link loss (area).
- swFwTbNone = environment (class), temperature (area).

swFwCustLow

OID 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.10

Description A customizable low-threshold value for a Fabric Watch ClassArea combination.

swFwCustHigh

OID 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.11

Description A customizable high-threshold value for a Fabric Watch ClassArea combination.

swFwCustBufSize

OID 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.12

Description A customizable buffer size value for a Fabric Watch ClassArea combination.

swFwThLevel

OID 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.13

Description swFwThLevel is used to point to the current level for classArea values. It is either default or custom.

Note: For a read operation, the return value is either 2 (swFwDefault) or 3 (swFwCustom). 1 (swFwReserved) is obsolete.

If the write operation sets the variable to 2 (swFwDefault), the following default configuration variables are used for the Fabric Watch classArea combination:

- swFwDefaultUnit
- swFwDefaultTimebase
- swFwDefaultLow
- swFwDefaultHigh
- swFwDefaultBufSize

If the write operation sets the variable to 3 (swFwCustom), the following custom configuration variables are used for the Fabric Watch classArea combination:

- swFwCustUnit
- swFwCustTimebase
- swFwCustLow
- swFwCustHigh
- swFwCustBufSize

---

swFwWriteActVals

OID 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.14

Description This applies or cancels the alarm value changes.

Note: For a read operation, the return value is always swFwCancelWrite.

The following are the custom alarm variables that can be modified:

- swFwCustChangedActs
- swFwCustExceededActs
- swFwCustBelowActs
- swFwCustAboveActs
- swFwCustInBetweenActs

Changes to these custom alarm variables can be saved by setting this variable to swFwApplyWrite.

Changes to these custom alarm variables can be removed by setting this variable to swFwCancelWrite.

---

swFwDefaultChangedActs

OID 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.15

Description Default action matrix for changed event.

swFwDefaultExceededActs

OID 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.16

Description Default action matrix for an exceeded event. The exceeded value may be either above the high-threshold or below the low-threshold.

swFwDefaultBelowActs

OID 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.17

Description Default action matrix for below event.

swFwDefaultAboveActs

OID 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.18

Description Default action matrix for above event.

swFwDefaultInBetweenActs

OID 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.19

Description Default action matrix for in-between event.

swFwCustChangedActs

OID 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.20

Description Custom action matrix for changed event.

swFwCustExceededActs

OID 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.21

Description Custom action matrix for an exceeded event.

swFwCustBelowActs

OID 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.22

Description Custom action matrix for below event.

swFwCustAboveActs

OID 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.23

Description Custom action matrix for above event.

swFwCustInBetweenActs

OID 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.24

Description Custom action matrix for in-between event.

swFwValidActs

OID 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.25

Description Matrix of valid acts for an ClassArea.

swFwActLevel

OID 1.3.6.1.4.1.1588.2.1.1.1.10.2.1.26

Description swFwActLevel is used to point to the current level for classArea values. It is either default or custom

---

Note: For a read operation, the return value is either 2 (swFwDefault) or 3 (swFwCustom). 1 (swFwReserved) is obsolete.

If the write operation sets the variable to 2 (swFwDefault), the following default action matrix variables are used for the Fabric Watch classArea combination:

- swFwDefaultChangedActs
- swFwDefaultExceededActs
- swFwDefaultBelowActs
- swFwDefaultAboveActs
- swFwDefaultInBetweenActs

If the write operation sets the variable to 3 (swFwCustom), the following custom action matrix variables are used for the Fabric Watch classArea combination:

- swFwCustChangedActs
- swFwCustExceededActs
- swFwCustBelowActs
- swFwCustAboveActs
- swFwCustInBetweenActs

---

swFwThresholdTable

OID 1.3.6.1.4.1.1588.2.1.1.1.10.3

Description The table of individual thresholds.

swFwThresholdEntry

OID 1.3.6.1.4.1.1588.2.1.1.1.10.3.1

Description An entry of an individual threshold.

Index swFwClassAreaIndex, swFwThresholdIndex

swFwThresholdIndex

OID 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.1

Description Represents the element index of a threshold.

Note: For environment class, the indexes are from 2 through (number of environment sensors+1). For example, the indexes for environment class temperature area are:

- envTemp001: index of 2
- envTemp002: index of 3
- envTemp003: index of 4
- envTemp004: index of 5
- envTemp005: index of 6

For port-related classes such as E_Port, the indexes are from 1 through (number of ports). For example, the indexes for E_Port classlink loss area:

- eportLink000: index of 1
- eportLink001: index of 2
- eportLink002: index of 3
- eportLink003: index of 4
- eportLink004: index of 5
- eportLink005: index of 6
- eportLink006: index of 7
- eportLink007: index of 8
- eportLink008: index of 9
- eportLink009: index of 10
- eportLink010: index of 11
- eportLink011: index of 12
- eportLink012: index of 13
- eportLink013: index of 14
- eportLink014: index of 15
- eportLink015: index of 16

---

swFwStatus

OID 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.2

Description Indicates whether a threshold is enabled or disabled.

swFwName

OID 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.3

Description Name of the threshold.

For examples, seeTable 4-2.

Table 4-2 swFwName Objects and Object Types

swFwName Objects (swFwName)	Object Types (Threshold Names)
envFan001	Env Fan 1
envPS002	Env Power Supply 2
envTemp001	Env Temperature 1
gbicTemp001	GBIC Temperature 1
gbicRXP001	GBIC RX power 1
gbicTXP001	GBIC TX power 1
gbicCrnt001	GBIC Current 1
eportCRCs007	E Port Invalid CRCs 7
eportLink007	E Port Link Failures 7
eportProtoErr007	E Port Protocol Errors 7
eportRXPerf007	E Port RX Performance 7
eportSignal007	E Port Loss of Signal 7
eportState007	E Port State Changes 7
eportSync007	E Port Loss of Sync 7
eportTXPerf007	E Port TX Performance 7
eportWords007	E Port Invalid Words 7
fabricDI000	Fabric Domain ID
fabricED000	Fabric E-port down
fabricFL000	Fabric Fabric login
fabricFQ000	Fabric Fabric<->QL
fabricFR000	Fabric Reconfigure
fabricGS000	Fabric GBIC change 0
fabricSC000	Fabric Segmentation
fabricZC000	Fabric Zoning change
fcuportCRCs013	FCU Port Invalid CRCs 13
fcuportLink013	FCU Port Link Failures 13
fcuportProtoErr0	FCU Port Protocol Errors 13
fcuportRXPerf013	FCU Port RX Performance 13
fcuportSignal013	FCU Port Loss of Signal 13

Table 4-2 swFwName Objects and Object Types (Continued)

swFwName Objects (swFwName)	Object Types (Threshold Names)
fcuportState013	FCU Port State Changes 13
fcuportSync013	FCU Port Loss of Sync 13
fcuportTXPerf013	FCU Port TX Performance 13
fcuportWords013	FCU Port Invalid Words 13
portCRCs000 Port Invalid CRCs 0	Port Invalid CRCs 0
portLink000	Port Link Failures 0
portProtoErr000	Port Protocol Errors 0
portRXPerf000	Port RX Performance 0
portSignal000	Port Loss of Signal 0
portState000	Port State Changes 0
portSync000	Port Loss of Sync 0
portTXPerf000	Port TX Performance 0
portWords000	Port Invalid Words 0
fopportCRCs013	FOP Port Invalid CRCs 13
fopportLink013	FOP Port Link Failures 13
fopportProtoErr0	FOP Port Protocol Errors 13
fopportRXPerf013	FOP Port RX Performance 13
fopportSignal013	FOP Port Loss of Signal 13
fopportState013	FOP Port State Changes 13
fopportSync013	FOP Port Loss of Sync 13
fopportTXPerf013	FOP Port TX Performance 13
fopportWords013	FOP Port Invalid Words 13

swFwLabel

OID 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.4

Description Label of the threshold.

Note: See *swFwName* on page 4-45.

swFwCurVal

OID 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.5

Description Current counter of the threshold.

swFwLastEvent

OID 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.6

Description Last event type of the threshold.

swFwLastEventVal

OID 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.7

Description Last event value of the threshold.

swFwLastEventTime

OID 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.8

Description Last event time of the threshold.

Note: This value is in the same format as in swCurrentDate.

swFwLastState

OID 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.9

Description Last event state of the threshold.

swFwBehaviorType

OID 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.10

Description A behavior of which the thresholds generate event.

swFwBehaviorInt

OID 1.3.6.1.4.1.1588.2.1.1.1.10.3.1.11

Description A integer of which the thresholds generate continuous event.

End Device Group

swEndDeviceRlsTable

OID 1.3.6.1.4.1.1588.2.1.1.1.21.1

Description The table of rls for individual end devices.

Note: By default, no data appears in this table.

swEndDeviceRlsEntry

OID 1.3.6.1.4.1.1588.2.1.1.1.21.1.1

Description An entry of an individual end devices' rls.

Index swEndDevicePort, swEndDeviceAlpa

Note: Since SilkWorm family switches start with port # 0, the SNMP port # should be physical port # + 1. In turn, that means that SNMP port # 3 translates to port # 2.

swEndDevicePort

OID 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.1

Description This object represents the port of the local switch to which the end device is connected.

swEndDeviceAlpa

OID 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.2

Description This object represents the ALPA of the end device. SNMP ALPA number should be the logical ALPA number + 1. For example, SNMP ALPA number 0xf0 translates to 0xef.

swEndDevicePortID

OID 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.3

Description The fibre channel port address ID of the entry.

swEndDeviceLinkFailure

OID 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.4

Description Link failure count for the end device.

swEndDeviceSyncLoss

OID 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.5

Description Sync loss count for the end device.

swEndDeviceSigLoss

OID 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.6

Description Sig loss count for the end device.

swEndDeviceProtoErr

OID 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.7

Description Protocol err count for the end device.

swEndDeviceInvalidWord

OID 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.8

Description Invalid word count for the end device.

swEndDeviceInvalidCRC

OID 1.3.6.1.4.1.1588.2.1.1.1.21.1.1.9

Description Invalid CRC count for the end device.

All Groups

swGroupTable

OID 1.3.6.1.4.1.1588.2.1.1.1.22.1

Description The table of groups. This may not be available on all versions of Fabric OS.

swGroupEntry

OID 1.3.6.1.4.1.1588.2.1.1.1.22.1.1

Description An entry of table of groups.

Index swGroupIndex

swGroupIndex

OID 1.3.6.1.4.1.1588.2.1.1.1.22.1.1.1

Description This object is the group index starting from 1.

swGroupName

OID 1.3.6.1.4.1.1588.2.1.1.1.22.1.1.2

Description This object identifies the name of the group.

swGroupType

OID 1.3.6.1.4.1.1588.2.1.1.1.22.1.1.3

Description This object identifies the type of the group.

swGroupMemTable

OID 1.3.6.1.4.1.1588.2.1.1.1.22.2

Description The table of members of all groups. This may not be available on all versions of the Fabric OS.

swGroupMemEntry

OID 1.3.6.1.4.1.1588.2.1.1.1.22.2.1

Description An entry for a member of a group.

Index swGroupID, swGroupMemWwn

swGroupID

OID 1.3.6.1.4.1.1588.2.1.1.1.22.2.1.1

Description This object identifies the Group Id of the member switch.

swGroupMemWwn

OID 1.3.6.1.4.1.1588.2.1.1.1.22.2.1.2

Description This object identifies the WWN of the member switch.

swGroupMemPos

OID 1.3.6.1.4.1.1588.2.1.1.1.22.2.1.3

Description This object identifies the position of the member switch in the group. This is based on the order that the switches were added in the group.

ASIC Performance Monitoring Group

swBlmPerfALPAMntTable

OID 1.3.6.1.4.1.1588.2.1.1.1.23.1

Description ALPA monitoring counter Table.

swBlmPerfALPAMntEntry

OID 1.3.6.1.4.1.1588.2.1.1.1.23.1.1

Description ALPA monitoring counter for given ALPA.

Index swEndDevicePort, swEndDeviceAlpa

swBlmPerfAlpaPort

OID 1.3.6.1.4.1.1588.2.1.1.1.23.1.1.1

Description This Object identifies the port index of the switch.

swBlmPerfAlpaIndx

OID 1.3.6.1.4.1.1588.2.1.1.1.23.1.1.2

Description This Object identifies the AL-PA index. There can be 126 ALPA values.

swBlmPerfAlpa

OID 1.3.6.1.4.1.1588.2.1.1.1.23.1.1.3

Description This Object identifies the ALPA values.These values range between x'01' and x'EF'(1 to 239). AL-PA value x'00' is reserved for FL_Port If Alpha device is invalid, then it will have -1 value.

swBlmPerfAlpaCRCCnt

OID 1.3.6.1.4.1.1588.2.1.1.1.23.1.1.4

Description Get CRC count for given AL-PA and port. This monitoring provides information on the number of CRC errors occurred on the frames destined to each possible AL-PA attached to a specific port.

swBlmPerfEEMntTable

OID 1.3.6.1.4.1.1588.2.1.1.1.23.2

Description End-to-End monitoring counter Table.

swBlmPerfEEMntEntry

OID 1.3.6.1.4.1.1588.2.1.1.1.23.2.1

Description End-to-End monitoring counter for given port.

Index swBlmPerfEEPort, swBlmPerfEERefKey

swBlmPerfEEPort

OID 1.3.6.1.4.1.1588.2.1.1.1.23.2.1.1

Description This object identifies the port number of the switch.

swBlmPerfEERefKey

OID 1.3.6.1.4.1.1588.2.1.1.1.23.2.1.2

Description This object identifies the reference number of the counter. This reference is number assigned when a filter is created. In SNMP Index start one instead of 0, add one to the actual ref key.

swBlmPerfEECRC

OID 1.3.6.1.4.1.1588.2.1.1.1.23.2.1.3

Description End-to-End CRC error for the frames that matched the SID-DID pair.

swBlmPerfEEFCWRx

OID 1.3.6.1.4.1.1588.2.1.1.1.23.2.1.4

Description Get End to End count of fibre channel words (FCW), received by the port, that matched the SID-DID pair.

swBlmPerfEEFCWTx

OID 1.3.6.1.4.1.1588.2.1.1.1.23.2.1.5

Description Get End to End count of fibre channel words (FCW), transmitted by the port, that matched the SID-DID pair.

swBlmPerfEESid

OID 1.3.6.1.4.1.1588.2.1.1.1.23.2.1.6

Description Gets DID info by reference number.

swBlmPerfEEDid

OID 1.3.6.1.4.1.1588.2.1.1.1.23.2.1.7

Description Gets SID info by reference number. SID (Source Identifier) is a 3-byte field in the frame header used to indicate the address identifier of the N-Port from which the frame was sent.

swBlmPerfFltMntTable

OID 1.3.6.1.4.1.1588.2.1.1.1.23.3

Description Filter based monitoring counter.

swBlmPerfFltMntEntry

OID 1.3.6.1.4.1.1588.2.1.1.1.23.3.1

Description Filter base monitoring counter for given port.

Index swBlmPerfFltPort, swBlmPerfFltRefkey

swBlmPerfFltPort

OID 1.3.6.1.4.1.1588.2.1.1.1.23.3.1.1

Description This object identifies the port number of the switch.

swBlmPerfFltRefkey

OID 1.3.6.1.4.1.1588.2.1.1.1.23.3.1.2

Description This object identifies the reference number of the filter. This reference number is assigned when a filter is created. In SNMP Index start one instead of 0, add one to actual ref key.

swBlmPerfFltCnt

OID 1.3.6.1.4.1.1588.2.1.1.1.23.3.1.3

Description Get statistics of filter based monitor. Filter based monitoring provides information about a filter hit count such as:

1. Read command
2. SCSI or IP traffic
3. SCSI Read/Write.

swBlmPerfFltAlias

OID 1.3.6.1.4.1.1588.2.1.1.1.23.3.1.4

Description Alias name for the filter.

Trunking Group

swSwitchTrunkable

OID 1.3.6.1.4.1.1588.2.1.1.1.24.1

Description The trunking status of the switch - whether the switch supports the trunking feature or not. Possible values are:

No (0)
Yes (8)

swTrunkTable

OID 1.3.6.1.4.1.1588.2.1.1.1.24.2

Description Table to display trunking information for the switch.

swTrunkEntry

OID 1.3.6.1.4.1.1588.2.1.1.1.24.2.1

Description Entry for the trunking table.

Index swTrunkPortIndex

swTrunkPortIndex

OID 1.3.6.1.4.1.1588.2.1.1.1.24.2.1.1

Description This object identifies the switch port index.

Note: The value of a port index is 1 higher than the port number labeled on the front panel. For example, port index 1 corresponds to port number 0.

swTrunkGroupNumber

OID 1.3.6.1.4.1.1588.2.1.1.1.24.2.1.2

Description This object is a logical entity which specifies the Group Number to which the port belongs to. If this value is Zero it means the port is not trunked.

swTrunkMaster

OID 1.3.6.1.4.1.1588.2.1.1.1.24.2.1.3

Description Port number that is the trunk master of the group. The trunk master implicitly defines the group. All ports with the same master are considered to be part of the same group.

swPortTrunked

OID 1.3.6.1.4.1.1588.2.1.1.1.24.2.1.4

Description The current state of trunking for a member port. Possible values are:

Disabled (0)
Enabled (1)

swTrunkGrpTable

OID 1.3.6.1.4.1.1588.2.1.1.1.24.3

Description Table to display trunking performance information for the switch.

swTrunkGrpEntry

OID 1.3.6.1.4.1.1588.2.1.1.1.24.3.1

Description Entry for the trunking group table.

Index swTrunkGrpNumber

swTrunkGrpNumber

OID 1.3.6.1.4.1.1588.2.1.1.1.24.3.1.1

Description This object is a logical entity which specifies the Group Number to which port belongs.

swTrunkGrpMaster

OID 1.3.6.1.4.1.1588.2.1.1.1.24.3.1.2

Description This object gives the master port id for the TrunkGroup.

swTrunkGrpTx

OID 1.3.6.1.4.1.1588.2.1.1.1.24.3.1.3

Description Gives the aggregate value of the transmitted words from this TrunkGroup.

swTrunkGrpRx

OID 1.3.6.1.4.1.1588.2.1.1.1.24.3.1.4

Description Gives the aggregate value of the received words by this TrunkGroup.

High Availability MIB Objects

Chapter 5

This chapter provides descriptions and other information specific to High Availability MIB object types and includes the following sections:

Overview

The HA-MIB provides information about the High Availability features of Fabric OS v4.*x*. This MIB is supported only in Fabric OS v4.1 and is not supported in Fabric OS v3.*x* or Fabric OS v2.6.1.

The HA-MIB has a dependency on the SW MIB. This dependency requires a management application to load the SNMP-FRAMEWORK MIB, then the SW MIB, followed by the Entity MIB before it can load the HA-MIB.

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

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

- High Availability Group
- HA MIB Traps

Figure 5-1 and Figure 5-2 depict the organization and structure of the HA-MIB file system.

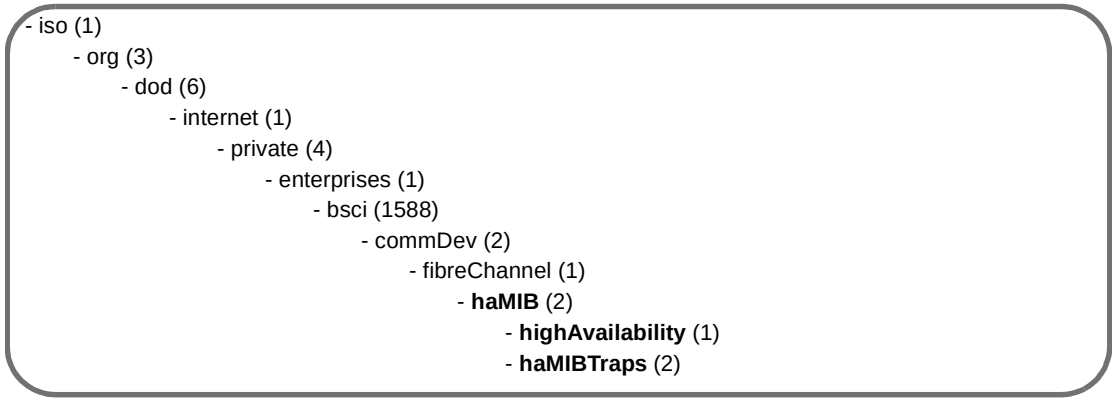


Figure 5-1 HA-MIB Overall Tree Structure

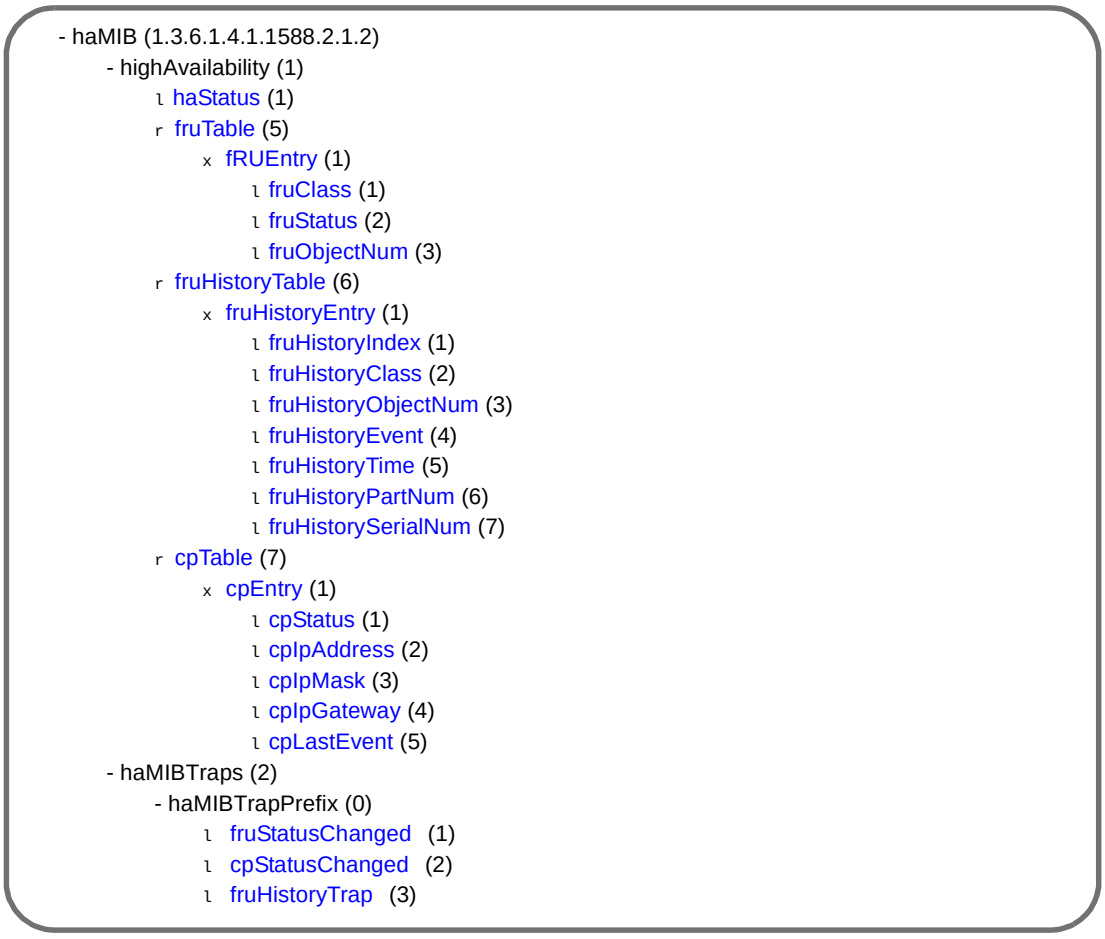


Figure 5-2 Tree Structure for highAvailability and haMIBTraps Groups

Table 5-1 lists the objects or definitions that are imported into the HA-MIB, and the modules from which they are imported.

Table 5-1 Objects Imported into the HA-MIB

Object	Imported from this module
MODULE-IDENTITY	SNMPv2-SMI
OBJECT-TYPE	
NOTIFICATION-TYPE	
TimeTicks	
Integer32	
IpAddress	
mib-2	
fibrechannel	SW-MIB
entPhysicalIndex	ENTITY-MIB
entPhysicalName	
DisplayString	SNMPv2-TC
TimeStamp	

High Availability Group

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

haStatus

OID 1.3.6.1.4.1.1588.2.1.2.1.1

Description Indicates whether the system is redundant. Possible values are:

redundant (0)
nonredundant (1)

Note: Redundant = Dual CP with standby CP ready to take over.
Non-redundant = Single/Dual CP system with standby CP not available to take over.

FRU Table

fruTable

OID 1.3.6.1.4.1.1588.2.1.2.1.5

Description 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)”.

fRUEntry

OID 1.3.6.1.4.1.1588.2.1.2.1.5.1

Description An entry for FRU slot in the fruTable

Index entPhysicalIndex

fruClass

OID 1.3.6.1.4.1.1588.2.1.2.1.5.1.1

Description The type of the FRU object that this slot can hold. Possible values are:

other (1)
unknown (2)
chassis (3)
cp (4)
other-CP (5)
switchblade (6)
wwn (7)
powerSupply (8)
fan (9)

fruStatus

OID 1.3.6.1.4.1.1588.2.1.2.1.5.1.2

Description The current status of the FRU object in the slot. Possible values are:

other (1)
unknown (2)
on (3)
off (4)
faulty (5)

fruObjectNum

OID 1.3.6.1.4.1.1588.2.1.2.1.5.1.3

Description The slot number of the blade, and the unit number for everything else.

FRU History Table

fruHistoryTable

OID 1.3.6.1.4.1.1588.2.1.2.1.6

Description This table gives the contents of the entire history log of the FRU events.

fruHistoryEntry

OID 1.3.6.1.4.1.1588.2.1.2.1.6.1

Description An entry in this table represents a particular FRU event.

Index fruHistoryIndex

fruHistoryIndex

OID 1.3.6.1.4.1.1588.2.1.2.1.6.1.1

Description Index of the FRU event in the history table.

fruHistoryClass

OID 1.3.6.1.4.1.1588.2.1.2.1.6.1.2

Description The type of the FRU object related to the event. Possible values are:

other (1)
unknown (2),
chassis (3),
cp (4),
other-CP (5),
switchblade (6),
wwn (7),
powerSupply (8),
fan (9)

fruHistoryObjectNum

OID 1.3.6.1.4.1.1588.2.1.2.1.6.1.3

Description The slot number of the blade, and the unit number for everything else.

fruHistoryEvent

OID 1.3.6.1.4.1.1588.2.1.2.1.6.1.4

Description The type of the FRU event. Possible values are:

added (1)
removed (2)
invalid (3)

fruHistoryTime

OID 1.3.6.1.4.1.1588.2.1.2.1.6.1.5

Description The time at which this event happened.

fruHistoryPartNum

OID 1.3.6.1.4.1.1588.2.1.2.1.6.1.6

Description The Brocade part number of the FRU object.

fruHistorySerialNum

OID 1.3.6.1.4.1.1588.2.1.2.1.6.1.7

Description The Brocade serial number of the FRU object.

Control Processor (CP) Table

cpTable

OID 1.3.6.1.4.1.1588.2.1.2.1.7

Description This table lists all the Control Processors (CPs) in the system.

cpEntry

OID 1.3.6.1.4.1.1588.2.1.2.1.7.1

Description An entry represents a single CP in the system.

Index entPhysicalIndex

cpStatus

OID 1.3.6.1.4.1.1588.2.1.2.1.7.1.1

Description The current status of the CP. Possible values are:

other (1)
unknown (2)
active (3)
standby (4)
failed (5)

cpIpAddress

OID 1.3.6.1.4.1.1588.2.1.2.1.7.1.2

Description The IP Address of the Ethernet interface of this CP.

cpIpMask

OID 1.3.6.1.4.1.1588.2.1.2.1.7.1.3

Description The IP Mask of the Ethernet interface of this CP.

cpIpGateway

OID 1.3.6.1.4.1.1588.2.1.2.1.7.1.4

Description The IP Address of the IP Gateway for this CP.

cpLastEvent

OID 1.3.6.1.4.1.1588.2.1.2.1.7.1.5

Description The last event related to this CP. Possible values are:

haSync (1)
haOutSync (2)
cpFaulty (3)
cpHealthy (4)
configChange (5)
failOverStart (6)
failOverDone (7)
firmwareCommit (8)
firmwareUpgrade (9)
other (10)
unknown (11)

Note: haSync = HA state on both is in sync; haOutSync = HA state on both is out of sync

haMIBTraps

This section lists the HA-MIB traps.

fruStatusChanged

OID 1.3.6.1.4.1.1588.2.1.2.2.0.1

Objects entPhysicalName
fruStatus

Status Current

Description This trap is sent when the status of any FRU object changes.

cpStatusChanged

OID 1.3.6.1.4.1.1588.2.1.2.2.0.2

Objects cpStatus
cpLastEvent
swID
swSsn

Status Current

Description This trap is sent when status of any CP object changes.

Note: The cpLastEvent variable provides the information about the event that occurred.

fruHistoryTrap

OID	1.3.6.1.4.1.1588.2.1.2.2.0.3
Objects	fruHistoryClass fruHistoryObjectNum fruHistoryEvent fruHistoryTime fruHistoryPartNum fruHistorySerialNum
Status	Current
Description	This trap is sent when a FRU is added or removed.

Section

III

Fibre Alliance MIB

This section provides the following information:

- Chapter 6, *Fibre Alliance MIB Objects*

Fibre Alliance MIB Objects

Chapter 6

This chapter contains descriptions and other information that is specific to Fibre Alliance MIB (FCMGMT-MIB) object types, including the following:

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 groupings:

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

FCMGMT-MIB System Organization of MIB Objects

Figure 6-1 through Figure 6-3 depict the organization and structure of FCMGMT-MIB.

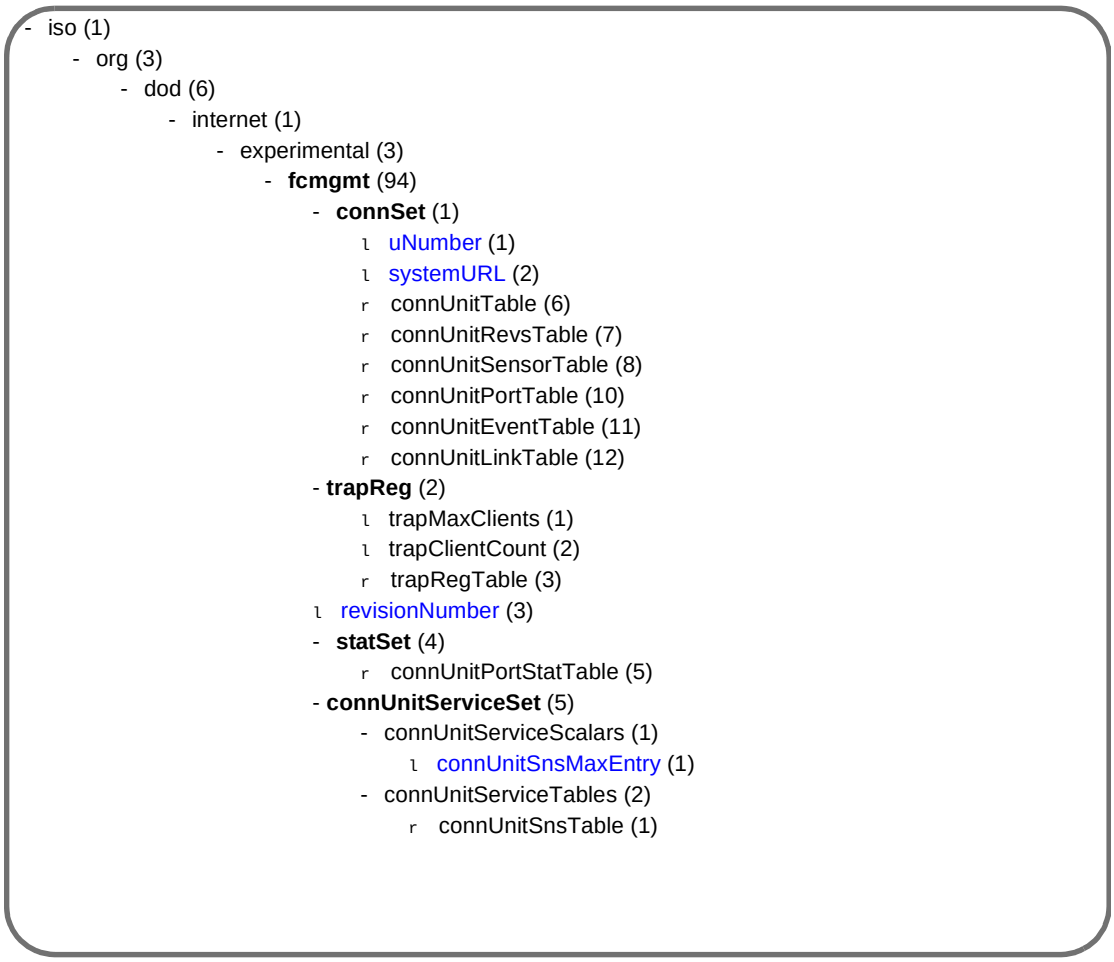


Figure 6-1 FCMGMT-MIB Overall Tree Structure

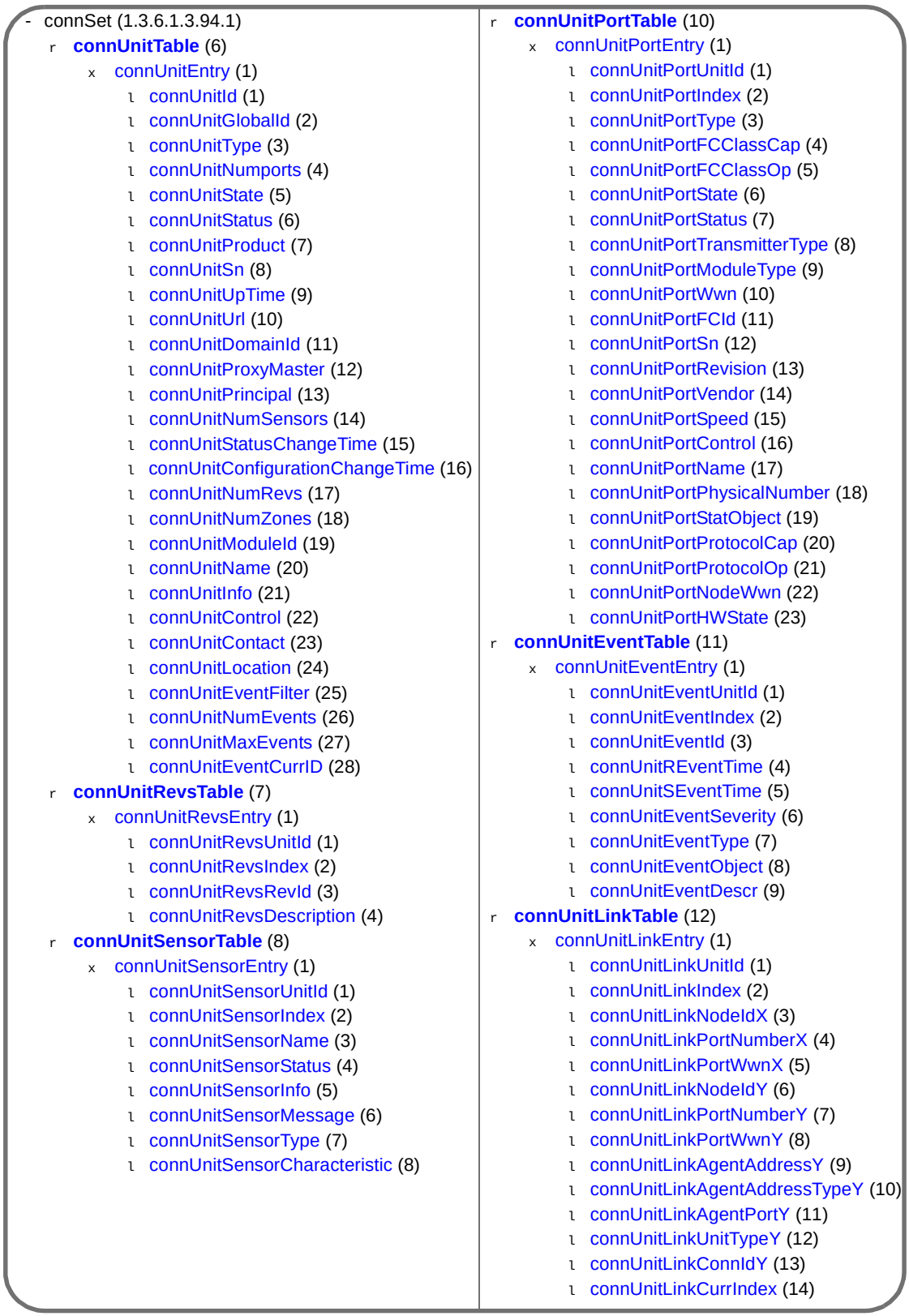


Figure 6-2 Tree Structure for connSet Tables

Figure 6-3 Tree Structure for trapReg, connUnitSns, and connUnitPortStat Tables

Definitions for FCMGMT-MIB

The following definitions are used for FCMGMT-MIB.

Table 6-1 FCMGMT-MIB Definitions

Type Definition	Value	Description
FcNameId	Octet String of size 8	
FcGlobalId	Octet String of size 16	
FcAddressId	Octet String of size 3	
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 the following. (Not 3–14) 3 (hub): Passive connectivity unit supporting loop protocol. 4 (switch): Active connectivity unit supporting multiple protocols. 5 (gateway): Unit that converts not only 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): For example, disk, CD, tape. 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 Group

Implementation of the Connectivity group is mandatory for all systems.

uNumber

OID 1.3.6.1.3.94.1.1

Description The number of connectivity units present on this system (represented by this agent). May be a count of the boards in a chassis or the number of full boxes in a rack.

Note: The connectivity unit is mapped to a switch.
uNumber is always set to 1.

systemURL

OID 1.3.6.1.3.94.1.2

Description The top-level URL of the system. If it does not exist the value is 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 globalid
SERIALNO	Replace with serial number

Note: The expected value for system URL.0 is:

- "http://{a.b.c.d}"

  where {a.b.c.d} is the IP address of the switch if a Web Tools license is available.

- "" (null)

  where "" is used when a Web Tools license is not available.

Connectivity Unit Table

connUnitTable

OID 1.3.6.1.3.94.1.6

Description 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

OID 1.3.6.1.3.94.1.6.1

Description A connectivity unit entry containing objects for a particular unit.

Index connUnitId

connUnitId

OID 1.3.6.1.3.94.1.6.1.1

Description The unique identification for this connectivity unit among those within this proxy domain. The value must be unique within the proxy domain because it is the index variable for connUnitTable. The value assigned to a given connectivity unit should be persistent across agent and unit resets. It should be the same as connUnitGlobalId if connUnitGlobalId is known and stable.

Note: Brocade's implementation maps the switch WWN to the top 8 octets of this variable and sets the remaining lower 8 octets to 0.

To specify a particular instance of any columnar variable in the connUnitEntry (such as connUnitType), specify the instance identifier as a 16-octet value.

Example:

```
connUnitType.10.0.0.60.69.4.11.19.0.0.0.0.0.0.0.0
```

where the object instance identifier consists of 16 octets, each representing the byte value from high byte order to low byte order of this 128-bit integer.

---

connUnitGlobalId

OID 1.3.6.1.3.94.1.6.1.2

Description An optional global-scope identifier for this connectivity unit. It must be a WWN for this connectivity unit or 16 octets of value zero.

The following characteristics are required:

- WWN formats requiring fewer than 16 octets must be extended to 16 octets with trailing zero octets.
- If a WWN is used for connUnitId, the same WWN must be used for connUnitGlobalId.

When a non-zero value is provided, the following characteristics are strongly recommended:

- It should be persistent across agent and unit resets.
- It should be globally unique.
- It should be one of these FC-PH/PH3 formats:
  - IEEE (NAA=1)
  - IEEE Extended (NAA=2)
  - IEEE Registered (NAA=5)
  - IEEE Registered extended (NAA=6)

Use of the IEEE formats allows any IEEE-registered vendor to assure global uniqueness independently. The following are some references on IEEE WWN formats:

```
http://standards.ieee.org/regauth/oui/tutorials/fibreformat.html
```

```
http://standards.ieee.org/regauth/oui/tutorials/
fibrecomp_id.html
```

If one or more WWNs are associated with the connUnit via other management methods, one of them should be used for connUnitGlobalId.

If a WWN is not assigned specifically to the connUnit, there is some merit, though not a requirement, to using a WWN assigned to (one of) its permanently attached FC/LAN interfaces. This cannot risk uniqueness, though.

As a counterexample, if your agent runs in a host and the host has an HBA, it is quite possible that agent, host, and HBA are all distinct connUnits, so the host and agent cannot use the WWN of the HBA.

Example:

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.

Note: Brocade's implementation maps the switch WWN to the top 8 octets of this variable and sets the remaining lower 8 octets to 0.

Example:

If Brocade's switch WWN is 10:0:0:60:69:10:02:18, then SNMP GET on

```
connUnitGlobalId.10.0.0.60.69.10.02.18.0.0.0.0.0.0.0.0
```

returns:

```
10 00 00 60 69 10 02 18 00 00 00 00 00 00 00 00
```

connUnitType

OID 1.3.6.1.3.94.1.6.1.3

Description The type of this connectivity unit.

Note: Set to 4 (switch).

connUnitNumports

OID 1.3.6.1.3.94.1.6.1.4

Description Number of physical ports (between 0 and the *maximum number of system supported ports*) in the connectivity unit (internal/embedded, external).

Note: To determine the *maximum number of system supported ports*, do an SNMP GET on swFcPortCapacity.

SilkWorm 12000: 0 to *maximum number of system supported ports*.

connUnitState

OID 1.3.6.1.3.94.1.6.1.5

Description Overall state of the connectivity unit. Possible values are:

unknown (1):
online (2): Set the state to online.
offline (3): Set the state to offline.

Note: Mapped as follows:

switchState(ONLINE) 2 (online)

switchState(not ONLINE) 3 (offline, testing, faulty)

---

connUnitStatus

OID 1.3.6.1.3.94.1.6.1.6

Description Overall status of the connectivity unit. Possible values are:

unknown (1)
unused (2)
ok (3)
warning (4): Needs attention.
failed (5)

Note: switchStatus maps directly as follows:

connUnitStatus	switchStatus
1 (unknown)	Unknown
2 (unused)	Unmonitored
3 (ok)	Healthy/ok
4 (warning)	Marginal/Warning
5 (failed)	Down/Failed

---

connUnitProduct

OID 1.3.6.1.3.94.1.6.1.7

Description The connectivity unit vendor's product model name.

Note: This is the same as for sysDescr (set for as many as 79 bytes).

---

connUnitSn

OID 1.3.6.1.3.94.1.6.1.8

Description The serial number for this connectivity unit.

Note: Set to the SSN (which by default is the WWN), but is changeable through telnet.

---

connUnitUpTime

OID 1.3.6.1.3.94.1.6.1.9

Description The number of centiseconds since the last unit initialization.

Note: Set when connUnitTable is initialized.

connUnitUrl

OID 1.3.6.1.3.94.1.6.1.10

Description URL to launch a management application, if applicable. Otherwise 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.

Note: (Same as systemURL.) The expected value for connUnitURL.0 is:

"http://{a.b.c.d}"

where {a.b.c.d} is the IP address of the switch if Web Tools license is available.

"" (null)

where "" is the IP address of the switch if Web Tools license is not available.

connUnitDomainId

OID 1.3.6.1.3.94.1.6.1.11

Description 24-bit fibre channel address ID of this connectivity unit, right justified with leading zeros if required. If this value is not applicable, return all bits set to one.

Note: Set to the switch domain ID (as per FC-SW).

connUnitProxyMaster

OID 1.3.6.1.3.94.1.6.1.12

Description A value of "yes" means this is the proxy master unit for a set of managed units. Possible values are:

unknown (1)
no (2)
yes (3)

Example:

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.

Note: Set to 3 (yes).

connUnitPrincipal

OID 1.3.6.1.3.94.1.6.1.13

Description Inticates whether this connectivity unit is the principal unit within the group of fabric elements. If this value is not applicable, return unknown. Possible values are:

unknown (1)
no (2)
yes (3)

Note: If the switch is principal, this is set to 3 (yes), otherwise, it is set to 2 (no).

connUnitNumSensors

OID 1.3.6.1.3.94.1.6.1.14

Description Number of sensors (between 0 and *maximum number of sensors*) in the connUnitSensorTable.

Note: **SilkWorm 12000**: This value is between 0 and 62. (The configuations for this switch vary too greatly to list them for each specific type of sensor.)

SilkWorm 3800: This value is between 0 and 13 (tempreture = 6, fan = 3, power supply = 4).

connUnitStatusChangeTime

OID 1.3.6.1.3.94.1.6.1.15

Description The sysuptime timestamp (in centiseconds) at which the last status change occurred for any members of the set. In other words, this is the latest timestamp that connUnitStatus or connUnitPortStatus changed.

connUnitConfigurationChangeTime

OID 1.3.6.1.3.94.1.6.1.16

Description The sysuptime timestamp (in centiseconds) at which the last configuration change occurred for any members of the set. In other words, this is the latest timestamp of flash memory update.This represents a union of change information for connUnitConfigurationChangeTime

connUnitNumRevs

OID 1.3.6.1.3.94.1.6.1.17

Description The number of revisions in the connUnitRevsTable.

Note: Set to 2.

connUnitNumZones

OID 1.3.6.1.3.94.1.6.1.18

Description Number of zones defined in connUnitZoneTable.

Note: Set to 0 because the zone table is not supported.

connUnitModuleId

OID 1.3.6.1.3.94.1.6.1.19

Description 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 zeros if this connUnit is not part of a module.

Note: Set to the WWN of the switch.

connUnitName

OID 1.3.6.1.3.94.1.6.1.20

Description A display string containing a name for this connectivity unit. This object value should be persistent between boots.

Note: Set to switchName/sysName.

connUnitInfo

OID 1.3.6.1.3.94.1.6.1.21

Description A display string containing information about this connectivity unit. This object value should be persistent between boots.

Note: Set to sysDescr and Read-only.

connUnitControl

OID 1.3.6.1.3.94.1.6.1.22

Description Controls the addressed connUnit. Each implementation may choose not to allow any or all of these values on a SET. Possible values are:

unknown (1)

invalid (2)

resetConnUnitColdStart (3): Reboot. Performs a switch reboot.

resetConnUnitWarmStart (4): Fastboot. The addressed unit performs a Warm Start reset.

offlineConnUnit (5): Disable switch. The addressed unit puts itself into an implementation dependant offline state. In general, if a unit is in an offline state, it cannot be used to perform meaningful fibre channel work.

onlineConnUnit (6): Enable switch. The addressed unit puts itself into an implementation dependant online state. In general, if a unit is in an online state, it is capable of performing meaningful fibre channel work.

Cold Start and Warm Start are as defined in MIB-II and are not meant to be a factory reset.

This is similar to swAdmStatus:

- resetConnunitColdStart = reboot
- resetConnunitWarmStart = fastboot
- offlineConnUnit = disable switch
- onlineConnUnit = enable switch
- default after reboot = unknown

The declaration 1 (unknown) maps to the default value upon rebooting, and 2 (invalid) is not applicable.

Note: Declarations 3 and 4 perform the same operation—a cold boot of the switch.

connUnitContact

OID 1.3.6.1.3.94.1.6.1.23

Description Contact information for this connectivity unit.

Note: Displays the same value as in sysContact. Changing the value in this variable causes the value in sysContact to also be changed.

connUnitLocation

OID 1.3.6.1.3.94.1.6.1.24

Description Location information for this connectivity unit.

Note: Displays the same value as in sysLocation.

connUnitEventFilter

OID 1.3.6.1.3.94.1.6.1.25

Description This value defines the event severity that is logged by this connectivity unit. All events of severity less than or equal to connUnitEventFilter are logged in connUnitEventTable.

Note: Returns (debug).

connUnitNumEvents

OID 1.3.6.1.3.94.1.6.1.26

Description Number of events currently in the connUnitEventTable.

Note: Returns the number of events that are currently in buffer (between 0 and 2048).

connUnitMaxEvents

OID 1.3.6.1.3.94.1.6.1.27

Description Maximum number of events (2048) that can be defined in connUnitEventTable.

connUnitEventCurrID

OID 1.3.6.1.3.94.1.6.1.28

Description The last used event ID (connUnitEventId).

Note: Maximum is 2147483647 (2^{31}-1).

Connectivity Unit Revisions Table

connUnitRevsTable

OID 1.3.6.1.3.94.1.7

Description Table of the revisions supported by connectivity units managed by this agent.

Note: This table lists the versions of hardware and software elements in the switch.

connUnitRevsEntry

OID 1.3.6.1.3.94.1.7.1

Description Table of the revisions supported by connectivity units managed by this agent.

Index connUnitRevsUnitId
connUnitRevsIndex

connUnitRevsUnitId

OID 1.3.6.1.3.94.1.7.1.1

Description The connUnitId of the connectivity unit that contains this revision table.

connUnitRevsIndex

OID 1.3.6.1.3.94.1.7.1.2

Description A unique value among all connUnitRevsEntrys with the same value of connUnitRevsUnitId, in the range between 1 and connUnitNumRevs.

Note: Index 1 returns the hardware version. Index 2 returns the software version.

connUnitRevsRevId

OID 1.3.6.1.3.94.1.7.1.3

Description A vendor-specific string identifying a revision of a component of the connUnit indexed by connUnitRevsUnitId.

Note: Index 1 returns the switchType from telnet command **switchShow**. Index 2 returns the Fabric OS version from telnet command **version**, for example, v2.6.

connUnitRevsDescription

OID 1.3.6.1.3.94.1.7.1.4

Description Description of a component to which the revision corresponds.

Note: Index 1 returns the hardware version. Index 2 returns the software version.

Connectivity Unit Sensor Table

connUnitSensorTable

OID 1.3.6.1.3.94.1.8

Description Table of the sensors supported by each connectivity unit managed by this agent.

connUnitSensorEntry

OID 1.3.6.1.3.94.1.8.1

Description Each entry contains the information for a specific sensor.

Index connUnitSensorUnitId
connUnitSensorIndex

connUnitSensorUnitId

OID 1.3.6.1.3.94.1.8.1.1

Description The connUnitId of the connectivity unit that contains this sensor table.

Note: Set to connUnitId.

connUnitSensorIndex

OID 1.3.6.1.3.94.1.8.1.2

Description A unique value among all connUnitSensorEntrys with the same value of connUnitSensorUnitId, in the range between 1 and the return value from connUnitNumSensor.

connUnitSensorName

OID 1.3.6.1.3.94.1.8.1.3

Description A textual identification of the sensor intended primarily for operator use.

Note: Each contains the name of sensor in textual format. (For example, Temp #1, Fan #2, and so on.)

connUnitSensorStatus

OID 1.3.6.1.3.94.1.8.1.4

Description The status indicated by the sensor. Possible values are:

unknown (1)	
other (2)	
ok (3):	The sensor indicates okay.
warning (4):	The sensor indicates a warning.
failed (5):	The sensor indicates failure.

Note: Nominal = 3 (ok). Not nominal = 5 (failed).

connUnitSensorInfo

OID 1.3.6.1.3.94.1.8.1.5

Description Miscellaneous static information about the sensor such as its serial number.

Note: Each contains textual information about the sensor.
Returns the serial ID if this is for the power supply. Otherwise, it returns Null.

connUnitSensorMessage

OID 1.3.6.1.3.94.1.8.1.6

Description This describes the status of the sensor as a message. It may also provide more resolution on the sensor indication, for example, Cover temperature 1503K, above nominal operating range.

Note: Each contains the sensor status (and reading if applicable) in textual format.

connUnitSensorType

OID 1.3.6.1.3.94.1.8.1.7

Description The type of component being monitored by this sensor. Possible values are:

unknown (1)
other (2)
battery (3)
fan (4)
power-supply (5)
transmitter (6)
enclosure (7)
board (8)
receiver (9)

Note: The following mapping is for each individual sensor, where applicable:

swSensorType	connUnitSensorType
1 (temperature)	8 (board)
2 (fan)	4 (fan)
3 (power-supply)	5 (power supply)

connUnitSensorCharacteristic

OID 1.3.6.1.3.94.1.8.1.8

Description The characteristics being monitored by this sensor. Possible values are:

unknown (1)
other (2)
temperature (3)
pressure (4)
emf (5)
currentValue (6): Current is a keyword.
airflow (7)
frequency (8)
power (9)
door (10) (Not supported in Fabric OS v2.6.1.)

Note: The following mapping is for each individual sensor, where applicable:

swSensorType	connUnitSensorCharacteristic
1 (temperature)	3 (temperature)
2 (fan)	7 (airflow)
3 (power-supply)	9 (power)

Connectivity Unit Port Table

connUnitPortTable

OID 1.3.6.1.3.94.1.10

Description Generic information on ports for a specific connUnit.

connUnitPortEntry

OID 1.3.6.1.3.94.1.10.1

Description Each entry contains the information for a specific port.

Index connUnitPortUnitId
connUnitPortIndex

connUnitPortUnitId

OID 1.3.6.1.3.94.1.10.1.1

Description The connUnitId of the connectivity unit that contains this port.

Note: Same value as connUnitId.

connUnitPortIndex

OID 1.3.6.1.3.94.1.10.1.2

Description Number of physical ports between (0 and *maximum number of system supported ports*) in the connectivity unit (internal/embedded, external).

Note: To determine the *maximum number of system supported ports*, do an SNMPget on swFcPortCapacity
SilkWorm 12000: 0 to *maximum number of system supported ports.*

connUnitPortType

OID 1.3.6.1.3.94.1.10.1.3

Description The port type. Possible values are:

unknown (1)	
other (2)	
not-present (3)	
hub-port (4)	
n-port (5):	End port for fabric.
l-port (6):	End port for loop.
fl-port (7):	Public loop.
f-port (8):	Fabric port.
e-port (9):	Fabric expansion port.
g-port (10):	Generic fabric port.
domain-ctl (11):	Domain controller.
hub-controller (12)	
scsi (13):	Parallel SCSI port.
escon (14)	
lan (15)	
wan (16)	
ac (17):	AC power line. (Not supported in Fabric OS v2.6.1.)
dc (18):	DC power line. (Not supported in Fabric OS v2.6.1)
ssa (19):	Serial storage architecture. (Not supported in Fabric OS v2.6.1.)

Note: Mapped as:

U_port = 10 (g-port)
F_port = 8 (f-port)
FL_port = 7 (fl-port)
E_port = 9 (e-port)

connUnitPortFCClassCap

OID 1.3.6.1.3.94.1.10.1.4

Description Bit mask that specifies the classes of service capability of this port. If this is not applicable, return all bits set to zero.

The bits have the following definition:

unknown	-	0
class-f	-	1
class-one	-	2
class-two	-	4
class-three	-	8
class-four	-	16
class-five	-	32
class-six	-	64

Note: For an F or FL_port, this value is 0x000C. For a G or E_port, this value is 0x000D.

connUnitPortFCClassOp

OID 1.3.6.1.3.94.1.10.1.5

Description Bit mask that specifies the classes of service that are currently operational. If this is not applicable, return all bits set to zero. This object has the same definition as connUnitPortFCClassCap.

Note: For an F or FL_port, this value is 0x000C. For a G or E_port, this value is 0x000D.

connUnitPortState

OID 1.3.6.1.3.94.1.10.1.6

Description The state of the port hardware. Possible values are:

unavailable (1):	Do not use.
online (2):	Available for meaningful work.
offline (3):	Not available for meaningful work.
bypassed (4):	No longer used.
diagnostics (5):	Map to your testing. (Not supported in Fabric OS v2.6.1.)

Note: For an E, F, or FL_port, the value is online. For a U_port, the value is offline (disabled, testing, faulted).

connUnitPortStatus

OID 1.3.6.1.3.94.1.10.1.7

Description An overall protocol status for the port. Possible values are:

unknown (1)	
unused (2):	Device cannot report this status.
ready (3):	FCAL Loop or FCPH Link reset protocol initialization has completed.
warning (4):	Do not use.
failure (5):	Do not use.
notparticipating (6):	Loop not participating and does not have a loop address.
initializing (7):	Protocol is proceeding.
bypass (8):	Do not use.
ols (9):	FCP offline status. (Not supported in Fabric OS v2.6.1)

Note: For an E, F, or FL_port, the value is 3 (ok). For a U_port, the value is 2 (unused) if not faulty with GBIC, 3 (warning) if not faulty but no GBIC, or 5 (failure) if faulty.

connUnitPortTransmitterType

OID 1.3.6.1.3.94.1.10.1.8

Description The technology of the port transceiver. Possible values are:

unknown (1)	
other (2)	
unused (3)	
shortwave (4)	
longwave (5)	
copper (6)	
scsi (7)	
longwaveNoOFC (8)	
shortwaveNoOFC (9)	
longwaveLED (10)	
ssa (11)	(Not supported in Fabric OS v2.6.1.)

Note: For an external FC_port, this value should be 9 (shortwaveNoOFC), 8 (longwaveNoOFC), or 6 (copper).

connUnitPortModuleType

OID 1.3.6.1.3.94.1.10.1.9

Description The module type of the port connector. Possible values are:

unknown (1)
other (2)
gbic (3)
embedded (4): Fixed. (oneXnine)
glm (5)
gbicSerialId (6)
gbicNoSerialId (7)
gbicNotInstalled (8)
smallFormFactor (9)

Note: For an external FC_port with GBIC, this value should be 6 (gbicSerialId) or 7 (gbicNoSerialId). For an external FC_port without GBIC, this value is set to 8 (gbicNotInstalled).

connUnitPortWwn

OID 1.3.6.1.3.94.1.10.1.10

Description The World Wide Name of the port if applicable, otherwise empty string.

This is in IEEE Extended format, and the extension contains the internal port number of each port.

Note: The internal port number is 1 less than the port index.
Example:
If the switch has WWN 10:00:00:60:69:10:02:18, then port numbers 0 and 6 have WWN 20:00:00:60:69:10:02:18 and 20:06:00:60:69:10:02:18 respectively. However, the embedded port has WWN 10:00:00:60:69:10:02:18, the same as the switch.

connUnitPortFCId

OID 1.3.6.1.3.94.1.10.1.11

Description This is the assigned fibre channel ID of this port. This value is expected to be a Big Endian value of 24 bits. If this is a loop, then it is the ALPA that is connected. If this is an E_port, then it contains only the domain ID left justified, zero filled. If this port does not have a fibre channel address, return all bits set to 1.

Note: 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 (alpa = 0). For a U or E_port, this is similar to F_port.

connUnitPortSn

OID 1.3.6.1.3.94.1.10.1.12

Description The serial number of the unit (for example, for a GBIC). If this is not applicable, return empty string.

Note: If the GBIC has a serial ID, the return value is the GBIC part number. Otherwise the return value is Null.

connUnitPortRevision

OID 1.3.6.1.3.94.1.10.1.13

Description The port revision (for example, GBIC).

Note: If the GBIC has a serial ID, this returns the GBIC revision number. Otherwise it returns a Null value.

connUnitPortVendor

OID 1.3.6.1.3.94.1.10.1.14

Description The port vendor (for example, for a GBIC).

Note: If the GBIC has a serial ID, this returns the GBIC vendor name. Otherwise it returns a Null value.

connUnitPortSpeed

OID 1.3.6.1.3.94.1.10.1.15

Description The speed of the port in kilobytes per second.

Note: The valid values for Brocade switch **SilkWorm 12000**: 125,000 or 250,000

connUnitPortControl

OID 1.3.6.1.3.94.1.10.1.16

Description Controls the addressed connUnit's port.

Valid commands are:

- resetConnUnitPort:

  If the addressed connUnit allows this operation to be performed to this port, the addressed port performs a vendor-specific reset operation. Examples of these operations are:

  - The Link Reset protocol.
  - The Loop Initialization protocol.
  - Re-synchronization occurring between the transceiver in the addressed port to the transceiver that the port is connected to.
- bypassConnUnitPort:

  If the addressed connUnit allows this operation to be performed to this port, the addressed port performs a vendor-specific "bypass" operation. Examples of these operations are:

  - Transitioning from online to offline.
  - A request (NON-PARTICIPATING) command to the Loop port state machine.
  - Removal of the port from an arbitrated loop by a hub.
- unbypassConnUnitPort:

  If the addressed connUnit allows this operation to be performed to this port, the addressed port performs a vendor-specific "unbypass" operation. Examples of these operations are:

  - The Link Failure protocol.
  - A request (PARTICIPATING) command to the Loop port state machine.
  - Addition of the port to an arbitrated loop by a hub.
- offlineConnUnitPort:

  If the addressed connUnit allows this operation to be performed to this port, the addressed port performs a vendor-specific offline operation. Examples of these operations are:

  - Disabling a port's transceiver
  - The Link Failure protocol
  - Request (NON-PARTICIPATING) command to the Loop port state machine removal of the port from an arbitrated loop by a hub

- onlineConnUnitPort:

  If the addressed connUnit allows this operation to be performed to this port, the addressed port performs a vendor-specific online operation. Examples of these operations are:

  - Enabling a port's transceiver
  - The Link Failure protocol, request (PARTICIPATING) command to the Loop port state machine
  - Addition of the port from an arbitrated loop by a hub.

Each implementation may choose not to allow any or all of these values on a SET.

If the Management Station uses in-band communication (FC-IP) with the switch, either of the two following action may result in a loss of in-band communication with the switch:

- Disabling the FC port that is connected to the Management Station.
- Disabling the embedded port.

Note: Return values are:

resetConnUnitPort	- portDisable (F or E_port, loop for U_port)
bypassConnUnitPort	- portDisable (FL_port)
unbypassConnUnitPort	- portEnable (FL_port)
offlineConnUnitPort	- portDisable (E, F, FL_port)
onlineConnUnitPort	- portEnable (U)
resetConnUnitPortCounters (unknown)	- clear the port stats counter. When rebooted, this defaults to 1

connUnitPortName

OID 1.3.6.1.3.94.1.10.1.17

Description A string describing the addressed port.

Note: This object is read-only for Brocade switches.

connUnitPortPhysicalNumber

OID 1.3.6.1.3.94.1.10.1.18

Description This is the internal port number by which this port is known. In many implementations, this should be the same as connUnitPortIndex. Some implementations may have an internal port representation not compatible with the rules for table indices. In that case, provide the internal representation of this port in this object. This value may also be used in the connUnitLinkPortNumberX or connUnitLinkPortNumberY objects of the connUnitLinkTable.

Note: The internal port numbers for Brocade switch
SilkWorm 12000: 0 through *maximum number of ports*.

connUnitPortStatObject

OID 1.3.6.1.3.94.1.10.1.19

Description 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 zero, then there are no statistics available for this port. The port type information helps identify the statistics objects that are found in the table. From this point, one would do a getnext to get the next statistics object. When the first part of the OID changes, the end of table is reached.

Note: Mapped to connUnitPortStatFabricUnitId.

connUnitPortProtocolCap

Note: Not supported in Fabric OS v2.6.1.

OID 1.3.6.1.3.94.1.10.1.20

Description This is the bit mask that specifies the driver level protocol capability of this port.

If this is not applicable, return all bits set to zero.

Return value = 07F

Note: The bits have the following definition:

0 = unknown
1 = Loop
2 = Fabric
4 = SCSI
8 = TCP/IP
16 = VI
32 = FICON

connUnitPortProtocolOp

Note: Not supported in Fabric OS v2.6.1.

OID 1.3.6.1.3.94.1.10.1.21

Description This is the bit mask that specifies the driver level protocol(s) that are currently operational.

Return value = 07F

Note: If this is not applicable, return all bits set to zero. The bits have the following definition:

0 = unknown
1 = Loop
2 = Fabric
4 = SCSI
8 = TCP/IP
16 = VI
32 = FICON

connUnitPortNodeWwn

Note: Not supported in Fabric OS v2.6.1.

OID 1.3.6.1.3.94.1.10.1.22

Description The node World Wide Name of the port if applicable, otherwise empty string.

All related ports in within a group should have the same node WWN value. The container is defined as the largest physical entity.

Example:

All ports on HBAs on a host will have the same Node WWN. All ports on the same storage subsystem will have the same Node WWN.

This is in IEEE Extended format and the extension contains the internal port number of each port.

Note: The internal port number is 1 less than the port index.

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.

connUnitPortHWState

Note: Not supported in Fabric OS v2.6.1.

OID 1.3.6.1.3.94.1.10.1.23

Description The state of the port as detected by the hardware. Possible values are:

unknown (1)	
failed (2):	Port failed diagnostics (port_flt_state).
bypassed (3):	FCAL bypass, loop only (not used).
active (4):	Connected to a device (light and sync are present).
loopback (5):	Port in ext loopback (loopback state).
txfault (6):	Transmitter fault (bad GBIC).
noMedia (7):	Media not installed (GBIC removed).
linkDown (8):	Waiting for activity—rx sync (light with no sync)

Connectivity Unit Event Table

connUnitEventTable

OID 1.3.6.1.3.94.1.11

Description The table of connectivity unit events. Errors, warnings, and information should be reported in this table.

Note: (v3.0 only) This table contains the 64 most-recent event log entries.
(v4.0 only) This table contains the 255 most-recent event log entries.

connUnitEventEntry

OID 1.3.6.1.3.94.1.11.1

Description Each entry contains information on a specific event for the given connectivity unit.

Index connUnitEventUnitId
connUnitEventIndex

connUnitEventUnitId

OID 1.3.6.1.3.94.1.11.1.1

Description The connUnitId of the connectivity unit that contains this event table.

Note: Same as connUnitId.

connUnitEventIndex

OID 1.3.6.1.3.94.1.11.1.2

Description Each connectivity unit has its own event buffer. As it wraps, it may 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 may be events that may not be contained in the agent's internal event buffer.

Example:

An agent may read events 50-75.

At the next read interval, connUnitEventCurrID is 189. If the management application tries to read event index 76, and the agent's internal buffer is 100 entries maximum, event index 76 is no longer available.

The index value is an incrementing integer starting from one (1) every time there is a table reset. On table reset, all contents are emptied and all indices are set to zero (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 one (1) again.

Note: Mapped to swEventIndex.

connUnitEventId

OID 1.3.6.1.3.94.1.11.1.3

Description 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 zero. This value is set back to zero at reset. The relationship of this value to the index is that internal event ID may represent a smaller number than a 32 bit integer (for example, maximum 100 entries) and would only have a value range up to connUnitMaxEvents.

Note: Same function as connUnitEventIndex.

connUnitREventTime

OID 1.3.6.1.3.94.1.11.1.4

Description This is the real time when the event occurred. It has the following format.

DDMMYYYY HHMMSS

where:

DD = day number
MM = month number
YYYY = year
HH = hours
MM = minutes
SS = seconds

If not applicable, return a NULL string.

connUnitSEventTime

OID 1.3.6.1.3.94.1.11.1.5

Description This is the sysuptime timestamp when the event occurred.

connUnitEventSeverity

OID 1.3.6.1.3.94.1.11.1.6

Description The event severity level. The mapping between errorlog severity level and this variable is:

Error log	FA-MIB
none (0)	unknown (1)
Critical (1)	critical (4)
Error (2)	error (5)
Warning (3)	warning (6)
Informational (4)	info (8)
Debug (5)	debug (9)

Note: See FcEventSeverity in Table 6-1 on page 6-5 for more information about severity.

connUnitEventType

OID 1.3.6.1.3.94.1.11.1.7

Description The type of this event. Possible values are:

unknown (1)
other (2)
status (3)
configuration (4)
topology (5)

Note: Always set to 2 (other).

connUnitEventObject

OID 1.3.6.1.3.94.1.11.1.8

Description This is used with the connUnitEventType to identify which object the event refers to. It can be the OID of a connectivity unit or of another object, like connUnitPortStatus[...].

Note: Always set to Null.

connUnitEventDescr

OID 1.3.6.1.3.94.1.11.1.9

Description The description of the event.

Note: Same as the string shown in the telnet command **errShow**.

Connectivity Unit Link Table

connUnitLinkTable

OID 1.3.6.1.3.94.1.12

Description A list of links know to this agent from this connectivity unit to other connectivity units. X = switch data, Y = other end.

Note: 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.

That is, the goal is to assist the management application by mapping the elements of the framework in addition to listing them.

With this goal, the agent should include as much as it possesses about any links from its own connectivity units to others, including links among its own units.

An agent should include partial information about links if it is not able to fully define them in accord with the following structure; however, the information must include either a nonzero connUnitNodeId- or a nonzero connUnitPortWwn - for each end of the link.

If the agent is able to discover links that do not directly attach to members of its agency and its discovery algorithm gives some assurance the links are recently valid, it may include these links.

Link information entered by administrative action may be included even if not validated directly if the link has at least one endpoint in this agency, but should not be included otherwise.

A connectivity unit should fill the table in as best it can. One of the methods to fill this in would be to use the RNID ELS command (ANSI document 99-422v0). This command queries a port for the information needed for the link table.

This table is accessed either directly if the management software has an index value or using "GetNext". The value 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 are defined by the size of the table

For an entry to be considered to be valid, both the X (local) and the Y (remote) need to have one valid value.

connUnitLinkEntry

OID 1.3.6.1.3.94.1.12.1

Description An entry describing a particular link to another.

Index connUnitLinkUnitId
connUnitLinkIndex

connUnitLinkUnitId

OID 1.3.6.1.3.94.1.12.1.1

Description The connUnitId of the connectivity unit that contains this link table.

Note: Set to WWN of the local switch.

connUnitLinkIndex

OID 1.3.6.1.3.94.1.12.1.2

Description 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 zero when the system is reset and the first value to be used is one.

Note: 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 device(s).

connUnitLinkNodeIdX

OID 1.3.6.1.3.94.1.12.1.3

Description 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.

Note: WWN of the local switch.

connUnitLinkPortNumberX

OID 1.3.6.1.3.94.1.12.1.4

Description The port number on the unit specified by connUnitLinkNodeIdX if known, otherwise -1. If the value is nonnegative then it is equal to connUnitPortPhysicalNumber.

Note: ISL: Physical port number of the E-port.
Device: Physical port # to which the device is connected.

connUnitLinkPortWwnX

OID 1.3.6.1.3.94.1.12.1.5

Description The port WWN of the unit specified by connUnitLinkNodeIdX if known, otherwise 16 octets of binary 0.

Note: WWN of the port to which the device is connected.

connUnitLinkNodeIdY

OID 1.3.6.1.3.94.1.12.1.6

Description 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.

Note: ISL: WWN of the remote switch.
Device: Node name of the device.

connUnitLinkPortNumberY

OID 1.3.6.1.3.94.1.12.1.7

Description The port number on the unit specified by connUnitLinkNodeIdY if known, otherwise -1. If the value is nonnegative then it is equal to connUnitPortPhysicalNumber.

Note: ISL: Physical port number of the remote port.
Device: -1.

connUnitLinkPortWwnY

OID 1.3.6.1.3.94.1.12.1.8

Description The port WWN on the unit specified by connUnitLinkNodeIdY if known, otherwise 16 octets of binary 0.

Note: ISL: WWN of the remote port.
Device: *Port name.*

connUnitLinkAgentAddressY

OID 1.3.6.1.3.94.1.12.1.9

Description The address of an FCMGMT MIB agent for the node identified by connUnitLinkNodeIdY, if known; otherwise 16 octets of binary 0.

Note: ISL: IP address (IPv4).
Device: 0 (Null).

connUnitLinkAgentAddressTypeY

OID 1.3.6.1.3.94.1.12.1.10

Description 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).

Note: ISL: Type 2.
Device: 0 (Null).

connUnitLinkAgentPortY

OID 1.3.6.1.3.94.1.12.1.11

Description The IP port number for the agent. This is provided in case the agent is at a non-standard SNMP port.

Note: ISL: IP port.
Device: 0 (Null).

connUnitLinkUnitTypeY

OID 1.3.6.1.3.94.1.12.1.12

Description Type of the FC connectivity unit as defined in connUnitType.
ISL: Switch device.
End devices: End device types based on an FCP Inquiry.

Table 6-2 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			

Note: Brocade does not support hubs.

connUnitLinkConnIdY

OID 1.3.6.1.3.94.1.12.1.13

Description 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 ALPA that is connected. If this is an E_port, then it contains only the domain ID. If not any of those, unknown or cascaded loop, return all bits set to 1.

Note: ISL: Port ID of the remote port.

Device: Port ID of the remote port.

connUnitLinkCurrIndex

Note: Not supported in Fabric OS v2.6.1.

OID 1.3.6.1.3.94.1.12.1.14

Description The last used link index.

Statistics Group

Note: Not supported in Fabric OS v2.6.1.

Note: 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 zero (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 zero at hardware initialization and continue incrementing until end of 63 bits and then wrap to zero.

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

connUnitPortStatTable

OID 1.3.6.1.3.94.4.5

Description A list of statistics for the fabric port types.

connUnitPortStatEntry

OID 1.3.6.1.3.94.4.5.1

Description An entry describing port statistics.

Index connUnitPortStatUnitId
connUnitPortStatIndex

connUnitPortStatUnitId

OID 1.3.6.1.3.94.4.5.1.1

Description The connUnitId of the connectivity unit that contains this port stat table.

connUnitPortStatIndex

OID 1.3.6.1.3.94.4.5.1.2

Description A unique value among all entries in this table, between 0 and connUnitNumPort[connUnitPortUnitId].

connUnitPortStatCountError

OID 1.3.6.1.3.94.4.5.1.3

Description A count of the errors that have occurred on this port.

connUnitPortStatCountTxObjects

OID 1.3.6.1.3.94.4.5.1.4

Description The number of frames/packets/IOs/etc that have been transmitted by this port.

Note: 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 Tx objects.

connUnitPortStatCountRxObjects

OID 1.3.6.1.3.94.4.5.1.5

Description The number of frames/packets/IOs/etc that have been received by this port.

Note: 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 Rx objects.

connUnitPortStatCountTxElements

OID 1.3.6.1.3.94.4.5.1.6

Description The number of octets or bytes that have been transmitted by this port. One second periodic polling of the port. This value is saved and compared with the next polled value to compute net throughput.

Note: For fibre channel, ordered sets are not included in the count.

connUnitPortStatCountRxElements

OID 1.3.6.1.3.94.4.5.1.7

Description The number of octets or bytes that have been received by this port. One second periodic polling of the port. This value is saved and compared with the next polled value to compute net throughput.

Note: For fibre channel, ordered sets are not included in the count.

connUnitPortStatCountBBCreditZero

OID 1.3.6.1.3.94.4.5.1.8

Description The number of transitions in/out of BB credit zero state. The other side is not providing any credit.

Note: This is a fibre channel stat only.

connUnitPortStatCountInputBuffersFull

Note: Not Supported.

OID 1.3.6.1.3.94.4.5.1.9

Description The number of occurrences when all input buffers of a port were full and outbound buffer-to-buffer credit transitioned to zero. There is no credit to provide to other side.

Return Value: 80 0 0 0 0 0 0 0 (Not Supported)

Note: This is a fibre channel stat only.

connUnitPortStatCountFBSYFrames

OID 1.3.6.1.3.94.4.5.1.10

Description The number of times that FBSY was returned to this port as a result of a frame that could not be delivered to the other end of the link. This occurs if either the Fabric or the destination port is temporarily busy. Port can only occur on SOFc1 frames (the frames that establish a connection).

Note: This is a fibre channel only stat. This is the sum of all classes. If you cannot keep the by class counters, then keep the sum counters.

connUnitPortStatCountPBSYFrames

Note: Not Supported.

OID 1.3.6.1.3.94.4.5.1.11

Description The number of times that PBSY was returned to this port as a result of a frame that could not be delivered to the other end of the link. This occurs if the destination port is temporarily busy. PBSY can only occur on SOFc1 frames (the frames that establish a connection).

Return Value: 80 0 0 0 0 0 0 0 (Not Supported)

Note: This is a fibre channel only stat. This is the sum of all classes. If you cannot keep the by class counters, then keep the sum counters.

connUnitPortStatCountFRJTFrames

OID 1.3.6.1.3.94.4.5.1.12

Description The number of times that FRJT was returned to this port as a result of a Frame that was rejected by the fabric.

Note: This is the total for all classes and is a fibre channel only stat.

connUnitPortStatCountPRJTFrames

Note: Not Supported.

OID 1.3.6.1.3.94.4.5.1.13

Description The number of times that FRJT was returned to this port as a result of a Frame that was rejected at the destination N_port.

Return Value: 80 0 0 0 0 0 0 0

Note: This is the total for all classes and is a fibre channel only stat.

connUnitPortStatCountClass1RxFrames

OID 1.3.6.1.3.94.4.5.1.14

Description The number of Class 1 Frames received at this port.

Note: This is a fibre channel only stat.
Brocade does not support Class 1 Frames.

connUnitPortStatCountClass1TxFrames

OID 1.3.6.1.3.94.4.5.1.15

Description The number of Class 1 Frames transmitted out this port.

Note: This is a fibre channel only stat.
Brocade does not support Class 1 Frames.

connUnitPortStatCountClass1FBSYFrames

OID 1.3.6.1.3.94.4.5.1.16

Description 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).

Note: This is a fibre channel only stat.
Brocade does not support Class 1 Frames.

connUnitPortStatCountClass1PBSYFrames

OID 1.3.6.1.3.94.4.5.1.17

Description 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).

Note: This is a fibre channel only stat.
Brocade does not support Class 1 Frames.

connUnitPortStatCountClass1FRJTFrames

OID 1.3.6.1.3.94.4.5.1.18

Description 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.

Note: This is a fibre channel only stat.
Brocade does not support Class 1 Frames.

connUnitPortStatCountClass1PRJTFrames

OID 1.3.6.1.3.94.4.5.1.19

Description 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.

Note: This is a fibre channel only stat.
Brocade does not support Class 1 Frames.

connUnitPortStatCountClass2RxFrames

OID 1.3.6.1.3.94.4.5.1.20

Description The number of Class 2 Frames received at this port.

Note: This is a fibre channel only stat.

connUnitPortStatCountClass2TxFrames

Note: Not Supported.

OID 1.3.6.1.3.94.4.5.1.21

Description The number of Class 2 Frames transmitted out this port.

Return Value: 80 0 0 0 0 0 0 0

Note: This is a fibre channel only stat.

connUnitPortStatCountClass2FBSYFrames

Note: Not Supported

OID 1.3.6.1.3.94.4.5.1.22

Description The number of times that FBSY 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 either the Fabric or the destination port is temporarily busy. FBSY can only occur on SOFc1 frames (the frames that establish a connection).

Return Value: 80 0 0 0 0 0 0 0

Note: This is a fibre channel only stat.

connUnitPortStatCountClass2PBSYFrames

Note: Not Supported.

OID 1.3.6.1.3.94.4.5.1.23

Description The number of times that PBSY was returned to this port as a result of a Class 2 Frame that could not be delivered to the other end of the link. This occurs if the destination N_port is temporarily busy. PBSY can only occur on SOFc1 frames (the frames that establish a connection).

Return Value: 80 0 0 0 0 0 0 0

Note: This is a fibre channel only stat.

connUnitPortStatCountClass2FRJTFrames

Note: Not Supported

OID 1.3.6.1.3.94.4.5.1.24

Description 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.

Return Value: 80 0 0 0 0 0 0 0

Note: This is a fibre channel only stat.

connUnitPortStatCountClass2PRJTFrames

OID 1.3.6.1.3.94.4.5.1.25

Description 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.

Return Value: 80 0 0 0 0 0 0 0 (Not Supported)

Note: This is a fibre channel only stat.

connUnitPortStatCountClass3RxFrames

OID 1.3.6.1.3.94.4.5.1.26

Description The number of Class 3 Frames received at this port.

Note: This is a fibre channel only stat.

connUnitPortStatCountClass3TxFrames

OID 1.3.6.1.3.94.4.5.1.27

Description The number of Class 3 Frames transmitted out this port.

Note: This is a fibre channel only stat.

connUnitPortStatCountClass3Discards

OID 1.3.6.1.3.94.4.5.1.28

Description 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 simply discarded if they cannot be delivered.

Note: This is a fibre channel only stat.

connUnitPortStatCountRxMulticastObjects

OID 1.3.6.1.3.94.4.5.1.29

Description The number of Multicast Frames or Packets received at this port.

connUnitPortStatCountTxMulticastObjects

OID 1.3.6.1.3.94.4.5.1.30

Description The number of Multicast Frames or Packets transmitted out this port.

connUnitPortStatCountRxBroadcastObjects

OID 1.3.6.1.3.94.4.5.1.31

Description The number of Broadcast Frames or Packets received at this port.

Return Value: 80 0 0 0 0 0 0 0 (Not Supported)

connUnitPortStatCountTxBroadcastObjects

OID 1.3.6.1.3.94.4.5.1.32

Description The number of Broadcast frames or packets transmitted out this port. On a fibre channel loop, count only OPNr frames generated.

Return Value: 80 0 0 0 0 0 0 0 (Not Supported)

connUnitPortStatCountRxLinkResets

OID 1.3.6.1.3.94.4.5.1.33

Description The number of Link resets. This is the number of LRs received.

Note: This is a fibre channel only stat.

connUnitPortStatCountTxLinkResets

OID 1.3.6.1.3.94.4.5.1.34

Description The number of Link resets. This is the number LRs transmitted.

Note: This is a fibre channel only stat.

connUnitPortStatCountNumberLinkResets

OID 1.3.6.1.3.94.4.5.1.35

Description The number of Link resets and LIPs detected at this port. The number times the reset link protocol is initiated. These are the count of the logical resets, a count of the number of primitives.

Note: This is a fibre channel only stat.

connUnitPortStatCountRxOfflineSequences

OID 1.3.6.1.3.94.4.5.1.36

Description The number of Offline Primitive OLS received at this port.

Note: This is a fibre channel only stat.

connUnitPortStatCountTxOfflineSequences

OID 1.3.6.1.3.94.4.5.1.37

Description The number of Offline Primitive OLS transmitted by this port.

Note: This is a fibre channel only stat.

connUnitPortStatCountNumberOfflineSequences

OID 1.3.6.1.3.94.4.5.1.38

Description The number of Offline Primitive sequence received at this port.

Return Value: 80 0 0 0 0 0 0 0 (Not Supported)

Note: This is a fibre channel only stat.

connUnitPortStatCountLinkFailures

OID 1.3.6.1.3.94.4.5.1.39

Description The number of link failures. This count is part of the Link Error Status Block (LESB). (FC-PH 29.8)

Note: This is a fibre channel only stat.

connUnitPortStatCountInvalidCRC

OID 1.3.6.1.3.94.4.5.1.40

Description The number of frames received with invalid CRC. This count is part of the Link Error Status Block (LESB). (FC-PH 29.8) Loop ports should not count CRC errors passing through when monitoring.

Note: This is a fibre channel only stat.

connUnitPortStatCountInvalidTxWords

OID 1.3.6.1.3.94.4.5.1.41

Description The number of invalid transmission words received at this port. This count is part of the Link Error Status Block (LESB). (FC-PH 29.8)

Note: This is a fibre channel only stat.

connUnitPortStatCountPrimitiveSequenceProtocolErrors

OID 1.3.6.1.3.94.4.5.1.42

Description The number of primitive sequence protocol errors detected at this port. This count is part of the Link Error Status Block (LESB). (FC-PH 29.8)

Note: This is a fibre channel only stat.

connUnitPortStatCountLossofSignal

OID 1.3.6.1.3.94.4.5.1.43

Description The number of instances of signal loss detected at port.

This count is part of the Link Error Status Block (LESB).

(FC-PH 29.8)

Note: This is a fibre channel only stat.

connUnitPortStatCountLossofSynchronization

OID 1.3.6.1.3.94.4.5.1.44

Description The number of instances of synchronization loss detected at port. This count is part of the Link Error Status Block (LESB). (FC-PH 29.8)

Note: This is a fibre channel only stat.

connUnitPortStatCountInvalidOrderedSets

OID 1.3.6.1.3.94.4.5.1.45

Description The number of invalid ordered sets received at port. This count is part of the Link Error Status Block (LESB). (FC-PH 29.8).

Note: This is a fibre channel only stat.

connUnitPortStatCountFramesTooLong

OID 1.3.6.1.3.94.4.5.1.46

Description The number of frames received at this port where the frame length was greater than what was agreed to in FLOGI/PLOGI. This could be caused by losing the end of frame delimiter.

Note: This is a fibre channel only stat.

connUnitPortStatCountFramesTruncated

OID 1.3.6.1.3.94.4.5.1.47

Description The number of frames received at this port where the frame length was less than the minimum indicated by the frame header - normally 24 bytes, but it could be more if the DFCTL field indicates an optional header should have been present.

Note: This is a fibre channel only stat.

connUnitPortStatCountAddressErrors

OID 1.3.6.1.3.94.4.5.1.48

Description The number of frames received with unknown addressing. For example, unknown SID or DID. The SID or DID is not known to the routing algorithm.

Note: This is a fibre channel only stat.

connUnitPortStatCountDelimiterErrors

OID 1.3.6.1.3.94.4.5.1.49

Description The number of invalid frame delimiters received at this port. An example is a frame with a class 2 start and a class 3 at the end.

Note: This is a fibre channel only stat.

connUnitPortStatCountEncodingDisparityErrors

OID 1.3.6.1.3.94.4.5.1.50

Description The number of disparity errors received at this port.

Note: This is a fibre channel only stat.

Service Group

Note: Not supported in Fabric OS v2.6.1.

Implementation of the Service group is mandatory for all systems.

The Service group contains the following subgroups:

- Connectivity Unit Service Scalers Group
- Connectivity Unit Service Tables Group

Connectivity Unit Service Scalars Group

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

connUnitSnsMaxEntry

OID 1.3.6.1.3.94.5.1.1

Description The maximum number of entries in the table.

Connectivity Unit Service Tables Group

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

connUnitSnsTable

OID 1.3.6.1.3.94.5.2.1

Description This table contains an entry for each object registered with this port in the switch.

connUnitSnsEntry

OID 1.3.6.1.3.94.5.2.1.1

Description The Simple Name Server table for the port represented by connUnitSnsPortIndex.

Index connUnitSnsId
connUnitSnsPortIndex
connUnitSnsPortIdentifier

connUnitSnsId

OID 1.3.6.1.3.94.5.2.1.1.1

Description The connUnitId of the connectivity unit that contains this Name Server table.

connUnitSnsPortIndex

OID 1.3.6.1.3.94.5.2.1.1.2

Description 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

OID 1.3.6.1.3.94.5.2.1.1.3

Description The port identifier for this entry in the SNS table.

connUnitSnsPortName

OID 1.3.6.1.3.94.5.2.1.1.4

Description The port name for this entry in the SNS table.

connUnitSnsNodeName

OID 1.3.6.1.3.94.5.2.1.1.5

Description The Node Name for this entry in the SNS table.

connUnitSnsClassOfSvc

OID 1.3.6.1.3.94.5.2.1.1.6

Description The Classes of Service offered by this entry in the SNS table.

connUnitSnsNodeIPAddress

OID 1.3.6.1.3.94.5.2.1.1.7

Description The IPv6 formatted address of the Node for this entry in the SNS table.

connUnitSnsProcAssoc

OID 1.3.6.1.3.94.5.2.1.1.8

Description The Process Associator for this entry in the SNS table.

connUnitSnsFC4Type

OID 1.3.6.1.3.94.5.2.1.1.9

Description The FC-4 Types supported by this entry in the SNS table.

connUnitSnsPortType

OID 1.3.6.1.3.94.5.2.1.1.10

Description The port type of this entry in the SNS table.

connUnitSnsPortIPAddress

OID 1.3.6.1.3.94.5.2.1.1.11

Description The IPv6 formatted address of this entry in the SNS table.

connUnitSnsFabricPortName

OID 1.3.6.1.3.94.5.2.1.1.12

Description The fabric port name of this entry in the SNS table.

connUnitSnsHardAddress

OID 1.3.6.1.3.94.5.2.1.1.13

Description The Hard Address of this entry in the SNS table.

connUnitSnsSymbolicPortName

OID 1.3.6.1.3.94.5.2.1.1.14

Description The symbolic port name of this entry in the SNS table.

connUnitSnsSymbolicNodeName

OID 1.3.6.1.3.94.5.2.1.1.15

Description The symbolic node name of this entry in the SNS table.

SNMP Trap Registration Group

trapMaxClients

OID 1.3.6.1.3.94.2.1

Description The maximum number of SNMP trap recipients supported by the connectivity unit.

Note: Set to 6.

trapClientCount

OID 1.3.6.1.3.94.2.2

Description The current number of rows in the trap table.

trapRegTable

OID 1.3.6.1.3.94.2.3

Description A table containing a row for each IP address/port number to which traps are sent.

trapRegEntry

OID 1.3.6.1.3.94.2.3.1

Description Ip/Port pair for a specific client.

Index trapRegIpAddress
trapRegPort

trapRegIpAddress

OID 1.3.6.1.3.94.2.3.1.1

Description The IP address of a client registered for traps.

trapRegPort

OID 1.3.6.1.3.94.2.3.1.2

Description 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.

Note: Set to 162.

trapRegFilter

OID 1.3.6.1.3.94.2.3.1.3

Description 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:

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)

Note: This severity applies to all entries. See FcEventSeverity in Table 6-1 on page 6-5.

The values 1, 3, 7, and 10 are not valid for SET operations.

trapRegRowState

OID 1.3.6.1.3.94.2.3.1.4

Description Specifies the state of the row.

Table 6-3 TrapRegRowState for Read/Write

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

Note: This entry always returns rowActive and allows for read-only.

Revision Number Scalar

revisionNumber

OID 1.3.6.1.3.94.3

Description This is the revision number for this MIB. The format of the revision value is as follows:

0 = High order major revision number
1 = Low order major revision number
2 = High order minor revision number
3 = Low order minor revision number

The value is stored as an ASCII value. The following is the current value of this object:

0 = “0”
1 = “3”
2 = “0”
3 = “0”

This defines a revision of 03.00.

Note: Set to “0300”.

Unsupported Tables

The Connectivity Unit Port Statistics Fabric Table is only supported in v2.6.1

Brocade does not support the following:

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

Related Traps

connUnitStatusChange

Enterprise	fcmgmt
Variables	connUnitStatus, connUnitState
Description	The overall status of the connectivity unit has changed. Recommended severity level (for filtering): alert.

Note: Generated when connUnitStatus changes. Refer to connUnitStatus on page 6-9 for a description of how the value is calculated.

connUnitDeletedTrap

Enterprise	fcmgmt
Variables	connUnitId
Description	A connUnit has been deleted from this agent. Recommended severity level (for filtering): warning.

Note: Not implemented.

connUnitEventTrap

Enterprise	fcmgmt
Variables	connUnitEventId, connUnitEventType, connUnitEventObject, connUnitEventDescr
Description	An event has been generated by the connectivity unit. Recommended severity level (for filtering): info.

connUnitSensorStatusChange

Enterprise	fcmgmt
Variables	connUnitSensorStatus
Description	The overall status of the connectivity unit has changed.

connUnitPortStatusChange

Enterprise	fcmgmt
Variables	connUnitPortStatus, connUnitPortState
Description	Overall status of the connectivity unit changed. Recommended severity level (for filtering): alert.

Appendix

A

MIB Object Groupings

Overview

This appendix provides a function-based listing of MIB objects. To see the correlation of various switch objects to MIB objects, including the following:

Switch Variables

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

Sensor Variables

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

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 Port Table in *Fibre Alliance MIB Objects* on page 6-18
- FxPort Table in *FE MIB Objects* on page 2-11
- FxPort Configuration Table in *FE MIB Objects* on page 2-36
- FxPort Status Table in *FE MIB Objects* on page 2-13
- FxPort Operation Table in *FE MIB Objects* on page 2-39
- FxPort Physical Level Table in *FE MIB Objects* on page 2-14 and on page 2-41
- FxPort Capability Table in *FE MIB Objects* on page 2-25 and on page 2-47
- Fibre Channel Port Group in *SW-MIB Objects* on page 4-28

Variables for Statistics and Measurement

- Statistics Group in *Fibre Alliance MIB Objects* on page 6-35
- FxPort Error Table in *FE MIB Objects* on page 2-18
- Class 2 Accounting Table in *FE MIB Objects* on page 2-22
- Capability Group in *FE MIB Objects* on page 2-25 and on page 2-47

Event Variables

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

- Connectivity Unit Event Table in *Fibre Alliance MIB Objects* on page 6-28
- Event Group in *SW-MIB Objects* on page 4-36

ISL and End Device Variables

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

ISL Variables

- Connectivity Unit Link Table in *Fibre Alliance MIB Objects* on page 6-31
- Fabric Group in *SW-MIB Objects* on page 4-23

End Device Variables

- Connectivity Unit Link Table in *Fibre Alliance MIB Objects* on page 6-31
- FxPort Fabric Login Table in *FE MIB Objects* on page 2-15
- swFCPortName in *SW-MIB Objects* on page 4-33

SNMP Configuration Variables

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

- trapRegTable in *Fibre Alliance MIB Objects* on page 6-48
- SW Agent Configuration Group in *SW-MIB Objects* on page 4-27

Series 3000 Variables

MIB variables that assist in performance monitoring and Trunking for the Series 3000 ASIC chip are in the following tables or groups:

- swBlmPerfALPAMntTable in *SW-MIB Objects* on page 4-50
- swBlmPerfEEMntTable in *SW-MIB Objects* on page 4-51
- ASIC Performance Monitoring Group in *SW-MIB Objects* on page 4-50
- swFwFabricWatchLicense in *SW-MIB Objects* on page 4-38
- swTrunkTable in *SW-MIB Objects* on page 4-53
- swTrunkGrpTable in *SW-MIB Objects* on page 4-54

MIB OIDs and Their Matching Object Names

Appendix B

MIB OIDs

This appendix provides a listing of the v3.1 MIB object names and the corresponding MIB Object ID (OID) associated with each.

The following matrix allows you to identify a MIB object name according to its related OID.

Table B-1 MIB Object Name/OID Matrix

MIB Object Name	OID	Page No.
iso	1	page 1-2
org	1.3	page 1-2
dod	1.3.6	page 1-2
internet	1.3.6.1	page 1-2
directory	1.3.6.1.1	page 1-2
mgmt	1.3.6.1.2	page 1-2
mib-2	1.3.6.1.2.1	page 1-2
fcFeMIB	1.3.6.1.2.1.75	page 2-3
fcFeMIBObjects	1.3.6.1.2.1.75.1	page 2-3
fcFeConfig	1.3.6.1.2.1.75.1.1	page 2-3
fcFeFabricName	1.3.6.1.2.1.75.1.1.1	page 2-8
fcFeElementName	1.3.6.1.2.1.75.1.1.2	page 2-9
fcFeModuleCapacity	1.3.6.1.2.1.75.1.1.3	page 2-9
fcFeModuleTable	1.3.6.1.2.1.75.1.1.4	page 2-9
fcFeModuleEntry	1.3.6.1.2.1.75.1.1.4.1	page 2-9
fcFeModuleIndex	1.3.6.1.2.1.75.1.1.4.1.1	page 2-9
fcFeModuleDescr	1.3.6.1.2.1.75.1.1.4.1.2	page 2-9
fcFeModuleObjectID	1.3.6.1.2.1.75.1.1.4.1.3	page 2-10
fcFeModuleOperStatus	1.3.6.1.2.1.75.1.1.4.1.4	page 2-10
fcFeModuleLastChange	1.3.6.1.2.1.75.1.1.4.1.5	page 2-10
fcFeModuleFxPortCapacity	1.3.6.1.2.1.75.1.1.4.1.6	page 2-10

Table B-1 MIB Object Name/OID Matrix

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fcFxPortBbCredit	1.3.6.1.2.1.75.1.1.5.1.5	page 2-12
fcFxPortRxBufSize	1.3.6.1.2.1.75.1.1.5.1.6	page 2-12
fcFxPortRatov	1.3.6.1.2.1.75.1.1.5.1.7	page 2-12
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fcFxPortIntermixSupported	1.3.6.1.2.1.75.1.1.5.1.10	page 2-12
fcFxPortStackedConnMode	1.3.6.1.2.1.75.1.1.5.1.11	page 2-12
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fcFxPortCosSuppAgreed	1.3.6.1.2.1.75.1.2.3.1.5	page 2-16
fcFxPortIntermixSuppAgreed	1.3.6.1.2.1.75.1.2.3.1.6	page 2-16
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Table B-1 MIB Object Name/OID Matrix

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fcFxPortC1ConnTime	1.3.6.1.2.1.75.1.4.1.1.10	page 2-22
fcFxPortC2AccountingTable	1.3.6.1.2.1.75.1.4.2	page 2-22
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fcFxPortC2Discards	1.3.6.1.2.1.75.1.4.2.1.5	page 2-23
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fcFeCapabilities	1.3.6.1.2.1.75.1.5	page 2-3
fcFxPortCapTable	1.3.6.1.2.1.75.1.5.1	page 2-25
fcFxPortCapEntry	1.3.6.1.2.1.75.1.5.1.1	page 2-25
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fcFxPortCapRxDataFieldSizeMax	1.3.6.1.2.1.75.1.5.1.1.5	page 2-26
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fcFxPortCapHoldTimeMax	1.3.6.1.2.1.75.1.5.1.1.12	page 2-27
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fcFeModuleOperStatus	1.3.6.1.3.42.2.1.1.4.1.4	page 2-35
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fcFxConfFxPortIndex	1.3.6.1.3.42.2.1.1.5.1.2	page 2-37
fcFxPortName	1.3.6.1.3.42.2.1.1.5.1.3	page 2-37
fcFxPortFcphVersionHigh	1.3.6.1.3.42.2.1.1.5.1.4	page 2-37
fcFxPortFcphVersionLow	1.3.6.1.3.42.2.1.1.5.1.5	page 2-37
fcFxPortBbCredit	1.3.6.1.3.42.2.1.1.5.1.6	page 2-37
fcFxPortRxBufSize	1.3.6.1.3.42.2.1.1.5.1.7	page 2-37
fcFxPortRatov	1.3.6.1.3.42.2.1.1.5.1.8	page 2-37
fcFxPortEdtov	1.3.6.1.3.42.2.1.1.5.1.9	page 2-38
fcFxPortCosSupported	1.3.6.1.3.42.2.1.1.5.1.10	page 2-38
fcFxPortIntermixSupported	1.3.6.1.3.42.2.1.1.5.1.11	page 2-38
fcFxPortStackedConnMode	1.3.6.1.3.42.2.1.1.5.1.12	page 2-38
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fcFxPortConnectedPort	1.3.6.1.3.42.2.1.2.1.1.5	page 2-40
fcFxPortBbCreditAvailable	1.3.6.1.3.42.2.1.2.1.1.6	page 2-40
fcFxPortOperMode	1.3.6.1.3.42.2.1.2.1.1.7	page 2-40
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Table B-1 MIB Object Name/OID Matrix

MIB Object Name	OID	Page No.
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fcFxPortPhysOperStatus	1.3.6.1.3.42.2.1.2.3.1.4	page 2-42
fcFxPortPhysLastChange	1.3.6.1.3.42.2.1.2.3.1.5	page 2-42
fcFxPortPhysRttov	1.3.6.1.3.42.2.1.2.3.1.6	page 2-42
fcFxlogiTable	1.3.6.1.3.42.2.1.2.4	page 2-42
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fcFxPortNxPortRxDataFieldSize	1.3.6.1.3.42.2.1.2.4.1.6	page 2-43
fcFxPortCosSuppAgreed	1.3.6.1.3.42.2.1.2.4.1.7	page 2-43
fcFxPortIntermixSuppAgreed	1.3.6.1.3.42.2.1.2.4.1.8	page 2-44
fcFxPortStackedConnModeAgreed	1.3.6.1.3.42.2.1.2.4.1.9	page 2-44
fcFxPortClass2SeqDelivAgreed	1.3.6.1.3.42.2.1.2.4.1.10	page 2-44
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fcFxPortNxPortName	1.3.6.1.3.42.2.1.2.4.1.12	page 2-44
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fcFxPortLinkFailures	1.3.6.1.3.42.2.1.3.1.1.3	page 2-46
fcFxPortSyncLosses	1.3.6.1.3.42.2.1.3.1.1.4	page 2-46
fcFxPortSigLosses	1.3.6.1.3.42.2.1.3.1.1.5	page 2-46
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Table B-1 MIB Object Name/OID Matrix

MIB Object Name	OID	Page No.
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fcFxPortInvalidCrcs	1.3.6.1.3.42.2.1.3.1.1.8	page 2-46
fcFxPortDelimiterErrors	1.3.6.1.3.42.2.1.3.1.1.9	page 2-46
fcFxPortAddressIdErrors	1.3.6.1.3.42.2.1.3.1.1.10	page 2-46
fcFxPortLinkResetIns	1.3.6.1.3.42.2.1.3.1.1.11	page 2-47
fcFxPortLinkResetOuts	1.3.6.1.3.42.2.1.3.1.1.12	page 2-47
fcFxPortOlsIns	1.3.6.1.3.42.2.1.3.1.1.13	page 2-47
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fcFeAcct	1.3.6.1.3.42.2.1.4	page 2-29
fcFeCap	1.3.6.1.3.42.2.1.5	page 2-29
fcFxPortCapTable	1.3.6.1.3.42.2.1.5.1	page 2-47
fcFxPortCapEntry	1.3.6.1.3.42.2.1.5.1.1	page 2-47
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fcFxPortCapFcphVersionHigh	1.3.6.1.3.42.2.1.5.1.1.3	page 2-48
fcFxPortCapFcphVersionLow	1.3.6.1.3.42.2.1.5.1.1.4	page 2-48
fcFxPortCapBbCreditMax	1.3.6.1.3.42.2.1.5.1.1.5	page 2-48
fcFxPortCapBbCreditMin	1.3.6.1.3.42.2.1.5.1.1.6	page 2-48
fcFxPortCapRxDataFieldSizeMax	1.3.6.1.3.42.2.1.5.1.1.7	page 2-48
fcFxPortCapRxDataFieldSizeMin	1.3.6.1.3.42.2.1.5.1.1.8	page 2-48
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fcFxPortCapIntermix	1.3.6.1.3.42.2.1.5.1.1.10	page 2-49
fcFxPortCapStackedConnMode	1.3.6.1.3.42.2.1.5.1.1.11	page 2-49
fcFxPortCapClass2SeqDeliv	1.3.6.1.3.42.2.1.5.1.1.12	page 2-49
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fcFxPortCapHoldTimeMax	1.3.6.1.3.42.2.1.5.1.1.14	page 2-49
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fcmgmt	1.3.6.1.3.94	page 6-2
connSet	1.3.6.1.3.94.1	page 6-2
uNumber	1.3.6.1.3.94.1.1	page 6-6
systemURL	1.3.6.1.3.94.1.2	page 6-6

Table B-1 MIB Object Name/OID Matrix

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connUnitNumports	1.3.6.1.3.94.1.6.1.4	page 6-8
connUnitState	1.3.6.1.3.94.1.6.1.5	page 6-9
connUnitStatus	1.3.6.1.3.94.1.6.1.6	page 6-9
connUnitProduct	1.3.6.1.3.94.1.6.1.7	page 6-9
connUnitSn	1.3.6.1.3.94.1.6.1.8	page 6-9
connUnitUpTime	1.3.6.1.3.94.1.6.1.9	page 6-10
connUnitUrl	1.3.6.1.3.94.1.6.1.10	page 6-10
connUnitDomainId	1.3.6.1.3.94.1.6.1.11	page 6-10
connUnitProxyMaster	1.3.6.1.3.94.1.6.1.12	page 6-10
connUnitPrincipal	1.3.6.1.3.94.1.6.1.13	page 6-11
connUnitNumSensors	1.3.6.1.3.94.1.6.1.14	page 6-11
connUnitStatusChangeTime	1.3.6.1.3.94.1.6.1.15	page 6-11
connUnitConfigurationChangeTime	1.3.6.1.3.94.1.6.1.16	page 6-11
connUnitNumRevs	1.3.6.1.3.94.1.6.1.17	page 6-11
connUnitNumZones	1.3.6.1.3.94.1.6.1.18	page 6-12
connUnitModuleId	1.3.6.1.3.94.1.6.1.19	page 6-12
connUnitName	1.3.6.1.3.94.1.6.1.20	page 6-12
connUnitInfo	1.3.6.1.3.94.1.6.1.21	page 6-12
connUnitControl	1.3.6.1.3.94.1.6.1.22	page 6-13
connUnitContact	1.3.6.1.3.94.1.6.1.23	page 6-13
connUnitLocation	1.3.6.1.3.94.1.6.1.24	page 6-14
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connUnitMaxEvents	1.3.6.1.3.94.1.6.1.27	page 6-14
connUnitEventCurrID	1.3.6.1.3.94.1.6.1.28	page 6-14
connUnitRevsTable	1.3.6.1.3.94.1.7	page 6-14
connUnitRevsEntry	1.3.6.1.3.94.1.7.1	page 6-15
connUnitRevsUnitId	1.3.6.1.3.94.1.7.1.1	page 6-15

Table B-1 MIB Object Name/OID Matrix

MIB Object Name	OID	Page No.
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connUnitRevsRevId	1.3.6.1.3.94.1.7.1.3	page 6-15
connUnitRevsDescription	1.3.6.1.3.94.1.7.1.4	page 6-15
connUnitSensorTable	1.3.6.1.3.94.1.8	page 6-15
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connUnitSensorName	1.3.6.1.3.94.1.8.1.3	page 6-16
connUnitSensorStatus	1.3.6.1.3.94.1.8.1.4	page 6-16
connUnitSensorInfo	1.3.6.1.3.94.1.8.1.5	page 6-17
connUnitSensorMessage	1.3.6.1.3.94.1.8.1.6	page 6-17
connUnitSensorType	1.3.6.1.3.94.1.8.1.7	page 6-17
connUnitSensorCharacteristic	1.3.6.1.3.94.1.8.1.8	page 6-18
connUnitPortTable	1.3.6.1.3.94.1.10	page 6-18
connUnitPortEntry	1.3.6.1.3.94.1.10.1	page 6-18
connUnitPortUnitId	1.3.6.1.3.94.1.10.1.1	page 6-18
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connUnitPortType	1.3.6.1.3.94.1.10.1.3	page 6-19
connUnitPortFCClassCap	1.3.6.1.3.94.1.10.1.4	page 6-20
connUnitPortFCClassOp	1.3.6.1.3.94.1.10.1.5	page 6-20
connUnitPortState	1.3.6.1.3.94.1.10.1.6	page 6-20
connUnitPortStatus	1.3.6.1.3.94.1.10.1.7	page 6-21
connUnitPortTransmitterType	1.3.6.1.3.94.1.10.1.8	page 6-21
connUnitPortModuleType	1.3.6.1.3.94.1.10.1.9	page 6-22
connUnitPortWwn	1.3.6.1.3.94.1.10.1.10	page 6-22
connUnitPortFCId	1.3.6.1.3.94.1.10.1.11	page 6-22
connUnitPortSn	1.3.6.1.3.94.1.10.1.12	page 6-23
connUnitPortRevision	1.3.6.1.3.94.1.10.1.13	page 6-23
connUnitPortVendor	1.3.6.1.3.94.1.10.1.14	page 6-23
connUnitPortSpeed	1.3.6.1.3.94.1.10.1.15	page 6-23
connUnitPortControl	1.3.6.1.3.94.1.10.1.16	page 6-24
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connUnitPortPhysicalNumber	1.3.6.1.3.94.1.10.1.18	page 6-25

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connUnitPortProtocolCap	1.3.6.1.3.94.1.10.1.20	page 6-26
connUnitPortProtocolOp	1.3.6.1.3.94.1.10.1.21	page 6-27
connUnitPortNodeWwn	1.3.6.1.3.94.1.10.1.22	page 6-27
connUnitPortHWState	1.3.6.1.3.94.1.10.1.23	page 6-28
connUnitEventTable	1.3.6.1.3.94.1.11	page 6-28
connUnitEventEntry	1.3.6.1.3.94.1.11.1	page 6-28
connUnitEventUnitId	1.3.6.1.3.94.1.11.1.1	page 6-28
connUnitEventIndex	1.3.6.1.3.94.1.11.1.2	page 6-29
connUnitEventId	1.3.6.1.3.94.1.11.1.3	page 6-29
connUnitREventTime	1.3.6.1.3.94.1.11.1.4	page 6-30
connUnitSEventTime	1.3.6.1.3.94.1.11.1.5	page 6-30
connUnitEventSeverity	1.3.6.1.3.94.1.11.1.6	page 6-30
connUnitEventType	1.3.6.1.3.94.1.11.1.7	page 6-30
connUnitEventObject	1.3.6.1.3.94.1.11.1.8	page 6-31
connUnitEventDescr	1.3.6.1.3.94.1.11.1.9	page 6-31
connUnitLinkTable	1.3.6.1.3.94.1.12	page 6-31
connUnitLinkEntry	1.3.6.1.3.94.1.12.1	page 6-32
connUnitLinkUnitId	1.3.6.1.3.94.1.12.1.1	page 6-32
connUnitLinkIndex	1.3.6.1.3.94.1.12.1.2	page 6-32
connUnitLinkNodeIdX	1.3.6.1.3.94.1.12.1.3	page 6-32
connUnitLinkPortNumberX	1.3.6.1.3.94.1.12.1.4	page 6-33
connUnitLinkPortWwnX	1.3.6.1.3.94.1.12.1.5	page 6-33
connUnitLinkNodeIdY	1.3.6.1.3.94.1.12.1.6	page 6-33
connUnitLinkPortNumberY	1.3.6.1.3.94.1.12.1.7	page 6-33
connUnitLinkPortWwnY	1.3.6.1.3.94.1.12.1.8	page 6-33
connUnitLinkAgentAddressY	1.3.6.1.3.94.1.12.1.9	page 6-34
connUnitLinkAgentAddressTypeY	1.3.6.1.3.94.1.12.1.10	page 6-34
connUnitLinkAgentPortY	1.3.6.1.3.94.1.12.1.11	page 6-34
connUnitLinkUnitTypeY	1.3.6.1.3.94.1.12.1.12	page 6-34
connUnitLinkConnIdY	1.3.6.1.3.94.1.12.1.13	page 6-35
connUnitLinkCurrIndex	1.3.6.1.3.94.1.12.1.14	page 6-35
trapReg	1.3.6.1.3.94.2	page 6-2

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trapClientCount	1.3.6.1.3.94.2.2	page 6-48
trapRegTable	1.3.6.1.3.94.2.3	page 6-48
trapRegEntry	1.3.6.1.3.94.2.3.1	page 6-49
trapRegIpAddress	1.3.6.1.3.94.2.3.1.1	page 6-49
trapRegPort	1.3.6.1.3.94.2.3.1.2	page 6-49
trapRegFilter	1.3.6.1.3.94.2.3.1.3	page 6-49
trapRegRowState	1.3.6.1.3.94.2.3.1.4	page 6-49
revisionNumber	1.3.6.1.3.94.3	page 6-50
statSet	1.3.6.1.3.94.4	page 6-35
connUnitPortStatTable	1.3.6.1.3.94.4.5	page 6-35
connUnitPortStatEntry	1.3.6.1.3.94.4.5.1	page 6-36
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connUnitPortStatCountError	1.3.6.1.3.94.4.5.1.3	page 6-36
connUnitPortStatCountTxObjects	1.3.6.1.3.94.4.5.1.4	page 6-36
connUnitPortStatCountRxObjects	1.3.6.1.3.94.4.5.1.5	page 6-36
connUnitPortStatCountTxElements	1.3.6.1.3.94.4.5.1.6	page 6-36
connUnitPortStatCountRxElements	1.3.6.1.3.94.4.5.1.7	page 6-37
connUnitPortStatCountBBCreditZero	1.3.6.1.3.94.4.5.1.8	page 6-37
connUnitPortStatCountInputBuffersFull	1.3.6.1.3.94.4.5.1.9	page 6-37
connUnitPortStatCountFBSYFrames	1.3.6.1.3.94.4.5.1.10	page 6-37
connUnitPortStatCountPBSYFrames	1.3.6.1.3.94.4.5.1.11	page 6-38
connUnitPortStatCountFRJTFrames	1.3.6.1.3.94.4.5.1.12	page 6-38
connUnitPortStatCountPRJTFrames	1.3.6.1.3.94.4.5.1.13	page 6-38
connUnitPortStatCountClass1RxFrames	1.3.6.1.3.94.4.5.1.14	page 6-38
connUnitPortStatCountClass1TxFrames	1.3.6.1.3.94.4.5.1.15	page 6-39
connUnitPortStatCountClass1FBSYFrames	1.3.6.1.3.94.4.5.1.16	page 6-39
connUnitPortStatCountClass1PBSYFrames	1.3.6.1.3.94.4.5.1.17	page 6-39
connUnitPortStatCountClass1FRJTFrames	1.3.6.1.3.94.4.5.1.18	page 6-39
connUnitPortStatCountClass1PRJTFrames	1.3.6.1.3.94.4.5.1.19	page 6-40
connUnitPortStatCountClass2RxFrames	1.3.6.1.3.94.4.5.1.20	page 6-40
connUnitPortStatCountClass2TxFrames	1.3.6.1.3.94.4.5.1.21	page 6-40

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MIB Object Name	OID	Page No.
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connUnitPortStatCountClass2PBSYFrames	1.3.6.1.3.94.4.5.1.23	page 6-41
connUnitPortStatCountClass2FRJTFrames	1.3.6.1.3.94.4.5.1.24	page 6-41
connUnitPortStatCountClass2PRJTFrames	1.3.6.1.3.94.4.5.1.25	page 6-41
connUnitPortStatCountClass3RxFrames	1.3.6.1.3.94.4.5.1.26	page 6-41
connUnitPortStatCountClass3TxFrames	1.3.6.1.3.94.4.5.1.27	page 6-42
connUnitPortStatCountClass3Discards	1.3.6.1.3.94.4.5.1.28	page 6-42
connUnitPortStatCountRxMulticastObjects	1.3.6.1.3.94.4.5.1.29	page 6-42
connUnitPortStatCountTxMulticastObjects	1.3.6.1.3.94.4.5.1.30	page 6-42
connUnitPortStatCountRxBroadcastObjects	1.3.6.1.3.94.4.5.1.31	page 6-42
connUnitPortStatCountTxBroadcastObjects	1.3.6.1.3.94.4.5.1.32	page 6-42
connUnitPortStatCountRxLinkResets	1.3.6.1.3.94.4.5.1.33	page 6-42
connUnitPortStatCountTxLinkResets	1.3.6.1.3.94.4.5.1.34	page 6-43
connUnitPortStatCountNumberLinkResets	1.3.6.1.3.94.4.5.1.35	page 6-43
connUnitPortStatCountRxOfflineSequences	1.3.6.1.3.94.4.5.1.36	page 6-43
connUnitPortStatCountTxOfflineSequences	1.3.6.1.3.94.4.5.1.37	page 6-43
connUnitPortStatCountNumberOffline Sequences	1.3.6.1.3.94.4.5.1.38	page 6-43
connUnitPortStatCountLinkFailures	1.3.6.1.3.94.4.5.1.39	page 6-43
connUnitPortStatCountInvalidCRC	1.3.6.1.3.94.4.5.1.40	page 6-44
connUnitPortStatCountInvalidTxWords	1.3.6.1.3.94.4.5.1.41	page 6-44
connUnitPortStatCountPrimitiveSequence ProtocolErrors	1.3.6.1.3.94.4.5.1.42	page 6-44
connUnitPortStatCountLossofSignal	1.3.6.1.3.94.4.5.1.43	page 6-44
connUnitPortStatCountLossofSynchronization	1.3.6.1.3.94.4.5.1.44	page 6-44
connUnitPortStatCountInvalidOrderedSets	1.3.6.1.3.94.4.5.1.45	page 6-45
connUnitPortStatCountFramesTooLong	1.3.6.1.3.94.4.5.1.46	page 6-45
connUnitPortStatCountFramesTruncated	1.3.6.1.3.94.4.5.1.47	page 6-45
connUnitPortStatCountAddressErrors	1.3.6.1.3.94.4.5.1.48	page 6-45
connUnitPortStatCountDelimiterErrors	1.3.6.1.3.94.4.5.1.49	page 6-45
connUnitPortStatCountEncodingDisparityErrors	1.3.6.1.3.94.4.5.1.50	page 6-46
connUnitServiceSet	1.3.6.1.3.94.5	page 6-46
connUnitServiceScalars	1.3.6.1.3.94.5.1	page 6-46

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MIB Object Name	OID	Page No.
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connUnitServiceTables	1.3.6.1.3.94.5.2	page 6-46
connUnitSnsTable	1.3.6.1.3.94.5.2.1	page 6-46
connUnitSnsEntry	1.3.6.1.3.94.5.2.1.1	page 6-46
connUnitSnsId	1.3.6.1.3.94.5.2.1.1.1	page 6-47
connUnitSnsPortIndex	1.3.6.1.3.94.5.2.1.1.2	page 6-47
connUnitSnsPortIdentifier	1.3.6.1.3.94.5.2.1.1.3	page 6-47
connUnitSnsPortName	1.3.6.1.3.94.5.2.1.1.4	page 6-47
connUnitSnsNodeName	1.3.6.1.3.94.5.2.1.1.5	page 6-47
connUnitSnsClassOfSvc	1.3.6.1.3.94.5.2.1.1.6	page 6-47
connUnitSnsNodeIPAddress	1.3.6.1.3.94.5.2.1.1.7	page 6-47
connUnitSnsProcAssoc	1.3.6.1.3.94.5.2.1.1.8	page 6-47
connUnitSnsFC4Type	1.3.6.1.3.94.5.2.1.1.9	page 6-47
connUnitSnsPortType	1.3.6.1.3.94.5.2.1.1.10	page 6-47
connUnitSnsPortIPAddress	1.3.6.1.3.94.5.2.1.1.11	page 6-48
connUnitSnsFabricPortName	1.3.6.1.3.94.5.2.1.1.12	page 6-48
connUnitSnsHardAddress	1.3.6.1.3.94.5.2.1.1.13	page 6-48
connUnitSnsSymbolicPortName	1.3.6.1.3.94.5.2.1.1.14	page 6-48
connUnitSnsSymbolicNodeName	1.3.6.1.3.94.5.2.1.1.15	page 6-48
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bcsi	1.3.6.1.4.1.1588	page 4-2
commDev	1.3.6.1.4.1.1588.2	page 4-2
fibrechannel	1.3.6.1.4.1.1588.2.1	page 4-2
fcSwitch	1.3.6.1.4.1.1588.2.1.1	page 4-2
sw	1.3.6.1.4.1.1588.2.1.1.1	page 4-2
swSystem	1.3.6.1.4.1.1588.2.1.1.1.1	page 4-13
swCurrentDate	1.3.6.1.4.1.1588.2.1.1.1.1.1	page 4-13
swBootDate	1.3.6.1.4.1.1588.2.1.1.1.1.2	page 4-14
swFWLastUpdated	1.3.6.1.4.1.1588.2.1.1.1.1.3	page 4-14
swFlashLastUpdated	1.3.6.1.4.1.1588.2.1.1.1.1.4	page 4-15
swBootPromLastUpdated	1.3.6.1.4.1.1588.2.1.1.1.1.5	page 4-15
swFirmwareVersion	1.3.6.1.4.1.1588.2.1.1.1.1.6	page 4-16

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swAdmStatus	1.3.6.1.4.1.1588.2.1.1.1.1.8	page 4-16
swTelnetShellAdmStatus	1.3.6.1.4.1.1588.2.1.1.1.1.9	page 4-17
swSsn	1.3.6.1.4.1.1588.2.1.1.1.1.10	page 4-17
swFlashDLOperStatus	1.3.6.1.4.1.1588.2.1.1.1.1.11	page 4-18
swFlashDLAdmStatus	1.3.6.1.4.1.1588.2.1.1.1.1.12	page 4-18
swFlashDLHost	1.3.6.1.4.1.1588.2.1.1.1.1.13	page 4-18
swFlashDLUser	1.3.6.1.4.1.1588.2.1.1.1.1.14	page 4-19
swFlashDLFile	1.3.6.1.4.1.1588.2.1.1.1.1.15	page 4-19
swFlashDLPassword	1.3.6.1.4.1.1588.2.1.1.1.1.16	page 4-19
swBeaconOperStatus	1.3.6.1.4.1.1588.2.1.1.1.1.18	page 4-19
swBeaconAdmStatus	1.3.6.1.4.1.1588.2.1.1.1.1.19	page 4-19
swDiagResult	1.3.6.1.4.1.1588.2.1.1.1.1.20	page 4-19
swNumSensors	1.3.6.1.4.1.1588.2.1.1.1.1.21	page 4-20
swSensorTable	1.3.6.1.4.1.1588.2.1.1.1.1.22	page 4-20
swSensorEntry	1.3.6.1.4.1.1588.2.1.1.1.1.22.1	page 4-20
swSensorIndex	1.3.6.1.4.1.1588.2.1.1.1.1.22.1.1	page 4-20
swSensorType	1.3.6.1.4.1.1588.2.1.1.1.1.22.1.2	page 4-20
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swSensorInfo	1.3.6.1.4.1.1588.2.1.1.1.1.22.1.5	page 4-22
swTrackChangesInfo	1.3.6.1.4.1.1588.2.1.1.1.1.23	page 4-22
swFabric	1.3.6.1.4.1.1588.2.1.1.1.2	page 4-23
swDomainID	1.3.6.1.4.1.1588.2.1.1.1.2.1	page 4-23
swPrincipalSwitch	1.3.6.1.4.1.1588.2.1.1.1.2.2	page 4-23
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