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Network OS

MIB Reference

Supporting Network OS 6.0.1

BROCADE

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Document conventions

The document conventions describe text formatting conventions, command syntax conventions, and important notice formats used in Brocade technical documentation.

TEXT FORMATTING

Text formatting conventions such as boldface, italic, or Courier font may be used in the flow of the text to highlight specific words or phrases.

Format	Description
bold text	Identifies command names Identifies keywords and operands Identifies the names of user-manipulated GUI elements Identifies text to enter at the GUI or CLI
<i>italic text</i>	Identifies emphasis Identifies variables Identifies document titles
<code>Courier font</code>	Identifies CLI output Identifies command syntax examples

COMMAND SYNTAX CONVENTIONS

Bold and italic text identify command syntax components. Delimiters and operators define groupings of parameters and their logical relationships.

Convention	Description
bold text	Identifies command names, keywords, and command options.
<i>italic text</i>	Identifies a variable.
value	In Fibre Channel products, a fixed value provided as input to a command option is printed in plain text, for example, -show WWN.
[]	Syntax components displayed within square brackets are optional. Default responses to system prompts are enclosed in square brackets.
{ x y z }	A choice of required parameters is enclosed in curly brackets separated by vertical bars. You must select one of the options. In Fibre Channel products, square brackets may be used instead for this purpose.
x y	A vertical bar separates mutually exclusive elements.
< >	Nonprinting characters, for example, passwords, are enclosed in angle brackets.
...	Repeat the previous element, for example, member[member...].
\	Indicates a “soft” line break in command examples. If a backslash separates two lines of a command input, enter the entire command at the prompt without the backslash.

NOTES, CAUTIONS, AND WARNINGS

Notes, cautions, and warning statements may be used in this document. They are listed in the order of increasing severity of potential hazards.

NOTE

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

ATTENTION

An Attention statement indicates a stronger note, for example, to alert you when traffic might be interrupted or the device might reboot.



CAUTION

A Caution statement alerts you to situations that can be potentially hazardous to you or cause damage to hardware, firmware, software, or data.



DANGER

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

Brocade resources

Visit the Brocade website to locate related documentation for your product and additional Brocade resources.

You can download additional publications supporting your product at www.brocade.com. Select the Brocade Products tab to locate your product, then click the Brocade product name or image to open the individual product page. The user manuals are available in the resources module at the bottom of the page under the Documentation category.

To get up-to-the-minute information on Brocade products and resources, go to [MyBrocade](#). You can register at no cost to obtain a user ID and password.

Release notes are available on [MyBrocade](#) under Product Downloads.

White papers, online demonstrations, and data sheets are available through the [Brocade](#) website.

Contacting Brocade Technical Support

As a Brocade customer, you can contact Brocade Technical Support 24x7 online, by telephone, or by email. Brocade OEM customers contact their OEM/Solutions provider.

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For product support information and the latest information on contacting the Technical Assistance Center, go to <http://www.brocade.com/services-support/index.html>.

If you have purchased Brocade product support directly from Brocade, use one of the following methods to contact the Brocade Technical Assistance Center 24x7.

Online	Telephone	E-mail
Preferred method of contact for nonurgent issues: <ul style="list-style-type: none"> • My Cases through MyBrocade • Software downloads and licensing tools • Knowledge Base 	Required for Sev 1-Critical and Sev 2-High issues: <ul style="list-style-type: none"> • Continental US: 1-800-752-8061 • Europe, Middle East, Africa, and Asia Pacific: +800-AT FIBREE (+800 28 34 27 33) • For areas unable to access toll free number: +1-408-333-6061 • Toll-free numbers are available in many countries. 	support@brocade.com Please include: <ul style="list-style-type: none"> • Problem summary • Serial number • Installation details • Environment description

BROCADE OEM CUSTOMERS

If you have purchased Brocade product support from a Brocade OEM/Solution Provider, contact your OEM/Solution Provider for all of your product support needs.

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

Document feedback

To send feedback and report errors in the documentation you can use the feedback form posted with the document or you can e-mail the documentation team.

Quality is our first concern at Brocade and we have made every effort to ensure the accuracy and completeness of this document. However, if you find an error or an omission, or you think that a topic needs further development, we want to hear from you. You can provide feedback in two ways:

- Through the online feedback form in the HTML documents posted on www.brocade.com.
- By sending your feedback to documentation@brocade.com.

Provide the publication title, part number, and as much detail as possible, including the topic heading and page number if applicable, as well as your suggestions for improvement.

About This Document

In this chapter

- [Supported hardware and software](#) xi
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Supported hardware and software

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

Although many different software and hardware configurations are tested and supported by Brocade Communications Systems, Inc., for Network OS 6.0.1, documenting all possible configurations and scenarios is beyond the scope of this document.

The following hardware platforms are supported by this release of Network OS:

- Brocade VDX 2740

NOTE

The Brocade VDX 2740 is the equivalent of the Lenovo Flex System EN4023 10Gb Scalable Switch. This platform is identified in the system as EN4023.

- Brocade VDX 2746
- Brocade VDX 6740
 - Brocade VDX 6740-48
 - Brocade VDX 6740-64
- Brocade VDX 6740T
 - Brocade VDX 6740T-48
 - Brocade VDX 6740T-64
 - Brocade VDX 6740T-1G
- Brocade VDX 6940-36Q
- Brocade VDX 6940-144S
- Brocade VDX 8770
 - Brocade VDX 8770-4
 - Brocade VDX 8770-8

To obtain information about a Network OS version other than this release, refer to the documentation specific to that version.

What's new in this document

The *Network OS MIB Reference* was last released for Network OS 3.0.1b. The following sections provide a high-level summary of changes for the 6.0.1, 6.0.0, 5.x.x, and 4.x.x releases.

6.0.1

Added BROCADE-MAPS-MIB.mib support.

6.0.0

Removed SNMP default configuration support.

5.X.X

- Added ifAlias MIB object
- Updated ifDescr MIB object behavior
- Added support for read-write operation (Set) for the following MIBs:
 - SNMP-TARGET-MIB
 - SNMP-VIEW-BASED-ACM-MIB
 - SNMP-COMMUNITY-MIB
- Added support for the following standard MIBs:
 - SNMP-NOTIFICATION-MIB
 - IP-FORWARD-MIB
 - IP-MIB
 - OSPF-MIB
 - BGP4-MIB
 - TCP-MIB
 - UDP-MIB
 - HOST-RESOURCE-MIB

4.X.X

- Added support for the following standard MIBs:
 - SNMP-MPD-MIB
 - SNMP-TARGET-MIB
 - SNMP-VIEW-BASED-ACM-MIB
 - SNMP-COMMUNITY-MIB
- Added support for two traps under FOUNDRY-SN-NOTIFICATION MIB
- Added connUnitPortStatusChange trap
- GVLAN support for SNMP

For further information about new features and documentation updates for this release, refer to the Network OS 6.0.1 release notes.

Understanding Brocade SNMP

In this chapter

- [Overview](#) 1
- [Basic SNMP operation](#) 2
- [Understanding MIBs](#) 3

Overview

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

- SNMP Manager
- SNMP Agent
- Management Information Base (MIB)

SNMP Manager

The SNMP Manager can communicate to the devices within a network using SNMP. Typically, the SNMP Manager is a network management system (NMS) that manages networks by monitoring the network parameters, and optionally, setting parameters in managed devices. Normally, the SNMP Manager sends read requests to the devices that host the SNMP Agent, to which the SNMP Agent responds with the requested data. In some cases, the managed devices can initiate the communication, and send data to the SNMP Manager using asynchronous events called traps.

SNMP Agent

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

Management information base

SNMP Agents in the managed devices store the data about these devices in a database called the management information base (MIB). The MIB is a hierarchical database, which is structured on the standard specified in RFC 2578 (Structure of Management Information Version 2 [SMIV2]).

1 Basic SNMP operation

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

Basic SNMP operation

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

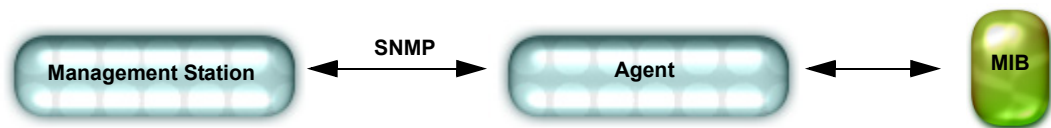


FIGURE 1 SNMP structure

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

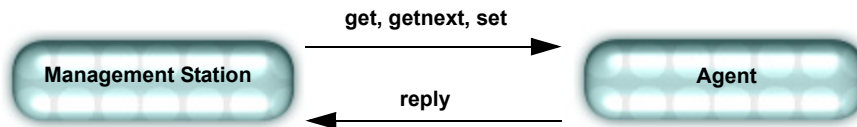


FIGURE 2 SNMP query

The management station can also receive *traps*, unsolicited messages from the switch agent, if an unusual event occurs.



FIGURE 3 SNMP trap

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

Understanding MIBs

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

Brocade MIB structure

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

1.3.6.1.2.1.47

The corresponding name is:

iso.org.dod.internet.mgmt.mib-2.entityMIB

The other branches are part of the standard MIBs, and the portions relevant to configuring SNMP on a Brocade switch are referenced in the remainder of this chapter.

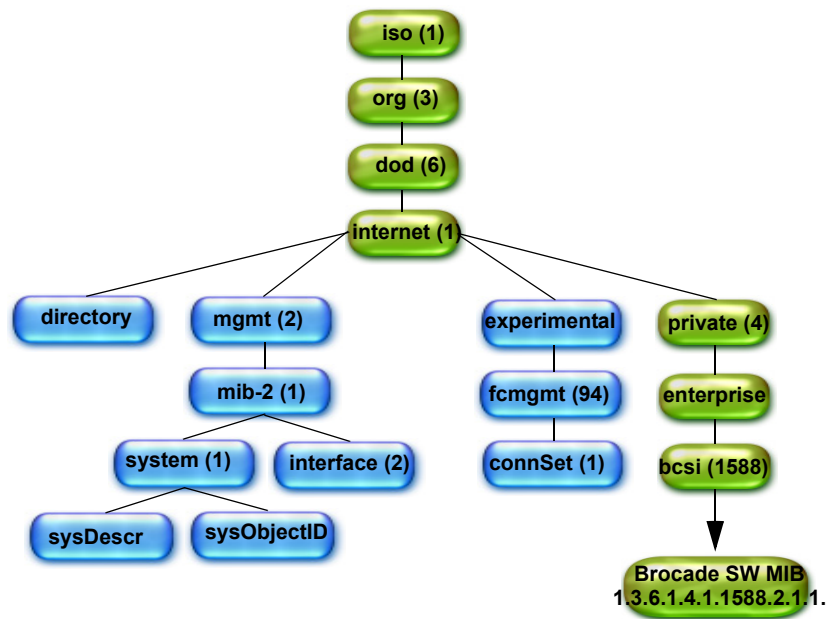


FIGURE 4 Brocade MIB tree location

Access to MIB variables

You can use a MIB browser to access the MIB variables. All MIB browsers perform queries and load MIBs.

1 Understanding MIBs

Once loaded, MAX-ACCESS provides access levels between the agent and management station. The access levels are described in the following table.

TABLE 1 MIB access levels

Access level	Description
not accessible	You cannot read or write to this variable.
read create	Specifies a tabular object that can be read, modified, or created as a new row in a table.
Read-only - Public	You can only monitor information.
read-write - Private	You can read or modify this variable.
accessible-to-notify	You can read this information only through traps.

Brocade MIBs

The Brocade MIB is a set of variables that are private extensions to the Internet standard MIB-II. The Brocade agents support many other Internet-standard MIBs. These standard MIBs are defined in RFC publications. To find specific MIB information, examine the Brocade proprietary MIB structure and the standard RFC MIBs supported by Brocade.

Brocade MIB files

The Brocade MIB files are as follows:

- BRCD_NOS_PRODUCTS.mib
- BROCADE-PRODUCTS-MIB.mib
- BROCADE-REG-MIB.mib
- BRCD_TC.mib
- SWBase.mib
- Resource.mib
- System.mib
- FA.mib
- HA.mib
- FOUNDRY-SN-NOTIFICATION.mib
- BROCADE-MAPS-MIB.mib

Obtaining the Brocade MIBs

You can download the Brocade-specific MIB files required for this release from the downloads area of MyBrocade. To download the Brocade-specific MIBs from MyBrocade, you must have a user name and password.

1. From your web browser, go to <http://my.brocade.com>.
2. Log in with your username and password.
3. Click the **downloads** tab.
4. On the **downloads** tab, under **Product Downloads**, select **All Operating Systems** from the **Download by** list.
5. Select **Network Operating System (NOS)**, and then navigate to the release.

- Navigate to the link for the MIBs package and either open the file or save it to disk.

Agent Capability MIBs

In SNMP, capability MIBs provide the implementation details for the associated MIBs. These MIBs, called AGENT-CAPABILITY MIBs, list supported conformance groups and any deviations from the MIBs as implemented in the associated software version. The following table lists the Brocade supported capability MIBs.

TABLE 2 Agent Capability MIBs

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

Standard MIBs

Standard MIBs are not distributed through Brocade. You can download the following MIBs from <http://www.oidview.com/> or <http://www.ietf.org>:

- IF-MIB
- LLDP-MIB
- BRIDGE-MIB
- LLDP-EXT-DOT3-MIB
- LLDP-EXT-DOT1-MIB
- RSTP-MIB
- RFC1213-MIB
- IEEE8023-LAG-MIB
- Q-BRIDGE-MIB
- IEEE8021-PAE-MIB
- P-BRIDGE-MIB
- RMON-MIB
- SFlow-MIB
- ENTITY-MIB
- IP-FORWARD-MIB
- IP-MIB
- OSPF-MIB
- BGP4-MIB
- TCP-MIB
- UDP-MIB
- HOST-RESOURCE-MIB
- INET-ADDRESS-MIB

1 Understanding MIBs

- IANAifType-MIB
- IANA-RTPROTO-MIB
- SNMPv2-PDU
- SNMPv2-TM
- SNMP-FRAMEWORK-MIB
- IANA-ADDRESS-FAMILY-NUMBERS-MIB
- FC-MGMT-MIB
- SNMP-COMMUNITY-MIB
- SNMP-MPD-MIB
- SNMP-TARGET-MIB
- SNMP-VIEW-BASED-ACM-MIB
- SNMP-NOTIFICATION-MIB
- SNMP-USER-BASED-SM-MIB

MIB loading order

Many MIBs use definitions that are defined in other MIBs. These definitions are listed in the IMPORTS section near the top of the MIB. When loading the Brocade MIBs, refer to the following table to ensure that any MIB dependencies are loading in the correct order.

NOTE

Before loading the Brocade MIB files, ensure that you have the correct version of SNMP for the Brocade Network OS. All versions of Network OS support SNMPv1, SNMPv2c, and SNMPv3. SNMPv2c informs are not supported.

TABLE 3 Brocade SNMP MIB dependencies

MIB Name	Dependencies
Brocade-REG.mib	RFC1155-SMI
Brocade-TC.mib	Brocade-REG-MIB SNMPv2-TC SNMPv2-SMI
BRCD_NOS_PRODUCTS.mib	SNMPv2-SMI Brocade-REG-MIB
BROCADE-PRODUCTS-MIB.mib	SNMPv2-SMI Brocade-REG-MIB
SWBase.mib	SNMPv2-TC SNMPv2-SMI Brocade-REG-MIB
Resource.mib	SNMPv2-TC SNMPv2-SMI SWBASE-MIB
System.mib	SNMPv2-TC Brocade-TC SWBASE-MIB

TABLE 3 Brocade SNMP MIB dependencies (Continued)

MIB Name	Dependencies
FA.mib	RFC1155-SMI RFC-1212 RFC1213-MIB RFC-1215
HA.mib	SNMPv2-SMI Brocade-REG-MIB SW-MIB ENTITY-MIB SNMPv2-TC
FOUNDRY-SN-NOTIFICATION.mib	SNMPv2-SMI FOUNDRY-SN-ROOT-MIB IF-MIB DOT3-OAM-MIB FOUNDRY-SN-SWITCH-GROUP-MIB FOUNDRY-SN-AGENT-MIB FOUNDRY-SN-SWITCH-GROUP-MIB FOUNDRY-SN-SW-L4-SWITCH-GROUP-MIB FOUNDRY-SN-WIRELESS-GROUP-MIB FOUNDRY-SN-OSPF-GROUP-MIB IEEE8021-CFM-MIB
BROCADE-MAPS-MIB.mib	SNMPv2-SMI Brocade-REG-MIB SYSTEM-MIB

1 Understanding MIBs

Supported Standard MIBs

In this chapter

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• LLDP-EXT-DOT3-MIB	20
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• RSTP MIB	23
• sFlow MIB	23
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RFC 1213: MIB-II

Fully supported or deprecated object groups

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

Object group name	OID	Supported?
system	1.3.6.1.2.1.1	Yes NOTE: All systems must implement the System group. If an agent is not configured to have a value for any of the System group variables, a string of length 0 is returned.
at	1.3.6.1.2.1.3	No NOTE: Implementation of the Address Translation (AT) group is mandatory for all systems. However, this group is deprecated by MIB-II. From MIB-II onward, each network protocol group contains its own address translation tables.
icmp	1.3.6.1.2.1.5	Yes NOTE: Implementation of the ICMP group is mandatory for all systems.
tcp	1.3.6.1.2.1.6	Yes NOTE: Implementation of the TCP group is mandatory for all systems that implement the TCP. Instances of object types that represent information about a particular TCP connection are transient; they persist only as long as the connection in question.
udp	1.3.6.1.2.1.7	Yes NOTE: Implementation of the UDP group is mandatory for all systems that implement UDP.
egp	1.3.6.1.2.1.8	No
transmission	1.3.6.1.2.1.10	No
snmp	snmp	Yes NOTE: Implementation of the Simple Network Management Protocol (SNMP) group is mandatory for all systems that support an SNMP entity. Some of the objects defined next are zero-valued in those SNMP implementations that are optimized to support only those functions specific to either a management agent or a management station. All of the objects that follow refer to an SNMP entity, and there may be several SNMP entities residing on a managed node (for example, if the node is acting as a management station).

Partially supported object groups

The following groups from RFC 1213 are partially supported.

Interfaces group

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

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

Object	OID	Supported?
ifNumber	1.3.6.1.2.1.2.1	Yes
ifTable	1.3.6.1.2.1.2.2	Yes
ifEntry	1.3.6.1.2.1.2.2.1	Yes
ifIndex	1.3.6.1.2.1.2.2.1.1	Yes
ifDescr	1.3.6.1.2.1.2.2.1.2	Yes
ifType	1.3.6.1.2.1.2.2.1.3	Yes
ifMtu	1.3.6.1.2.1.2.2.1.4	Yes
ifSpeed	1.3.6.1.2.1.2.2.1.5	Yes
ifPhysAddress	1.3.6.1.2.1.2.2.1.6	Yes
ifAdminStatus	1.3.6.1.2.1.2.2.1.7	Yes
ifOperStatus	1.3.6.1.2.1.2.2.1.8	Yes
ifLastChange	1.3.6.1.2.1.2.2.1.9	Yes
ifInOctets	1.3.6.1.2.1.2.2.1.10	Yes
ifInUcastPkts	1.3.6.1.2.1.2.2.1.11	Yes
ifInNUcastPkts	1.3.6.1.2.1.2.2.1.12	Yes
ifInDiscards	1.3.6.1.2.1.2.2.1.13	Yes
ifInErrors	1.3.6.1.2.1.2.2.1.14	Yes
ifInUnknownProtos	1.3.6.1.2.1.2.2.1.15	No
ifOutOctets	1.3.6.1.2.1.2.2.1.16	Yes
ifOutUcastPkts	1.3.6.1.2.1.2.2.1.17	Yes
ifOutNUcastPkts	1.3.6.1.2.1.2.2.1.18	Yes
ifOutDiscards	1.3.6.1.2.1.2.2.1.19	Yes
ifOutErrors	1.3.6.1.2.1.2.2.1.20	Yes
ifOutQLen	1.3.6.1.2.1.2.2.1.21	No
ifSpecific	1.3.6.1.2.1.2.2.1.22	Yes

ifMIB group

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

Object	OID	Supported?
ifXTable	1.3.6.1.2.1.31.1.1	Yes
ifXentry	1.3.6.1.2.1.31.1.1.1	Yes
ifName	1.3.6.1.2.1.31.1.1.1.1	Yes
ifInMulticastPkts	1.3.6.1.2.1.31.1.1.1.2	Yes
ifInBroadcastPkts	1.3.6.1.2.1.31.1.1.1.3	Yes
ifOutMulticastPkts	1.3.6.1.2.1.31.1.1.1.4	No
ifOutBroadcastPkts	1.3.6.1.2.1.31.1.1.1.5	Yes
ifHCInOctets	1.3.6.1.2.1.31.1.1.1.6	Yes
ifHCInUcastPkts	1.3.6.1.2.1.31.1.1.1.7	Yes
ifHCInMulticastPkts	1.3.6.1.2.1.31.1.1.1.8	No
ifHCInBroadcastPkts	1.3.6.1.2.1.31.1.1.1.9	No
ifHCOctets	1.3.6.1.2.1.31.1.1.1.10	Yes
ifHCOUcastPkts	1.3.6.1.2.1.31.1.1.1.11	Yes
ifHCOMulticastPkts	1.3.6.1.2.1.31.1.1.1.12	No
ifHCOBroadcastPkts	1.3.6.1.2.1.31.1.1.1.13	No
ifLinkUpDownTrapEnable	1.3.6.1.2.1.31.1.1.1.14	Yes
ifHighSpeed	1.3.6.1.2.1.31.1.1.1.15	Yes
ifPromiscuousMode	1.3.6.1.2.1.31.1.1.1.16	Yes
ifConnectorPresent	1.3.6.1.2.1.31.1.1.1.17	Yes
ifAlias	1.3.6.1.2.1.31.1.1.1.18	Yes
ifCounterDiscontinuityTime	1.3.6.1.2.1.31.1.1.1.19	No

RFC 1757: Remote Network Monitoring Management Information Base

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

The following groups from RFC 1757 are fully supported.

Object group name	OID	Supported?
rmon	1.3.6.1.2.1.16	Yes
statistics	1.3.6.1.2.1.16.1	Yes
history	1.3.6.1.2.1.16.2	Yes
alarm	1.3.6.1.2.1.16.3	Yes
event	1.3.6.1.2.1.16.9	Yes

RFC 4133: Entity MIB

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

Fully supported object group

The following group from RFC 4133 is fully supported.

Physical entity group

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

The following table lists the entPhysicalTable entries for Brocade switches.

TABLE 4 entPhysicalTable entries for Brocade switches

Platform	Blades	Fans	Power supply	WWN card
Brocade VDX 6710-54	Standalone	2 FRUs	2 PS	1 WWN unit
Brocade VDX 6720-24	Standalone	2 FRUs	2 PS	1 WWN unit
Brocade VDX 6720-60	Standalone	3 FRUs	2 PS	1 WWN unit
Brocade VDX 6730-32	Standalone	2 FRUs	2 PS	1 WWN unit
Brocade VDX 6730-72	Standalone	3 FRUs	2 PS	1 WWN unit

The following figure shows the hierarchy of the physical objects.

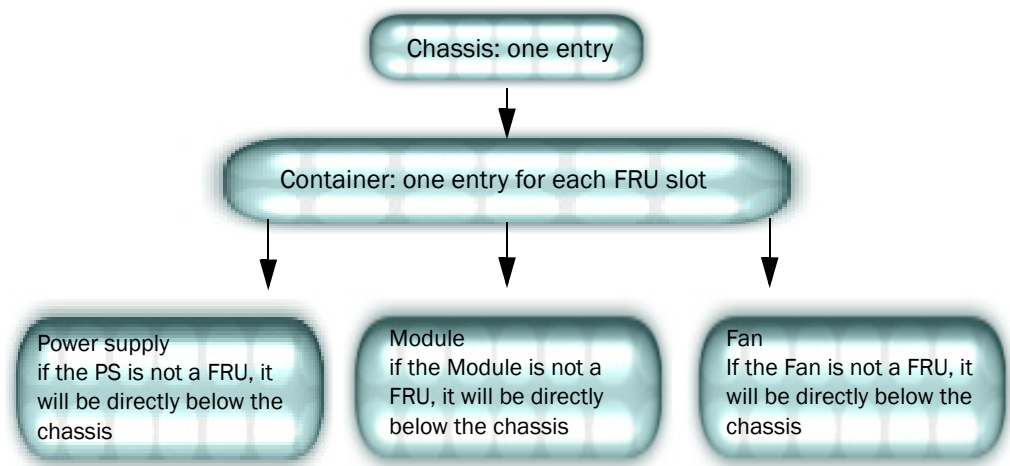


FIGURE 5 entPhysicalTable containment hierarchy (entPhysicalContainsTable)

Unsupported object groups

The following groups from RFC 4133 are not supported.

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

BGP4 MIB

The BGP4 MIB module defines the MIB objects for management of Border Gateway Protocol Version 4 (BGPv4). Both read-only and read-write operations are supported on this MIB through SNMP.

Fully supported object groups

The following groups from BGP4 MIB are fully supported.

Object group name	OID	Supported?
bgpVersion	1.3.6.1.2.1.15.1	Yes
bgpLocalAs	1.3.6.1.2.1.15.2	Yes
bgpPeerTable	1.3.6.1.2.1.15.3	Yes
bgpIdentifier	1.3.6.1.2.1.15.4	Yes
bgpRcvdPathAttrTable	1.3.6.1.2.1.15.5	Yes
bgp4PathAttrTable	1.3.6.1.2.1.15.6	Yes
bgpMIBConformance	1.3.6.1.2.1.15.8	Yes

Bridge-MIB

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

NOTE

Though BRIDGE-MIB objects are retrievable in VCS mode, SNMP is not VCS-aware. An SMNP query will return the switch-specific response.

Fully supported object groups

The following groups from LLDP-EXT-DOT1-MIB are fully supported.

Object group name	OID	Supported?
dot1dBase	1.3.6.1.2.1.17.1	Yes This contains the objects that are applicable to all types of bridges (support only for default VLAN).
dot1dStp	1.3.6.1.2.1.17.2	Yes This contains objects that denote the bridge's state with respect to the Spanning Tree Protocol.
dot1dTp	1.3.6.1.2.1.17.4	Yes Implementation of the dot1dTp sub-tree is optional. It is implemented by those bridges that support the transparent bridging mode. A transparent or SRT bridge will implement this sub-tree.
dot1dStatic	1.3.6.1.2.1.17.5	Yes

P-Bridge MIB

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

NOTE

Though P-Bridge MIB objects are retrievable in VCS mode, SNMP is not VCS-aware. An SMNP query will return the switch-specific response.

The following tables are not supported:

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

Fully supported object groups

The following groups from P-Bridge MIB are fully supported.

Object group name	OID	Supported?
dot1dBase	1.3.6.1.2.1.17.1	Yes
dot1dExtBase	1.3.6.1.2.1.17.6.1.1	Yes
dot1dPortPriority	1.3.6.1.2.1.17.6.1.2	Yes

Q-Bridge MIB

The VLAN Bridge MIB module manages Virtual Bridged Local Area Networks, as defined by IEEE 802.1Q-2003, including Restricted VLAN Registration defined by IEEE 802.1u-2001 and VLAN Classification defined by IEEE 802.1v-2001.

NOTE

Though Q-Bridge MIB objects are retrievable in VCS mode, SNMP is not VCS-aware. An SMNP query will return the switch-specific response.

The following tables are not supported:

- dot1qPortVlanTable
- dot1qPortVlanHCStatisticsTable
- dot1qLearningConstraintsTable
- dot1vProtocolGroupTable
- dot1vProtocolPortTable

Fully supported object groups

The following groups from P-Bridge MIB are fully supported.

Object group name	OID	Supported?
dot1qBase	1.3.6.1.2.1.17.7.1.1	Yes
dot1qTp	1.3.6.1.2.1.17.7.1.2	Yes
dot1qStatic	1.3.6.1.2.1.17.7.1.3	Yes
dot1qVlan	1.3.6.1.2.1.17.7.1.4	Yes

Host Resource MIB

The Host Resource MIB module defines a uniform set of MIB objects useful for the management of host computers. Only read-only operation is supported on this MIB through SNMP.

Fully supported/deprecated object groups

The following group from Host Resource MIB are either fully supported or deprecated.

Object group name	OID	Supported?
hrSystem	1.3.6.1.2.1.25.1	No
hrStorage	1.3.6.1.2.1.25.2	No
hrDevice	1.3.6.1.2.1.25.3	No
hrSWRun	1.3.6.1.2.1.25.4	Yes (Read-only)
hrSWRunPerf	1.3.6.1.2.1.25.5	No
hrSWInstalled	1.3.6.1.2.1.25.6	No
hrMIBAdminInfo	1.3.6.1.2.1.25.7	No

IEEE 802.1x PAE MIB

NOTE

The dot1xPaeSupplicant group is not supported.

Fully supported object groups

The following groups from IEEE 802.1x PAE MIB are fully supported.

Object group name	OID	Supported?
dot1xPaePortTable	1.0.8802.1.1.1.1.2	Yes
dot1xAuthConfigTable	1.0.8802.1.1.1.1.2.1	Yes

IEEE 802.3 LAG MIB

Fully supported object group

The following groups from IEEE 802.3 LAG MIB are fully supported.

Object group name	OID	Supported?
dot3adAggTable	1.2.840.10006.300.43.1.1.1	Yes
dot3adAggPortTable	1.2.840.10006.300.43.1.2.1	Yes

IP Forward MIB

The IP Forward MIB module defines MIB objects for the management of Classless Inter-domain Routing (CIDR) multipath IP routes. Both read-only and read-write operations are supported on this MIB through SNMP.

Fully supported object groups

The following groups from IP Forward MIB are fully supported.

Object group name	OID	Supported?
inetCidrRouterNumber	1.3.6.1.2.1.4.24.6	Yes
inetCidrRouteTable	1.3.6.1.2.1.4.24.7	Yes
inetCidrRouteDiscards	1.3.6.1.2.1.4.24.8	Yes

IP-MIB

The IP-MIB module provides MIB objects for management of IP modules in an IP version-independent manner. Both read-only and read-write operations are supported on this MIB through SNMP.

Fully supported object groups

The following groups from IP-MIB are fully supported.

Object group name	OID	Supported?
ipForwarding	1.3.6.1.2.1.4.1	Yes (Read-only)
ipDefaultTTL	1.3.6.1.2.1.4.2	Yes (Read-only)
ipReasmTimeout	1.3.6.1.2.1.4.13	Yes
ipv6IpForwarding	1.3.6.1.2.1.4.25	Yes (Read-only)
ipv6IpDefaultHopLimit	1.3.6.1.2.1.4.26	Yes (Read-only)

Object group name	OID	Supported?
ipv4InterfaceTableLastChange	1.3.6.1.2.1.4.27	No
ipv4InterfaceTable	1.3.6.1.2.1.4.28	Yes (Read-only)
ipv6InterfaceTableLastChange	1.3.6.1.2.1.4.29	No
ipv6InterfaceTable	1.3.6.1.2.1.4.30	Yes (Read-only)
ipSystemStatsTable	1.3.6.1.2.1.4.31.1	No
ipIfStatsTableLastChange	1.3.6.1.2.1.4.31.2	No
ipIfStatsTable	1.3.6.1.2.1.4.31.3	No
ipAddressPrefixTable	1.3.6.1.2.1.4.32	No
ipAddressTable	1.3.6.1.2.1.4.34	Yes (Read-only)
ipNetToPhysicalTable	1.3.6.1.2.1.4.35	Yes
ipv6ScopeZoneIndexTable	1.3.6.1.2.1.4.36	No
ipDefaultRouterTable	1.3.6.1.2.1.4.37	No
ipv6RouterAdvertTable	1.3.6.1.2.1.4.39	Yes
icmpStatsTable	1.3.6.1.2.1.5.29	No
icmpMsgStatsTable	1.3.6.1.2.1.5.30	No

LLDP MIB

The MIB module for LLDP configuration, statistics, local system data and remote systems data components.

NOTE

LLDP notifications are not supported.

Fully supported object groups

The following groups from LLDP MIB are fully supported.

Object group name	OID	Supported?
lldpStatistics	1.0.8802.1.1.2.1.2	Yes
lldpLocalSystemData	1.0.8802.1.1.2.1.3	Yes
lldpRemoteSystemsData	1.0.8802.1.1.2.1.4	Yes

Partially supported object groups

The following group from LLDP MIB is partially supported.

LLDP configuration group

Object	OID	Supported?
IldpConfiguration	1.0.8802.1.1.2.1.1	Yes
IldpMessageTxInterval	1.0.8802.1.1.2.1.1.1	Yes
IldpMessageTxHoldMultiplier	1.0.8802.1.1.2.1.1.2	Yes
IldpReinitDelay	1.0.8802.1.1.2.1.1.3	Yes
IldpTxDelay	1.0.8802.1.1.2.1.1.4	Yes
IldpNotificationInterval	1.0.8802.1.1.2.1.1.5	Yes
IldpPortConfigTable	1.0.8802.1.1.2.1.1.6	Yes
IldpPortConfigEntry	1.0.8802.1.1.2.1.1.6.1	Yes
IldpPortConfigPortNum	1.0.8802.1.1.2.1.1.6.1.1	Yes
IldpPortConfigAdminStatus	1.0.8802.1.1.2.1.1.6.1.2	Yes
IldpPortConfigNotificationEnable	1.0.8802.1.1.2.1.1.6.1.3	Yes
IldpPortConfigTLVsTxEnable	1.0.8802.1.1.2.1.1.6.1.4	Yes
IldpConfigManAddrTable	1.0.8802.1.1.2.1.1.7	No

LLDP-EXT-DOT1-MIB

The LLDP MIB extension module for IEEE 802.1 organizationally defined discovery information.

Fully supported object groups

The following groups from LLDP-EXT-DOT1-MIB are fully supported.

Object group name	OID	Supported?
IldpXdot1Config	1.0.8802.1.1.2.1.5.32962.1.1	Yes
IldpXdot1LocalData	1.0.8802.1.1.2.1.5.32962.1.2	Yes
IldpXdot1RemoteData	1.0.8802.1.1.2.1.5.32962.1.3	Yes

LLDP-EXT-DOT3-MIB

The LLDP MIB extension module for IEEE 802.3 organizationally defined discovery information.

Fully supported object group

The following group from LLDP-EXT-DOT3-MIB is fully supported.

Object group name	OID	Supported?
IldpXdot3Config	1.0.8802.1.1.2.1.5.4623.1.1	Yes

Partially supported objects

The following groups from LLDP-EXT-DOT3-MIB are partially supported.

lldpXdot3 local data group

Object	OID	Supported?
lldpXdot3LocalData	1.0.8802.1.1.2.1.5.4623.1.2	Yes
lldpXdot3LocPortTable	1.0.8802.1.1.2.1.5.4623.1.2.1	Yes
lldpXdot3LocPortEntry	1.0.8802.1.1.2.1.5.4623.1.2.1.1	Yes
lldpXdot3LocPortAutoNegSupported	1.0.8802.1.1.2.1.5.4623.1.2.1.1.1	Yes
lldpXdot3LocPortAutoNegEnabled	1.0.8802.1.1.2.1.5.4623.1.2.1.1.2	Yes
lldpXdot3LocPortAutoNegAdvertisedCap	1.0.8802.1.1.2.1.5.4623.1.2.1.1.3	Yes
lldpXdot3LocPortOperMauType	1.0.8802.1.1.2.1.5.4623.1.2.1.1.4	Yes
lldpXdot3LocPowerTable	1.0.8802.1.1.2.1.5.4623.1.2.2	No
lldpXdot3LocLinkAggTable	1.0.8802.1.1.2.1.5.4623.1.2.3	Yes
lldpXdot3LocLinkAggEntry	1.0.8802.1.1.2.1.5.4623.1.2.3.1	Yes
lldpXdot3LocLinkAggStatus	1.0.8802.1.1.2.1.5.4623.1.2.3.1.1	Yes
lldpXdot3LocLinkAggPortId	1.0.8802.1.1.2.1.5.4623.1.2.3.1.2	Yes
lldpXdot3LocMaxFrameSizeTable	1.0.8802.1.1.2.1.5.4623.1.2.4	Yes
lldpXdot3LocMaxFrameSizeEntry	1.0.8802.1.1.2.1.5.4623.1.2.4.1	Yes
lldpXdot3LocMaxFrameSize	1.0.8802.1.1.2.1.5.4623.1.2.4.1.1	Yes

IldpXdot3 remote data group

Object	OID	Supported?
IldpXdot3RemoteData	1.0.8802.1.1.2.1.5.4623.1.3	Yes
IldpXdot3RemPortTable	1.0.8802.1.1.2.1.5.4623.1.3.1	Yes
IldpXdot3RemPortEntry	1.0.8802.1.1.2.1.5.4623.1.3.1.1	Yes
IldpXdot3RemPortAutoNegSupported	1.0.8802.1.1.2.1.5.4623.1.3.1.1.1	Yes
IldpXdot3RemPortAutoNegEnabled	1.0.8802.1.1.2.1.5.4623.1.3.1.1.2	Yes
IldpXdot3RemPortAutoNegAdvertisedCap	1.0.8802.1.1.2.1.5.4623.1.3.1.1.3	Yes
IldpXdot3RemPortOperMauType	1.0.8802.1.1.2.1.5.4623.1.3.1.1.4	Yes
IldpXdot3RemPowerTable	1.0.8802.1.1.2.1.5.4623.1.3.2	No
IldpXdot3RemLinkAggTable	1.0.8802.1.1.2.1.5.4623.1.3.3	Yes
IldpXdot3RemLinkAggEntry	1.0.8802.1.1.2.1.5.4623.1.3.3.1	Yes
IldpXdot3RemLinkAggStatus	1.0.8802.1.1.2.1.5.4623.1.3.3.1.1	Yes
IldpXdot3RemLinkAggPortId	1.0.8802.1.1.2.1.5.4623.1.3.3.1.2	Yes
IldpXdot3RemMaxFrameSizeTable	1.0.8802.1.1.2.1.5.4623.1.3.4	Yes
IldpXdot3RemMaxFrameSizeEntry	1.0.8802.1.1.2.1.5.4623.1.3.4.1	Yes
IldpXdot3RemMaxFrameSize	1.0.8802.1.1.2.1.5.4623.1.3.4.1.1	Yes

OSPF MIB

The OSPF MIB module defines the MIB objects for management of the Open Shortest Path First version 2 (OSPFv2) protocol. Both read-only and read-write operations are supported on this MIB through SNMP.

Fully supported object groups

The following groups from OSPF MIB are fully supported.

Object group name	OID	Supported?
ospfGeneralGroup	1.3.6.1.2.1.14.1	Yes
ospfAreaTable	1.3.6.1.2.1.14.2	Yes
ospfStubAreaTable	1.3.6.1.2.1.14.3	Yes
ospfLsdbTable	1.3.6.1.2.1.14.4	Yes
ospfAreaRangeTable	1.3.6.1.2.1.14.5	Yes
ospfHostTable	1.3.6.1.2.1.14.6	Yes
ospfIfTable	1.3.6.1.2.1.14.7	Yes
ospfIfMetricTable	1.3.6.1.2.1.14.8	Yes
ospfVirtIfTable	1.3.6.1.2.1.14.9	Yes
ospfNbrTable	1.3.6.1.2.1.14.10	Yes

Object group name	OID	Supported?
ospfVirtNbrTable	1.3.6.1.2.1.14.11	Yes
ospfExtLsdbTable	1.3.6.1.2.1.14.12	Yes
ospfRouteGroup	1.3.6.1.2.1.14.13	Yes
ospfAreaAggregateTable	1.3.6.1.2.1.14.14	Yes
ospfConformance	1.3.6.1.2.1.14.15	Yes

RSTP MIB

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

NOTE

The RSTP MIB objects are not supported in VCS mode.

Fully supported object groups

The following groups from RSTP MIB are fully supported.

Object group name	OID	Supported?
dot1dStpVersion	1.3.6.1.2.1.17.2.16	Yes
dot1dStpTxHoldCount	1.3.6.1.2.1.17.2.17	Yes
dot1dStpExtPortTable	1.3.6.1.2.1.17.2.19	Yes

sFlow MIB

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

Fully supported object groups

The following groups from sFlow MIB are fully supported.

Object group name	OID	Supported?
sFlowVersion	1.3.6.1.4.1.14706.1.1.1	Yes
sFlowAgentAddressType	1.3.6.1.4.1.14706.1.1.2	Yes
sFlowAgentAddress	1.3.6.1.4.1.14706.1.1.3	Yes
sFlowRcvrTable	1.3.6.1.4.1.14706.1.1.4	Yes
sFlowFsTable	1.3.6.1.4.1.14706.1.1.5	Yes
sFlowCpTable	1.3.6.1.4.1.14706.1.1.6	Yes

SNMP Community MIB

The SNMP Community MIB defines objects to support coexistence between SNMPv1, SNMPv2c, and SNMPv3.

NOTE

From Network OS 5.0.1, read-write operation (Set) is supported for the SNMP Community MIB which was already available for read-only operations (Get and Get-next).

Fully supported object groups

The following groups from SNMP Community MIB are fully supported.

Object group name	OID	Supported?
snmpCommunityMIBObjects	1.3.6.1.6.3.18.1	Yes
snmpCommunityMIBConformance	1.3.6.1.6.3.18.2	Yes

SNMP MPD MIB

The SNMP MPD MIB defines the objects for message processing and dispatching.

Fully supported object groups

The following groups from SNMP MPD MIB are fully supported.

Object group name	OID	Supported?
snmpMPDAdmin	1.3.6.1.6.3.11.1	Yes
snmpMPDMIBObjects	1.3.6.1.6.3.11.2	Yes
snmpMPDMIBConformance	1.3.6.1.6.3.11.3	Yes

SNMP Target MIB

The SNMP Target MIB defines MIB objects which provide mechanisms to remotely configure the parameters used by an SNMP entity for the generation of SNMP messages.

NOTE

From Network OS 5.0.1, read-write operation (Set) is supported for the SNMP Target MIB which was already available for read-only operations (Get and Get-next).

Fully supported object groups

The following groups from SNMP Target MIB are fully supported.

Object group name	OID	Supported?
snmpTargetObjects	1.3.6.1.6.3.12.1	Yes
snmpTargetConformance	1.3.6.1.6.3.12.3	Yes

SNMP View-Based ACM MIB

The SNMP View-Based ACM MIB defines the management information definitions for the view-based access control model for SNMP.

NOTE

From Network OS 5.0.1, read-write operation (Set) is supported for the SNMP View-Based ACM MIB which was already available for read-only operations (Get and Get-next).

Fully supported object groups

The following groups from SNMP View-Based ACM MIB are fully supported.

Object group name	OID	Supported?
vacmMIBObjects	1.3.6.1.6.3.16.1	Yes
vacmMIBConformance	1.3.6.1.6.3.16.2	Yes

SNMP Notification MIB

The SNMP Notification MIB module defines MIB objects which provide mechanisms to remotely configure the parameters used by an SNMP entity for the generation of notifications. Both read-only (Get and Get-next) and read-write (Set) operations are supported on this MIB through SNMP.

Fully supported object groups

The following groups from SNMP Notification MIB are fully supported.

Object group name	OID	Supported?
snmpNotifyObjects	1.3.6.1.6.3.13.1	Yes
snmpNotifyConformance	1.3.6.1.6.3.13.2	Yes

TCP MIB

The TCP MIB module defines the MIB objects for management of Transmission Control Protocol (TCP). Only read-only operation is supported on this MIB through SNMP.

Fully supported object groups

The following groups from TCP MIB are fully supported.

Object group name	OID	Supported?
tcpMIB	1.3.6.1.2.1.49	Yes
tcpRtoAlgorithm	1.3.6.1.2.1.6.1	Yes
tcpRtoMin	1.3.6.1.2.1.6.2	Yes
tcpRtoMax	1.3.6.1.2.1.6.3	Yes
tcpMaxConn	1.3.6.1.2.1.6.4	Yes
tcpActiveOpens	1.3.6.1.2.1.6.5	Yes
tcpPassiveOpens	1.3.6.1.2.1.6.6	Yes
tcpAttemptFails	1.3.6.1.2.1.6.7	Yes
tcpEstabResets	1.3.6.1.2.1.6.8	Yes
tcpCurrEstab	1.3.6.1.2.1.6.9	Yes
tcpInSegs	1.3.6.1.2.1.6.10	Yes
tcpOutSegs	1.3.6.1.2.1.6.11	Yes
tcpRetransSegs	1.3.6.1.2.1.6.12	Yes
tcpConnTable	1.3.6.1.2.1.6.13	Yes
tcpInErrs	1.3.6.1.2.1.6.14	Yes
tcpOutRsts	1.3.6.1.2.1.6.15	Yes

UDP MIB

The UDP MIB module defines the MIB objects for management of User Datagram Protocol (UDP). Only read-only operation is supported on this MIB through SNMP.

Fully supported object groups

The following groups from UDP MIB are fully supported.

Object group name	OID	Supported?
udpMIB	1.3.6.1.2.1.50	Yes
udpInDatagrams	1.3.6.1.2.1.7.1	Yes
udpNoPorts	1.3.6.1.2.1.7.2	Yes
udpInErrors	1.3.6.1.2.1.7.3	Yes

Object group name	OID	Supported?
udpOutDatagrams	1.3.6.1.2.1.7.4	Yes
udpTable	1.3.6.1.2.1.7.5	Yes

Standard Traps

This section describes the supported standard traps.

System status traps

Trap name and OID	Description
coldStart 1.3.6.1.6.3.1.1.5.1	A coldStart trap signifies that the sending protocol entity is re-initializing itself such that the configuration of the agent or the protocol entity implementation may be altered. This trap is generated for the following switch events: <ul style="list-style-type: none"> reboot fastboot
warmStart 1.3.6.1.6.3.1.1.5.2	A warmStart trap signifies that the sending protocol entity is re-initializing itself such that neither the agent configuration nor the protocol entity implementation is altered.
linkDown 1.3.6.1.6.3.1.1.5.3	A linkDown trap signifies that the sending protocol entity recognizes a failure in one of the communication links represented in the configuration of the agent. Varbinds for this trap are as follows: <ul style="list-style-type: none"> ifIndex ifAdminStatus ifOperStatus
linkUp 1.3.6.1.6.3.1.1.5.4	A linkUp trap signifies that the sending protocol entity recognizes that one of the communication links represented in the configuration of the agent has come up. Variable bindings for this trap are as follows: <ul style="list-style-type: none"> ifIndex ifAdminStatus ifOperStatus

RMON traps

Trap name and OID	Description
rmonEventsV2 1.3.6.1.2.1.16.0	Definition point for RMON notifications.
risingAlarm 1.3.6.1.2.1.16.0.1	The SNMP trap that is generated when an alarm entry crosses its rising threshold and generates an event that is configured for sending SNMP traps.
fallingAlarm 1.3.6.1.2.1.16.0.2	The SNMP trap that is generated when an alarm entry crosses its falling threshold and generates an event that is configured for sending SNMP traps.

Bridge-MIB traps

Trap name and OID	Description
dot1dNotifications 1.3.6.1.2.1.17.0	Notifications for the Spanning Tree Protocol.
newRoot 1.3.6.1.2.1.17.0.1	This notification indicates that the sending agent is the new root of the spanning tree. It is sent by a bridge soon after its election as the new root.
topologyChange 1.3.6.1.2.1.17.0.2	This notification is sent by a bridge when any of its configured ports transits from Learning state to Forwarding state or from the Forwarding state to the Blocking state. It is not sent if a newRoot notification is sent for the same transition.

SW-MIB Objects

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SW-MIB overview

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

Switch base MIB

The MIB module for the Brocade switch.

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

Switch system MIB

This MIB holds the switch system-related information.

System group

Object and OID	Access	Description
swSystem 1.3.6.1.4.1.1588.2.1.1.1.1	Not accessible	The MIB module is for system information.
swCurrentDate 1.3.6.1.4.1.1588.2.1.1.1.1.1	Read-only	The object displays the current date in textual format.
swBootDate 1.3.6.1.4.1.1588.2.1.1.1.1.2	Read-only	The date and time when the system last booted.

Object and OID	Access	Description
swFWLastUpdated 1.3.6.1.4.1.1588.2.1.1.1.1.3	Read-only	The date when the firmware was last updated to the switch.
swFlashLastUpdated 1.3.6.1.4.1.1588.2.1.1.1.1.4	Read-only	The date and time when the flash was last updated.
swBootPromLastUpdated 1.3.6.1.4.1.1588.2.1.1.1.1.5	Read-only	The date and time when the Boot PROM was last updated.
swFirmwareVersion 1.3.6.1.4.1.1588.2.1.1.1.1.6	Read-only	The current version of the firmware.
swOperStatus 1.3.6.1.4.1.1588.2.1.1.1.1.7	Read-only	The current operational status of the switch. Possible values: <ul style="list-style-type: none"> • online (1) - The switch is accessible by an external FC port. • offline (2) - The switch is not accessible. • testing (3) - The switch is in a built-in test mode and is not accessible by an external Fibre Channel port. • faulty (4) - The switch is not operational.
Flash administration		
The next five objects are related to firmware or configuration file management.		
swFlashDLOperStatus 1.3.6.1.4.1.1588.2.1.1.1.1.11	Read-only	The operational status of the flash. Possible values: <ul style="list-style-type: none"> • unknown (0) - Indicates that the operational status of the flash is unknown. • swCurrent (1) - Indicates that the flash contains the current firmware image or configuration file. • swFwUpgraded (2) - Indicates that the flash contains the upgraded image from the swFlashDLHost.0. • swCfUploaded (3) - Indicates that the switch configuration file has been uploaded to the host. • swCfDownloaded (4) - Indicates that the switch configuration file has been downloaded from the host. • swFwCorrupted (5) - Indicates that the firmware in the flash of the switch is corrupted.
swFlashDLAdmStatus 1.3.6.1.4.1.1588.2.1.1.1.1.12	Read-write	The state of the flash. Possible values: <ul style="list-style-type: none"> • swCurrent (1) - The flash contains the current firmware image or configuration file. • swFwUpgrade (2) - The firmware in the flash is to be upgraded from the host specified. • swCfUpload (3) - The switch configuration file is to be uploaded to the host specified. • swCfDownload (4) - The switch configuration file is to be downloaded from the host specified. • swFwCorrupted (5) - The firmware in the flash is corrupted. This value is for informational purposes only; however, setting swFlashDLAdmStatus to this value is not allowed.

Object and OID	Access	Description
swBeaconOperStatus 1.3.6.1.4.1.1588.2.1.1.1.1.18	Read-only	The current operational status of the switch beacon. Possible values: <ul style="list-style-type: none"> on (1) - The LEDs on the front panel of the switch run alternately from left to right and right to left. The color is yellow. off (2) - Each LED is in its regular status, indicating color and state.
swBeaconAdmStatus 1.3.6.1.4.1.1588.2.1.1.1.1.19	Read-write	The desired status of the switch beacon. Possible values: <ul style="list-style-type: none"> on (1) - The LEDs on the front panel of the switch run alternately from left to right and right to left. Set the color to yellow. off (2) - Set each LED to its regular status, indicating color and state.
swDiagResult 1.3.6.1.4.1.1588.2.1.1.1.1.20	Read-only	The result of the power-on self-test (POST) diagnostics. Possible values: <ul style="list-style-type: none"> sw-ok (1) - The switch is okay. sw-faulty (2) - The switch has experienced an unknown fault. sw-embedded-port-fault (3) - The switch has experienced an embedded port fault.
swNumSensors 1.3.6.1.4.1.1588.2.1.1.1.1.21	Read-only	The number of sensors inside the switch.
swSensorTable 1.3.6.1.4.1.1588.2.1.1.1.1.22	Not accessible	The table of sensor entries.
swSensorEntry 1.3.6.1.4.1.1588.2.1.1.1.1.22.1	Not accessible	An entry of the sensor information.
swSensorIndex 1.3.6.1.4.1.1588.2.1.1.1.1.22.1.1	Read-only	The index of the sensor.
swSensorType 1.3.6.1.4.1.1588.2.1.1.1.1.22.1.2	Read-only	The type of sensor. Possible values: <ul style="list-style-type: none"> temperature (1) fan (2) power-supply (3)
swSensorStatus 1.3.6.1.4.1.1588.2.1.1.1.1.22.1.3	Read-only	The current status of the sensor. Possible values: <ul style="list-style-type: none"> unknown (1) faulty (2) below-min (3) - The sensor value is below the minimal threshold. nominal (4) above-max (5) - The sensor value is above the maximum threshold. absent (6) - The sensor is missing.
swSensorValue 1.3.6.1.4.1.1588.2.1.1.1.1.22.1.4	Read-only	The current value (reading) of the sensor. The unknown value -2147483648 indicates the maximum value of integer value; it also means that the sensor does not have the capability to measure the actual value. In Network OS v2.0 and later, the temperature sensor value is in Celsius, the fan value is in RPM (revolutions per minute), and the power supply sensor reading is unknown.

3 Switch system MIB

Object and OID	Access	Description
swSensorInfo 1.3.6.1.4.1.1588.2.1.1.1.1.22.1.5	Read-only	Additional information on the sensor. It contains the sensor type and number, in textual format; for example: Temp 3, Fan 6, and so on.
swEtherIPAddress 1.3.6.1.4.1.1588.2.1.1.1.1.25	Read-only	The IP address of the Ethernet interface of this logical switch.
swEtherIPMask 1.3.6.1.4.1.1588.2.1.1.1.1.26	Read-only	The IP mask of the Ethernet interface of this logical switch.
swIPv6Address 1.3.6.1.4.1.1588.2.1.1.1.1.29	Not accessible	The IPv6 address.
swIPv6Status 1.3.6.1.4.1.1588.2.1.1.1.1.30	Not accessible	The current status of the IPv6 address. Possible values: <ul style="list-style-type: none"> • tentative (1) • preferred (2) • ipdeprecated (3) • inactive (4)

Switch fabric group

Object and OID	Access	Description
swFabric 1.3.6.1.4.1.1588.2.1.1.1.2	Not accessible	The OID sub-tree for the switch fabric group.

FC port group

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

Object and OID	Access	Description
swFCport 1.3.6.1.4.1.1588.2.1.1.1.6	Not accessible	The OID sub-tree for FC port group.
swFCPortTable 1.3.6.1.4.1.1588.2.1.1.1.6.2	Not accessible	A table that contains one entry for each switch port, configuration, and service parameters of the port.
swFCPortEntry 1.3.6.1.4.1.1588.2.1.1.1.6.2.1	Not accessible	An entry containing the configuration and service parameters of the switch port.
swFCPortIndex 1.3.6.1.4.1.1588.2.1.1.1.6.2.1.1	Read-only	This object identifies the switch port index. NOTE: The value of a port index is the port number labeled on the front panel plus one. For example, the port index 1 corresponds to port number 0.

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

3 Switch system MIB

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

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

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

Switch event group

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

Switch trap

Trap name and OID	Variables	Description
swFcPortScn 1.3.6.1.4.1.1588.2.1.1.1 .0.3	swFcPortIndex swFcPortOpStatus swFcPortName swFcPortFlag	This trap is sent whenever the operational status or the type of an FC port changes. The events that trigger this trap are as follows: <ul style="list-style-type: none"> • Port goes to online or offline • Port type changes to E_Port, F_Port, or FL_Port swFcPortName is an optional varbind in the trap PDU.
swEventTrap 1.3.6.1.4.1.1588.2.1.1.1 .0.4	swEventIndex swEventTimeInfo swEventLevel swEventRepeatCount swEventDescr	This trap is generated when an event occurs with a level that is at or below swEventTrapLevel.
SwStateChangeTrap 1.3.6.1.4.1.1588.2.1.1.1 .0.12	swOperStatus	This trap is sent when the switch changes its state to online or offline.

Switch resource MIB

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

Object and OID	Access	Description
swCpuOrMemoryUsage 1.3.6.1.4.1.1588.2.1.1.1.26	Not accessible	The object identifier sub-tree for the CPU or memory usage group.
swCpuUsage 1.3.6.1.4.1.1588.2.1.1.1.26.1	Read-only	The object indicates the CPU usage of the system.
swCpuNoOfRetries 1.3.6.1.4.1.1588.2.1.1.1.26.2	Read-only	The number of times the system takes a CPU utilization sample before sending the CPU utilization trap.
swCpuUsageLimit 1.3.6.1.4.1.1588.2.1.1.1.26.3	Read-only	The CPU usage limit.
swCpuPollingInterval 1.3.6.1.4.1.1588.2.1.1.1.26.4	Read-only	The time interval between two memory samples.
swCpuAction 1.3.6.1.4.1.1588.2.1.1.1.26.5	Read-only	The action to be taken if system resources exceed the specified threshold limit.
swMemUsage 1.3.6.1.4.1.1588.2.1.1.1.26.6	Read-only	The system's memory usage.
swMemNoOfRetries 1.3.6.1.4.1.1588.2.1.1.1.26.7	Read-only	The number of times the system must take a memory usage sample before sending the memory usage trap.
swMemUsageLimit 1.3.6.1.4.1.1588.2.1.1.1.26.8	Read-only	The memory usage limit.
swMemPollingInterval 1.3.6.1.4.1.1588.2.1.1.1.26.9	Read-only	The time interval between two memory samples.
swMemAction 1.3.6.1.4.1.1588.2.1.1.1.26.10	Read-only	The action to be taken if system resources exceed the specified threshold limit.

High Availability MIB Objects

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HA-MIB overview

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

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

- High Availability group
- HA-MIB traps

[Table 5](#) lists the objects or definitions that are imported into the HA-MIB and the modules from which they are imported.

TABLE 5 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	Brocade-REG-MIB
swID	SYSTEM-MIB
swSsn	
entPhysicalIndex	ENTITY-MIB
entPhysicalName	
DisplayString	SNMPv2-TC

High Availability group

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

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

FRU table

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

FRU history table

Object and OID	Access	Description
fruHistoryTable 1.3.6.1.4.1.1588.2.1.2.1.6	Not accessible	This table gives the contents of the entire history log of the FRU events.
fruHistoryEntry 1.3.6.1.4.1.1588.2.1.2.1.6.1	Not accessible	An entry in this table represents a particular FRU event.

Object and OID	Access	Description
fruHistoryIndex 1.3.6.1.4.1.1588.2.1.2.1.6.1.1	Read-only	Index of the FRU event in the history table.
fruHistoryClass 1.3.6.1.4.1.1588.2.1.2.1.6.1.2	Read-only	The type of the FRU object related to the event.
fruHistoryObjectNum 1.3.6.1.4.1.1588.2.1.2.1.6.1.3	Read-only	The slot number of the blade and the unit number for everything else.
fruHistoryEvent 1.3.6.1.4.1.1588.2.1.2.1.6.1.4	Read-only	The type of the FRU event.
fruHistoryTime 1.3.6.1.4.1.1588.2.1.2.1.6.1.5	Read-only	The time this event happened.
fruHistoryFactoryPartNum 1.3.6.1.4.1.1588.2.1.2.1.6.1.6	Read-only	The factory part number of the FRU object.
fruHistoryFactorySerialNum 1.3.6.1.4.1.1588.2.1.2.1.6.1.7	Read-only	The factory serial number of the FRU object.

CP table

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

HA-MIB traps

This section lists the HA-MIB traps.

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

FibreAlliance MIB Objects

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FibreAlliance MIB overview

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

Definitions for FCMGMT-MIB

[Table 6](#) lists the definitions used for FCMGMT-MIB.

TABLE 6 Definitions for FCMGMT-MIB

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

TABLE 6 Definitions for FCMGMT-MIB (Continued)

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

Connectivity unit group

Implementation of the connectivity group is mandatory for all systems.

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

Object and OID	Access	Description
connUnitTable 1.3.6.1.3.94.1.6	Not accessible	A list of units under a single SNMP agent. The number of entries is given by the value of uNumber. The value is 1 for standalone system.
connUnitEntry 1.3.6.1.3.94.1.6.1	Not accessible	A connectivity unit entry containing objects for a particular unit.
connUnitId 1.3.6.1.3.94.1.6.1.1	Read-only	The unique identification for this connectivity unit among those within this proxy domain. The value must be unique within the proxy domain because it is the index variable for connUnitTable. The value assigned to a given connectivity unit must be persistent across agent and unit resets. It must be the same as connUnitGlobalId if connUnitGlobalId is known and stable.
connUnitGlobalId 1.3.6.1.3.94.1.6.1.2	Read-only	<p>An optional global-scope identifier for this connectivity unit. It must be a WWN for this connectivity unit or 16 octets of value 0.</p> <p>The following characteristics are required:</p> <ul style="list-style-type: none"> • WWN formats requiring fewer than 16 octets must be extended to 16 octets with trailing 0 octets. • If a WWN is used for connUnitId, the same WWN must be used for connUnitGlobalId. <p>When a non-zero value is provided, the following characteristics are strongly recommended:</p> <ul style="list-style-type: none"> • It must be persistent across agent and unit resets. • It must be globally unique. • It must be one of these FC-PH/PH3 formats: <ul style="list-style-type: none"> • IEEE (NAA=1) • IEEE Extended (NAA=2) • IEEE Registered (NAA=5) • IEEE Registered Extended (NAA=6) <p>Use of the IEEE formats allows any IEEE-registered vendor to assure global uniqueness independently. The following are some references on IEEE WWN formats:</p> <p>http://standards.ieee.org/regauth/oui/tutorials/fibreformat.html http://standards.ieee.org/regauth/oui/tutorials/fibrecomp_id.html</p> <p>If one or more WWNs are associated with the connUnit through other management methods, one of them must be used for connUnitGlobalId. If a WWN is not assigned specifically to the connUnit, there is some merit to using a WWN assigned to (one of) its permanently attached FC/LAN interfaces. This cannot risk uniqueness, though.</p> <p>As a counterexample, if your agent runs in a host and the host has an HBA, it is quite possible that agent, host, and HBA are all distinct connUnits, so the host and agent cannot use the WWN of the HBA.</p> <p>If your hub has a built-in Ethernet port, it might be reasonable for the hub to use its LAN address (prefixed with the appropriate NAA) as its connUnitId. If the Ethernet is a replaceable PCCard, the hub must have an independent ID.</p>
connUnitType 1.3.6.1.3.94.1.6.1.3	Read-only	The type of this connectivity unit.
connUnitNumports 1.3.6.1.3.94.1.6.1.4	Read-only	The number of physical ports in the connectivity unit (internal or embedded, external).
connUnitState 1.3.6.1.3.94.1.6.1.5	Read-only	The overall state of the connectivity unit.

5 Connectivity unit group

Object and OID	Access	Description
connUnitStatus 1.3.6.1.3.94.1.6.1.6	Read-only	The overall status of the connectivity unit.
connUnitProduct 1.3.6.1.3.94.1.6.1.7	Read-only	The product model name of the connectivity unit vendor.
connUnitSn 1.3.6.1.3.94.1.6.1.8	Read-only	The serial number for this connectivity unit.
connUnitUpTime 1.3.6.1.3.94.1.6.1.9	Read-only	The number of centiseconds since the last unit initialization.
connUnitUrl 1.3.6.1.3.94.1.6.1.10	Read-write	The URL to launch a management application, if applicable; otherwise an empty string. In a standalone unit, this is the same as the top-level URL. This has the same definition as system URL for keywords.
connUnitDomainId 1.3.6.1.3.94.1.6.1.11	Read-only	A 24-bit Fibre Channel address ID of this connectivity unit, right-justified with leading 0s, if required. This must be set to the Fibre Channel address ID or if it is a switch it will be set to the Domain Controller address. If this value is not applicable, return all bits set to one.
connUnitProxyMaster 1.3.6.1.3.94.1.6.1.12	Read-only	A value of "yes" means this is the proxy master unit for a set of managed units. For example, this can be the only unit with a management card in it for a set of units. A standalone unit must return "yes" for this object.
connUnitPrincipal 1.3.6.1.3.94.1.6.1.13	Read-only	Indicates whether this connectivity unit is the principal unit within the group of fabric elements. If this value is not applicable, it returns "unknown".
connUnitNumSensors 1.3.6.1.3.94.1.6.1.14	Read-only	Number of sensors in the connUnitSensorTable.
connUnitStatusChangeTime 1.3.6.1.3.94.1.6.1.15	Read-only	The sysuptime time stamp (in centiseconds) at which the last status change occurred.
connUnitConfigurationChangeTime 1.3.6.1.3.94.1.6.1.16	Read-only	The sysuptime time stamp (in centiseconds) at which the last configuration change occurred.
connUnitNumRevs 1.3.6.1.3.94.1.6.1.17	Read-only	The number of revisions in the connUnitRevsTable.
connUnitNumZones 1.3.6.1.3.94.1.6.1.18	Read-only	The number of zones defined in the connUnitZoneTable.
connUnitModuleId 1.3.6.1.3.94.1.6.1.19	Read-only	This is a unique ID, persistent between boots, that can be used to group a set of connUnits together into a module. It is used to create a connUnit with a connUnitType of "module" to represent a physical or logical group of connectivity units. Then the value of the group must be set to the value of connUnitId for this "container" connUnit. The connUnitModuleId must be in 0s if this connUnit is not part of a module.
connUnitName 1.3.6.1.3.94.1.6.1.20	Read-write	A display string containing a name for this connectivity unit. This object value must be persistent between boots.
connUnitInfo 1.3.6.1.3.94.1.6.1.21	Read-write	A display string containing information about this connectivity unit. This object value must be persistent between boots.

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

5 Connectivity unit group

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

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

Object and OID	Access	Description
connUnitPortControl 1.3.6.1.3.94.1.10.1.16	Read-write	<p>Controls the addressed connUnit port. The following are the valid commands:</p> <p>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:</p> <ul style="list-style-type: none"> • The Link Reset protocol. • The Loop Initialization protocol. • Resynchronization occurring between the transceiver in the addressed port to the transceiver to which the port is connected. <p>bypassConnUnitPort If the addressed connUnit allows this operation to be performed to this port, the addressed port performs a vendor-specific “bypass” operation. Examples of these operations are:</p> <ul style="list-style-type: none"> • Transitioning from online to offline. • A request (NON-PARTICIPATING) command to the loop port state machine. • Removal of the port from an arbitrated loop by a hub. <p>unbypassConnUnitPort If the addressed connUnit allows this operation to be performed to this port, the addressed port performs a vendor-specific “unbypass” operation. Examples of these operations are:</p> <ul style="list-style-type: none"> • The Link Failure protocol. • A request (PARTICIPATING) command to the loop port state machine. • Addition of the port to an arbitrated loop by a hub. <p>offlineConnUnitPort If the addressed connUnit allows this operation to be performed to this port, the addressed port performs a vendor-specific offline operation. Examples of these operations are:</p> <ul style="list-style-type: none"> • Disabling a port's transceiver. • The Link Failure protocol. • Request (NON-PARTICIPATING) command to the loop port state machine • Removal of the port from an arbitrated loop by a hub. <p>onlineConnUnitPort If the addressed connUnit allows this operation to be performed to this port, the addressed port performs a vendor-specific online operation. Examples of these operations are:</p> <ul style="list-style-type: none"> • Enabling a port's transceiver. • The Link Failure protocol • Request (PARTICIPATING) command to the loop port state machine. • Addition of the port from an arbitrated loop by a hub. <p>NOTE: Each implementation may chose not to allow any or all of these values on a SET.</p>
connUnitPortName 1.3.6.1.3.94.1.10.1.17	Read-write	A string describing the addressed port.

Object and OID	Access	Description
connUnitPortPhysicalNumber 1.3.6.1.3.94.1.10.1.18	Read-only	This is the internal port number by which this port is known. In many implementations, this must be the same as connUnitPortIndex. Some implementations may have an internal port representation not compatible with the rules for table indices. In these cases, provide the internal representation of this port in this object. This value may also be used in the connUnitLinkPortNumberX or connUnitLinkPortNumberY objects of the connUnitLinkTable.
connUnitPortStatObject 1.3.6.1.3.94.1.10.1.19	Read-only	This OID is deprecated. This contains the OID of the first object of the table that contains the statistics for this particular port. If this has a value of 0, then there are no statistics available for this port. The port type information helps identify the statistics objects found in the table. From this point, use the getnext command to get the next statistics object. When the first part of the OID changes, the end of the table is reached.
connUnitPortProtocolCap 1.3.6.1.3.94.1.10.1.20	Read-only	The bit mask that specifies the driver-level protocol capability of this port. If this is not applicable, return all bits set to zero. The bits have the following definitions: <ul style="list-style-type: none"> • 0 = unknown • 1 = Loop • 2 = Fabric • 4 = SCSI • 8 = TCP/IP • 16 = VI • 32 = FICON
connUnitPortProtocolOp 1.3.6.1.3.94.1.10.1.21	Read-only	The bit mask that specifies the driver level protocols that are currently operational. If this is not applicable, return all bits set to zero. The bits have the following definitions: <ul style="list-style-type: none"> • 0 = unknown • 1 = Loop • 2 = Fabric • 4 = SCSI • 8 = TCP/IP • 16 = VI • 32 = FICON
connUnitPortNodeWwn 1.3.6.1.3.94.1.10.1.22	Read-only	The node WWN of the port, if applicable; otherwise, an empty string. This must have the same value for a group of related ports. The container is defined as the largest physical entity. For example, all ports on HBAs on a host have the same node WWN. All ports on the same storage subsystem have the same node WWN.
connUnitPortHWState 1.3.6.1.3.94.1.10.1.23	Read-only	The state of the port as detected by the hardware.
connUnitEventTable 1.3.6.1.3.94.1.11	Not accessible	The table of connectivity unit events. Errors, warnings, and information must be reported in this table.
connUnitEventEntry 1.3.6.1.3.94.1.11.1	Not accessible	Each entry contains an information on a specific event for the given connectivity unit.
connUnitEventUnitId 1.3.6.1.3.94.1.11.1.1	Read-only	The connUnitId of the connectivity unit that contains this event table.

5 Connectivity unit group

Object and OID	Access	Description
connUnitEventIndex 1.3.6.1.3.94.1.11.1.2	Read-only	<p>Each connectivity unit has its own event buffer. As it wraps, it 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 must read the event table at periodic intervals and then determine if any new entries were added by comparing the last known index value with the current highest index value. The management application must then update its copy of the event table. If the read interval is too long, it is possible that there may be events that may not be contained in the agent's internal event buffer. An agent may read events 50-75.</p> <p>At the next read interval, connUnitEventCurrID is 189. If the management application tries to read event index 76 and the agent's internal buffer is 100 entries maximum, event index 76 is no longer available.</p> <p>The index value is an incrementing integer starting from 1 every time there is a table reset. On table reset, all contents are emptied and all indices are set to 0. When an event is added to the table, the event is assigned the next-higher integer value than the last item entered into the table. If the index value reaches its maximum value, the next item entered causes the index value to roll over and start at 1 again.</p>
connUnitEventId 1.3.6.1.3.94.1.11.1.3	Read-only	<p>The internal event ID. Incremented for each event, ranging between 0 and connUnitMaxEvents. Not used as the table index to simplify the agent implementation. When this reaches the end of the range specified by connUnitMaxEvents, the ID rolls over to start at 0. This value is set back to 0 at reset. The relationship of this value to the index is that the internal event ID may represent a smaller number than a 32-bit integer (for example, maximum 100 entries) and will only have a value range up to connUnitMaxEvents.</p>
connUnitREventTime 1.3.6.1.3.94.1.11.1.4	Read-only	<p>This is the real time when the event occurred. It has the following format. DDMMYYYY HHMMSS</p> <p>Where:</p> <ul style="list-style-type: none"> DD = day number MM = month number YYYY = year HH = hours MM = minutes SS = seconds <p>If not applicable, returns a null string.</p>
connUnitSEventTime 1.3.6.1.3.94.1.11.1.5	Read-only	<p>This is the sysuptime time stamp when the event occurred.</p>
connUnitEventSeverity 1.3.6.1.3.94.1.11.1.6	Read-only	<p>The event severity level.</p>
connUnitEventType 1.3.6.1.3.94.1.11.1.7	Read-only	<p>The type of this event.</p>
connUnitEventObject 1.3.6.1.3.94.1.11.1.8	Read-only	<p>This is used with the connUnitEventType to identify to which object the event refers. It can be the OID of a connectivity unit or of another object, such as connUnitPortStatus [...].</p>
connUnitEventDescr 1.3.6.1.3.94.1.11.1.9	Read-only	<p>The description of the event.</p>
connUnitLinkTable 1.3.6.1.3.94.1.12	Not accessible	<p>A list of links known to this agent from this connectivity unit to other connectivity units.</p>

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

Statistics group

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

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

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

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

5 Statistics group

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

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

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

Service group

Implementation of the Service group is mandatory for all systems.

The Service group contains the following subgroups:

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

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

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

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

Trap

Trap name and OID	Description
connUnitPortStatusChange 1.3.6.1.3.94.6	The SNMP trap that is generated when the GBIC is pulled in/out from the FC port slot in the VDX switches.

5 Trap

MAPS-MIB Objects

In this chapter

- [MAPS-MIB overview](#) 61
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MAPS-MIB overview

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

MAPS Traps

The OID represents the MAPS traps.

TABLE 7

Trap name and OID	Variables	Description
mapsTrapAM 1.3.6.1.4.1.1588.3.1.4.0.1	mapsConfigRuleName mapsConfigObjectGroupType mapsConfigObjectKeyType mapsConfigObjectKeyValue mapsConfigNumOfMS mapsConfigMsList mapsConfigSeverityLevel mapsConfigCondition mapsConfigAction swVfid	This trap is sent for MAPS threshold events.

MAPS configuration

The OID represents the MAPS configuration.

TABLE 8

Object and OID	Access	Description
mapsConfig		This object represents the MAPS configuration parameters.
mapsConfigRuleName 1.3.6.1.4.1.1588.3.1.4.1.1	Read only	This object indicates the rule name which associates a condition with actions that must be triggered when the specified condition is evaluated to be true.
mapsConfigCondition 1.3.6.1.4.1.1588.3.1.4.1.2	Read only	This object indicates the condition defined in the rule. It includes the counter, time base, and threshold value with the logical operation that must be evaluated. For example, (CRC/MIN > 10).
mapsConfigNumOfMS 1.3.6.1.4.1.1588.3.1.4.1.3	Read only	This object indicates the number of monitoring system entries in the notifications.
mapsConfigMsName 1.3.6.1.4.1.1588.3.1.4.1.4	Read only	This object indicates the monitoring system name like CRC, ITW, PS, FAN.
mapsConfigObjectGroupType 1.3.6.1.4.1.1588.3.1.4.1.5	Read only	This object indicates the object group type like circuit, PS, FAN. Possible values are: <ul style="list-style-type: none"> • unknown (1) • ps (2) • fan (3) • port (4) • ve-port-cir (5) • ts (6) • slot (7) • gbic (8) • flash (9) • rule (10) • switch (11) • chassis (12) • cpu (13) • wwn (14) • flow (15) • eth-port (16)
mapsConfigObjectKeyType 1.3.6.1.4.1.1588.3.1.4.1.6	Read only	This object indicates the object key type. The object helps the NMS applications to interpret the data easily. For example, if the mapsConfigObjectGroupType is port, then the key type is an integer, and the key value is the port number. Possible values are: <ul style="list-style-type: none"> • int32 (1) • uint32 (2) • float (3) • string (4)

TABLE 8

Object and OID	Access	Description
mapsConfigObjectKeyValue 1.3.6.1.4.1.1588.3.1.4.1.7	Read only	This object indicates the object key value. For example, <ul style="list-style-type: none"> • For integer the value is 1, 2, 3, 4, ... • For string the value is flowname1, flowname2, ... • If group type is port, then the object key value is the port number.
mapsConfigValueType 1.3.6.1.4.1.1588.3.1.4.1.8	Read only	This object indicates the value type which can be an integer, float, or string. The object helps NMS applications to interpret data easily. Possible values are: <ul style="list-style-type: none"> • int32 (1) • uint32 (2) • float (3) • string (4)
mapsConfigCurrentValue 1.3.6.1.4.1.1588.3.1.4.1.9	Read only	This object indicates the actual value of the monitoring system.
mapsConfigTimeBase 1.3.6.1.4.1.1588.3.1.4.1.10	Read only	This object indicates the time period across which the change in a counter is to be monitored.
mapsConfigSeverityLevel 1.3.6.1.4.1.1588.3.1.4.1.11	Read only	This object indicates the severity level of the condition triggered. Possible values are: <ul style="list-style-type: none"> • critical (1) • error (2) • warning (3) • informational (4) • debug (5)
mapsConfigMsList 1.3.6.1.4.1.1588.3.1.4.1.12	Read only	This object indicates the list of the monitoring systems. The format is <msname>,<value-type>,<current-value>,<time-base> ::<msName>,<value-type>,<current-value>,<time-base>::
mapsConfigAction 1.3.6.1.4.1.1588.3.1.4.1.13	Read only	This object indicates the actions (bitmask value) that must be triggered when the specified condition is evaluated to be true. Action bitmask value mapping are, <ul style="list-style-type: none"> none (0), raslog (1), snmp (2), portlog (4), port-fence (8), email (16), hareboot (32), switchpolicy (64) For example, mapsConfigAction value 3 represents both raslog and snmp actions.
mapsDbCategory 1.3.6.1.4.1.1588.3.1.4.1.14	Read only	This object indicates the DB category name (Port Health, FRU Health, Security Violations, or Switch Resources).

6 MAPS configuration

Frequently Asked Questions About MIBs

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

1. When should 64-bit counters be used?

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

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

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

A Frequently Asked Questions About MIBs

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