BROCADE

MIB REFERENCE GUIDE

Brocade SLX-OS MIB Reference, 16r.1.00

Supporting the Brocade SLX 9850 Router

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Contents

Preface

Document conventions

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

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.

Text formatting conventions

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

Format	Description
bold text	Identifies command names.
	Identifies keywords and operands.
	Identifies the names of GUI elements.
	Identifies text to enter in the GUI.
italic text	Identifies emphasis.
	Identifies variables.
	Identifies document titles.
`Courier font`	Identifies CLI output.

Format	Description
	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.
italic text	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.

Brocade resources

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

White papers, data sheets, and the most recent versions of Brocade software and hardware manuals are available at www.brocade.com. Product documentation for all supported releases is available to registered users at MyBrocade.
Click the **Support** tab and select **Document Library** to access documentation on MyBrocade or www.brocade.com You can locate documentation by product or by operating system.

Release notes are bundled with software downloads on MyBrocade. Links to software downloads are available on the MyBrocade landing page and in the Document Library.

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Online	Telephone	E-mail
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- 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.

About This Document

Supported hardware and software

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

Although many different software and hardware configurations are tested and supported by Brocade Communications Systems, Inc. for SLX-OS Release 16r.1.00, documenting all possible configurations and scenarios is beyond the scope of this document.

The following hardware platforms are supported by this release:

- Brocade SLX 9850-4 router
- Brocade SLX 9850-8 router

To obtain information about other Brocade OS versions, refer to the documentation specific to that version.

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)
- Port Information

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]).

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.

Port Information

The following table provides information on ports that the device uses. When configuring the switch for various policies, take into consideration firewalls and other devices that may sit between device and your network or between the managers and the device.

TABLE 1 Port Information

Port	Type	Common use	Comment

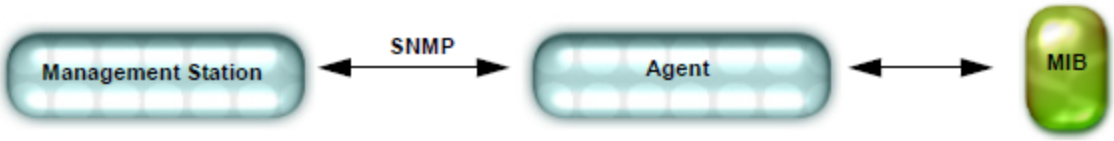
TABLE 1 Port Information (continued)

161	UDP	SNMP GET/SET/GETNEXT/ BULK	Disable the SNMP service on the remote host if you do not use it, or filter incoming UDP packets going to this port.
162	UDP	SNMP TRAPS/INFORMS	Sends traps/informs. Uses CLI command "no snmp-server enable trap" to disable the SNMP trap service. For outgoing source port, the available port number is picked in the port range.

Basic SNMP operation

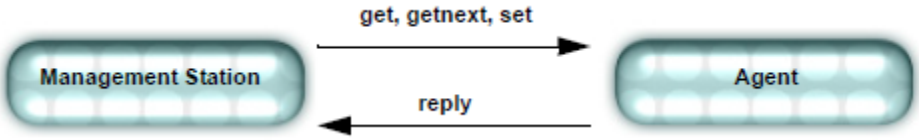
Every Brocade device carries an agent and management information base (MIB). The agent accesses information about a device and makes it available to an SNMP network management station.

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 getbulk, are sent from the management station, and the agent replies immediately and send traps/notifications on any asynchronous events on the device. 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 router. 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 sysDescr is:

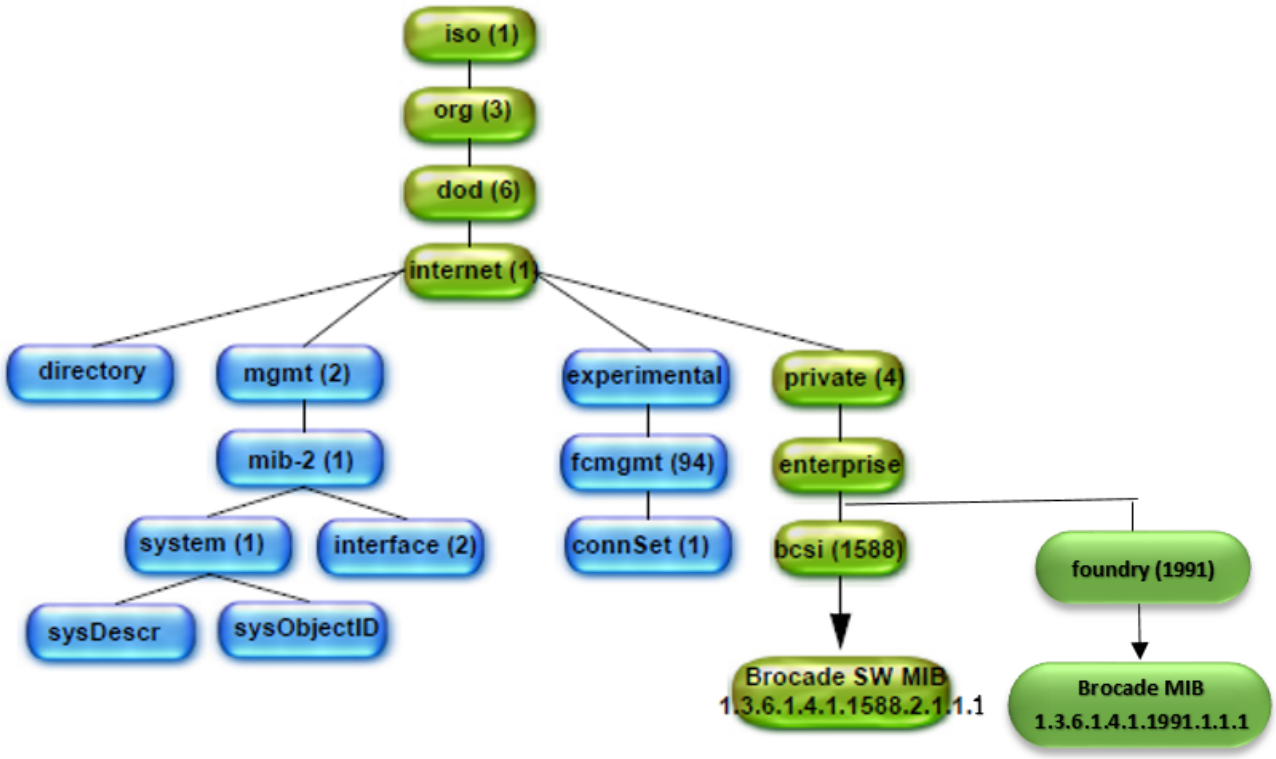
```
1.3.6.1.2.1.1.1
```

The corresponding name is:

```
iso.org.dod.internet.mgmt.mib-2.sysDescr
```

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

FIGURE 4 Brocade MIB tree



Access to MIB variables

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

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

TABLE 2 MIB access levels

Access level	Description
Not accessible/None	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	You can only monitor information.
Read-write	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 MIBs. The Brocade agents support many 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:

- BROCADE-REG-MIB.mib
- BRCD_TC.mib
- BROCADE-PRODUCTS-MIB.mib
- SWBase.mib
- System.mib
- HA.mib
- FOUNDRY-SN-AGENT.mib
- SWITCH-GROUP.mib
- FOUNDRY-SN-SW-L4-SWITCH-GROUP-MIB.mib
- FOUNDRY-SN-WIRELESS-GROUP-MIB.mib
- FOUNDRY-SN-OSPF-GROUP-MIB.mib
- BROCADE-NP-TM-STATS-MIB.mib
- FOUNDRY-SN-STACKING-MIB.mib
- FOUNDRY-SN-NOTIFICATION.mib
- BROCADE-CONTEXT-MAPPING-MIB.mib
- Foundry-MPLS-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 SLX Operating System (SLX OS), and then navigate to the release.
6. 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 3 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 distributed through Brocade by shipping a concatenated file for Standard MIBs and Enterprise MIBs. You can also download the following MIBs from http://www.oidview.com/ or http://www.ietf.org:

- BGP4-MIB
- BRIDGE-MIB
- ENTITY-MIB
- HOST-RESOURCE-MIB
- IANA-ADDRESS-FAMILY-NUMBERS-MIB
- IANA-RTPROTO-MIB
- IANAifType-MIB
- LLDP-MIB
- LLDP-EXT-DOT3-MIB
- LLDP-EXT-DOT1-MIB
- OSPF-MIB
- PAE-MIB
- P-BRIDGE-MIB
- Q-BRIDGE-MIB
- RFC 2856: HCNUM-TC MIB
- RFC 2863: The Interfaces Group MIB
- RFC 3289: Management Information Base for the Differentiated Services Architecture
- RFC 3593: PerfHist-TC-MIB
- RFC 3705: HC-PerfHist-TC-MIB
- RFC 3811: MPLS-TC-STD-MIB DEFINITIONS
- RFC 3813: Multiprotocol Label Switching (MPLS) Label Switching Router (LSR) Management Information Base (MIB)
- RFC 3815: Definitions of Managed Objects for the Multiprotocol Label Switching (MPLS), Label Distribution Protocol (LDP)
- RFC 4001: INET-ADDRESS-MIB
- RFC 4292: IP Forwarding Table MIB
- RFC 4293: Management Information Base for the Internet Protocol (IP)
- RMON-MIB
- RSTP-MIB
- SFlow-MIB
- SNMP-FRAMEWORK-MIB
- SNMPv2-MIB
- SNMPv2-TC
- TCP-MIB
- UDP-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 SLX-OS. All versions of SLX-OS support SNMPv1, SNMPv2c, and SNMPv3. SNMPv2c informs are not supported.

TABLE 4 Brocade SNMP MIB dependencies

MIB Name	Dependencies
Brocade-REG.mib	RFC1155-SMI
Brocade-TC.mib	Brocade-REG-MIB SNMPv2-TC SNMPv2-SMI
BROCADE-PRODUCTS-MIB.mib	SNMPv2-SMI Brocade-REG-MIB
SWBase.mib	SNMPv2-TC SNMPv2-SMI Brocade-REG-MIB
System.mib	SNMPv2-TC Brocade-TC SWBASE-MIB
HA.mib	SNMPv2-SMI Brocade-REG-MIB SW-MIB ENTITY-MIB SNMPv2-TC
FOUNDRY-SN-NOTIFICATION.mib	SNMPv2-SMI FOUNDRY-SN-ROOT-MIB FOUNDRY-SN-SWITCH-GROUP-MIB FOUNDRY-SN-AGENT-MIB FOUNDRY-SN-OSPF-GROUP-MIB IEEE8021-CFM-MIB

Supported Standard MIB Objects

BGP4 MIB

The MIB module for the BGP-4 protocol. 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.

Supported object groups

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
bgpPeerEntry	1.3.6.1.2.1.15.3	Yes
bgpPeerIdentifier	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

History

Release version	History
16r.1.00	This MIB was introduced.

Bridge MIB

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

The Bridge-Identifier, as used in the Spanning Tree Protocol, to uniquely identify a bridge. Its first two octets (in network byte order) contain a priority value, and its last 6 octets contain the MAC address used to refer to a bridge in a unique fashion (typically, the numerically smallest MAC address of all ports on the bridge.

Supported object groups

Object group name	OID	Supported?
dot1dBase	1.3.6.1.2.1.17.1	Yes
dot1dStp	1.3.6.1.2.1.17.2	Yes
dot1dTp	1.3.6.1.2.1.17.4	Yes
dot1dStatic	1.3.6.1.2.1.17.5	Yes

NOTE

The dot1dTpFdbTable (OID 1.3.6.1.2.1.17.4.4) in RFC 1493 is used to find dynamically learned MAC addresses. Statically configured MAC addresses are in the snFdbTable

NOTE

The SNMP MIB object dot1dStpPortTable (OID 1.3.6.1.2.1.17.2.15) does not display information for tagged ports that belong to an 802.1W RSTP configuration. The design of that MIB table is based on a Single STP standard, and does not accommodate Multiple STPs. Thus, the table displays information only for SSTP and for tagged and untagged ports.

NOTE

RFC 4188 has been converted to SMIv2 format. The object dot1dStpPortPathCost32 was added to support IEEE 802. The existing MIB dot1dStpPortPathCost has an upper range of 65535. Over that value, this MIB stays at the upper value and you should access dot1dStpPortPathCost32, which has a higher upper-range value.

History

Release version	History
16r.1.00	This MIB was introduced.

CFM MIB

Connectivity Fault Management module for managing IEEE 802.1ag.

Supported object groups

Object group name	OID	Supported?
dot1agNotifications	1.3.111.2.802.1.1.8.0	Yes
dot1agMIBObjects	1.3.111.2.802.1.1.8.1	Yes
dot1agCfmConformance	1.3.111.2.802.1.1.8.2	Yes

History

Release version	History
16r.1.00	This MIB was introduced.

Entity MIB (Version 3)

The following objects from RFC 4133 Entity MIBs are the module for representing multiple physical and logical entities supported by a single SNMP agent.

Supported object groups

Objects	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
entPhysicalMfgDate	1.3.6.1.2.1.47.1.1.1.1.17	Yes
entPhysicalUris	1.3.6.1.2.1.47.1.1.1.1.18	Yes
entPhysicalContainsTable	1.3.6.1.2.1.47.1.3.3	Yes
entLastChangeTime	1.3.6.1.2.1.47.1.4.1	Yes
entConfigChange	1.3.6.1.2.1.47.2.0.1	Yes

History

Release version	History
16r.1.00	This MIB was introduced.

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.

Supported object groups

Object group name	OID	Supported?
hrSystem	1.3.6.1.2.1.25.1	Yes
hrStorage	1.3.6.1.2.1.25.2	Yes
hrDevice	1.3.6.1.2.1.25.3	Yes
hrSWRun	1.3.6.1.2.1.25.4	Yes
hrSWRunPerf	1.3.6.1.2.1.25.5	Yes
hrSWInstalled	1.3.6.1.2.1.25.6	Yes
hrMIBAdminInfo	1.3.6.1.2.1.25.7	Yes

History

Release version	History
16r.1.00	This MIB was introduced.

IANA-ADDRESS-FAMILY-NUMBERS-MIB

The ianaAddressFamilyNumbers MIB module defines the AddressFamilyNumbers textual convention.

ianaAddressFamilyNumbers textual convention

Name	Description
AddressFamilyNumbers Syntax: Integer	The definition of this textual convention with the addition of newly assigned values is published periodically by the IANA, in either the Assigned Numbers RFC, or some derivative of it specific to Internet Network Management number assignments. (The latest arrangements can be obtained by contacting the IANA.)

History

Release version	History
16r.1.00	This MIB was introduced.

IANAifType-MIB

The ianaifType MIB module defines the IANAifType textual convention, and thus the enumerated values of the ifType object defined in MIB-II's ifTable.

ianaifType textual convention

Name	Description
IANAifType Syntax: Integer	This data type is used as the syntax of the ifType object in the (updated) definition of MIB-II's ifTable. The definition of this textual convention with the addition of newly assigned values is published periodically by the IANA, in either the Assigned Numbers RFC, or some derivative of it specific to Internet Network Management number assignments. (The latest arrangements can be obtained by contacting the IANA.)
IANAtunnelType Syntax: Integer	The encapsulation method used by a tunnel.

History

Release version	History
16r.1.00	This MIB was introduced.

IANA-RTPROTO-MIB

The ianaRtProtoMIB module defines the IANAipRouteProtocol and IANAipMRouteProtocol textual conventions for use in MIBs which need to identify unicast or multicast routing mechanisms. Any additions or changes to the contents of this MIB module require either publication of an RFC, or Designated Expert Review as defined in RFC 2434, Guidelines for Writing an IANA Considerations Section in RFCs. The Designated Expert will be selected by the IESG Area Director(s) of the Routing Area.

ianaRtProtoMIB textual convention

Name	Description
IANAipRouteProtocol Syntax: Integer	A mechanism for learning routes. Inclusion of values for routing protocols is not intended to imply that those protocols need be supported.
IANAipMRouteProtocol Syntax: Integer	The multicast routing protocol. Inclusion of values for multicast routing protocols is not intended to imply that those protocols need be supported.

History

Release version	History
16r.1.00	This MIB was introduced.

Interface group MIB

The interface entry table is based on the RFC 2863 and it obsoletes RFC 2233. It contains information about the interfaces. Each sub-layer is considered to be an interface.

TABLE 5 ifMIB group

Object group name	Object Identifier
ifMIB	1.3.6.1.2.1.31
ifMIBObjects	1.3.6.1.2.1.31.1
ifXTable	1.3.6.1.2.1.31.1.1
ifXEntry	1.3.6.1.2.1.31.1.1.1
ifName	1.3.6.1.2.1.31.1.1.1.1
ifInMulticastPkts	1.3.6.1.2.1.31.1.1.1.2
ifInBroadcastPkts	1.3.6.1.2.1.31.1.1.1.3
ifOutMulticastPkts	1.3.6.1.2.1.31.1.1.1.4
ifOutBroadcastPkts	1.3.6.1.2.1.31.1.1.1.5
ifHCInOctets	1.3.6.1.2.1.31.1.1.1.6
ifHCInUcastPkts	1.3.6.1.2.1.31.1.1.1.7
ifHCInMulticastPkts	1.3.6.1.2.1.31.1.1.1.8
ifHCInBroadcastPkts	1.3.6.1.2.1.31.1.1.1.9
ifHCOutOctets	1.3.6.1.2.1.31.1.1.1.10
ifHCOutUcastPkts	1.3.6.1.2.1.31.1.1.1.11
ifHCOutMulticastPkts	1.3.6.1.2.1.31.1.1.1.12
ifHCOutBroadcastPkts	1.3.6.1.2.1.31.1.1.1.13
ifLinkUpDownTrapEnable	1.3.6.1.2.1.31.1.1.1.14
ifHighSpeed	1.3.6.1.2.1.31.1.1.1.15
ifPromiscuousMode	1.3.6.1.2.1.31.1.1.1.16
ifConnectorPresent	1.3.6.1.2.1.31.1.1.1.17
ifAlias	1.3.6.1.2.1.31.1.1.1.18

TABLE 6 iInterface group

Object group name	Object Identifier
ifNumber	1.3.6.1.2.1.2.1
ifTable	1.3.6.1.2.1.2.2
ifEntry	1.3.6.1.2.1.2.2.1
ifIndex	1.3.6.1.2.1.2.2.1.1
ifDescr	1.3.6.1.2.1.2.2.1.2
ifType	1.3.6.1.2.1.2.2.1.3
ifMtu	1.3.6.1.2.1.2.2.1.4
ifSpeed	1.3.6.1.2.1.2.2.1.5
ifPhysAddress	1.3.6.1.2.1.2.2.1.6
ifAdminStatus	1.3.6.1.2.1.2.2.1.7
ifOperStatus	1.3.6.1.2.1.2.2.1.8
ifLastChange	1.3.6.1.2.1.2.2.1.9

TABLE 6 iInterface group (continued)

Object group name	Object Identifier
ifInOctets	1.3.6.1.2.1.2.2.1.10
ifInUcastPkts	1.3.6.1.2.1.2.2.1.11
ifInNUcastPkts	1.3.6.1.2.1.2.2.1.12
ifInDiscards	1.3.6.1.2.1.2.2.1.13
ifInErrors	1.3.6.1.2.1.2.2.1.14
ifInUnknownProtos	1.3.6.1.2.1.2.2.1.15
ifOutOctets	1.3.6.1.2.1.2.2.1.16
ifOutUcastPkts	1.3.6.1.2.1.2.2.1.17
ifOutNUcastPkts	1.3.6.1.2.1.2.2.1.18
ifOutDiscards	1.3.6.1.2.1.2.2.1.19
ifOutErrors	1.3.6.1.2.1.2.2.1.20
ifOutQLen	1.3.6.1.2.1.2.2.1.21
ifSpecific	1.3.6.1.2.1.2.2.1.22

History

Release version	History
16r.1.00	This MIB was introduced.

IP-MIB

The IP-MIB module provides MIB objects for management of IP modules in an IP version-independent manner.

Object group name	Object Identifier
ipForwarding	1.3.6.1.2.1.4.1
ipDefaultTTL	1.3.6.1.2.1.4.2
ipReasmTimeout	1.3.6.1.2.1.4.13
ipForward	1.3.6.1.2.1.4.24
ipAddressTable	1.3.6.1.2.1.4.34

History

Release version	History
16r.1.00	This MIB was introduced.

IP Forward MIB

The IP Forward MIB module defines MIB objects for the management of Classless Inter-domain Routing (CIDR) multipath IP routes.

Object group name	Object Identifier
inetCidrRouteNumber	1.3.6.1.2.1.4.24.6
inetCidrRouteTable	1.3.6.1.2.1.4.24.7
inetCidrRouteDiscards	1.3.6.1.2.1.4.24.8

History

Release version	History
16r.1.00	This MIB was introduced.

LAG MIB

The Link Aggregation module for managing IEEE 802.3ad.

Supported object groups

Object group name	OID	Supported?
dot3adAggIndex	1.2.840.10006.300.43.1.1.1.1.1	Yes
dot3adAggMACAddress	1.2.840.10006.300.43.1.1.1.1.2	Yes
dot3adAggActorSystemPriority	1.2.840.10006.300.43.1.1.1.1.3	Yes
dot3adAggActorSystemID	1.2.840.10006.300.43.1.1.1.1.4	Yes
dot3adAggAggregateOrIndividual	1.2.840.10006.300.43.1.1.1.1.5	Yes
dot3adAggActorAdminKey	1.2.840.10006.300.43.1.1.1.1.6	Yes
dot3adAggActorOperKey	1.2.840.10006.300.43.1.1.1.1.7	Yes
dot3adAggPartnerSystemID	1.2.840.10006.300.43.1.1.1.1.8	Yes
dot3adAggPartnerSystemPriority	1.2.840.10006.300.43.1.1.1.1.9	Yes
dot3adAggPartnerOperKey	1.2.840.10006.300.43.1.1.1.1.10	Yes
dot3adAggCollectorMaxDelay	1.2.840.10006.300.43.1.1.1.1.11	Yes

History

Release version	History
16r.1.00	This MIB was introduced.

LLDP MIB

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

Supported object groups

Object group name	OID	Supported?
lldpConfiguration	1.0.8802.1.1.2.1.1	Yes
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
lldpExtensions	1.0.8802.1.1.2.1.5	Yes

History

Release version	History
16r.1.00	This MIB was introduced.

LLDP-EXT-DOT1 MIB

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

Supported object groups

Object group name	OID	Supported?
lldpXdot1Config	1.0.8802.1.1.2.1.5.32962.1.1	Yes
lldpXdot1LocalData	1.0.8802.1.1.2.1.5.32962.1.2	Yes
lldpXdot1RemoteData	1.0.8802.1.1.2.1.5.32962.1.3	Yes

History

Release version	History
16r.1.00	This MIB was introduced.

LLDP-EXT-DOT3 MIB

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

Supported object groups

Object group name	OID	Supported?
lldpXdot3Config	1.0.8802.1.1.2.1.5.4623.1.1	Yes
lldpXdot3LocalData	1.0.8802.1.1.2.1.5.4623.1.2	Yes
lldpXdot3RemoteData	1.0.8802.1.1.2.1.5.4623.1.3	Yes

History

Release version	History
16r.1.00	This MIB was introduced.

MPLS MIB

The MIB module contains managed object definitions for Multiprotocol Label Switching (MPLS).

Supported object groups

Object group name	OID	Supported?
mplsLsrStdMIB	1.3.6.1.2.1.10.166.2	Yes
mplsInterfaceTable	1.3.6.1.2.1.10.166.2.1.1	Yes
mplsInterfacePerfTable	1.3.6.1.2.1.10.166.2.1.2	Yes
mplsInSegmentIndexNext	1.3.6.1.2.1.10.166.2.1.3	Yes
mplsInSegmentTable	1.3.6.1.2.1.10.166.2.1.4	Yes
mplsInSegmentPerfTable	1.3.6.1.2.1.10.166.2.1.5	Yes
mplsOutSegmentIndexNext	1.3.6.1.2.1.10.166.2.1.6	Yes
mplsOutSegmentTable	1.3.6.1.2.1.10.166.2.1.7	Yes
mplsOutSegmentPerfTable	1.3.6.1.2.1.10.166.2.1.8	Yes
mplsXCIndexNext	1.3.6.1.2.1.10.166.2.1.9	Yes
mplsXCTable	1.3.6.1.2.1.10.166.2.1.10	Yes
mplsMaxLabelStackDepth	1.3.6.1.2.1.10.166.2.1.11	Yes
mplsLabelStackIndexNext	1.3.6.1.2.1.10.166.2.1.12	Yes
mplsLabelStackTable	1.3.6.1.2.1.10.166.2.1.13	Yes
mplsInSegmentMapTable	1.3.6.1.2.1.10.166.2.1.14	Yes
mplsXCNotificationsEnable	1.3.6.1.2.1.10.166.2.1.15	Yes
mplsTeStdMIB	1.3.6.1.2.1.10.166.3	Yes
mplsTeScalars	1.3.6.1.2.1.10.166.3.1	Yes
mplsTeObjects	1.3.6.1.2.1.10.166.3.2	Yes
mplsLdpStdMIB	1.3.6.1.2.1.10.166.4	Yes
mplsLdpObjects	1.3.6.1.2.1.10.166.4.1	Yes
mplsLdpConformance	1.3.6.1.2.1.10.166.4.2	Yes

History

Release version	History
16r.1.00	This MIB was introduced.

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.

Supported object groups

Objects 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
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
ospfTrap	1.3.6.1.2.1.14.16	Yes

History

Release version	History
16r.1.00	This MIB was introduced.

P-Bridge MIB

The P-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.

Supported object groups

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

History

Release version	History
16r.1.00	This MIB was introduced.

PAE MIB

The Port Access Entity module for managing IEEE 802.1X.

Supported object groups

Objects group name	OID	Supported?
dot1xPaePortTable	1.0.8802.1.1.1.1.1.2	Yes
dot1xAuthConfigTable	1.0.8802.1.1.1.1.2.1	Yes

History

Release version	History
16r.1.00	This MIB was introduced.

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.

Supported object groups

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
dot1vProtocol	1.3.6.1.2.1.17.7.1.5	Yes

History

Release version	History
16r.1.00	This MIB was introduced.

RIPv2-MIB

The MIB module to describe the RIP2 Version 2 Protocol.

Supported object groups

Objects group name	OID	Supported?
rip2Globals	1.3.6.1.2.1.23.1	Yes
rip2IfStatTable	1.3.6.1.2.1.23.2	Yes

History

Release version	History
16r.1.00	This MIB was introduced.

RMON-MIB

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.

Supported object groups

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

History

Release version	History
16r.1.00	This MIB was introduced.

RSTP MIB

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

Supported object groups

Objects 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

History

Release version	History
16r.1.00	This MIB was introduced.

SFLOW MIB (Version 5)

The sFlowMIB module manages the generation and transportation of sFlow data records.

Supported object groups

Objects 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

History

Release version	History
16r.1.00	This MIB was introduced.

SNMP-FRAMEWORK MIB

The SNMP Management Architecture MIB.

Supported object group

Object group name	OID	Supported?
snmpFrameworkAdmin	1.3.6.1.6.3.10.1	Yes
snmpFrameworkMIBObjects	1.3.6.1.6.3.10.2	Yes
snmpFrameworkMIBConformance	1.3.6.1.6.3.10.3	Yes

History

Release version	History
16r.1.00	This MIB was introduced.

SNMPv2 MIB

The MIB module for SNMP entities.

Supported object groups

Object group name	OID	Supported?
sysDescr	1.3.6.1.2.1.1.1	Yes
sysObjectID	1.3.6.1.2.1.1.2	Yes
sysUpTime	1.3.6.1.2.1.1.3	Yes
sysContact	1.3.6.1.2.1.1.4	Yes
sysName	1.3.6.1.2.1.1.5	Yes
sysLocation	1.3.6.1.2.1.1.6	Yes
sysServices	1.3.6.1.2.1.1.7	Yes
sysORLastChange	1.3.6.1.2.1.1.8	Yes
sysORTable	1.3.6.1.2.1.1.9	Yes
sysORIndex	1.3.6.1.2.1.1.9.11	Yes
sysORID	1.3.6.1.2.1.1.9.12	Yes
sysORDescr	1.3.6.1.2.1.1.9.13	Yes
sysORUpTime	1.3.6.1.2.1.1.9.14	Yes

History

Release version	History
16r.1.00	This MIB was introduced.

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.

Supported object groups

Objects 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
tcpEstabResets	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

History

Release version	History
16r.1.00	This MIB was introduced.

UDP MIB

Usage Guidelines

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.

Supported object groups

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
udpOutDatagrams	1.3.6.1.2.1.7.4	Yes
udpTable	1.3.6.1.2.1.7.5	Yes

History

Release version	History
16r.1.00	This MIB was introduced.

Supported Enterprise MIB objects

High Availability MIB overview

The HA-MIB provides information about the High Availability features of SLX-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

Objects and OID	Access	Description
haStatus 1.3.6.1.4.1.1588.2.1.2.1.1	None	Indicates whether the system is redundant.

History

Release version	History
16r.1.00	This MIB was introduced.

High Availability - FRU table

Objects and OID	Access	Description
fruTable 1.3.6.1.4.1.1588.2.1.2.1.5	None	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 entPhysicalIsFRU set to "true (1)".
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.

History

Release version	History
16r.1.00	This MIB was introduced.

High Availability - FRU history table

Objects and OID	Access	Description
fruHistoryTable 1.3.6.1.4.1.1588.2.1.2.1.6	None	This table gives the contents of the entire history log of the FRU events.
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.

History

Release version	History
16r.1.00	This MIB was introduced.

High Availability - CP table

Objects and OID	Access	Description
cpTable 1.3.6.1.4.1.1588.2.1.2.1.7	None	This table lists all the control cards 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.

History

Release version	History
16r.1.00	This MIB was introduced.

High Availability - MIB traps

Trap name and OID	Varbinds	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.

History

Release version	History
16r.1.00	This MIB was introduced.

MPLS administrative group table

The following table contains the MPLS AdminGroup MIB objects that lists the Administrative Group ID that has a configured group name.

Objects and OID	Access	Description
brcdMplsAdminGroupTable 1.3.6.1.4.1.1991.1.2.15.1.1.2	None	The list of administrative groups (by ID) that have a configured group name.
brcdMplsAdminGroupId 1.3.6.1.4.1.1991.1.2.15.1.1.2.1.1 Syntax: Unsigned32	None	Identifies the administrative group ID in a 1- based index. The end user of this object must convert this to a 0-based because the index maps to the bit position in the constraint-based link selection.
brcdMplsAdminGroupName 1.3.6.1.4.1.1991.1.2.15.1.1.2.1.2 Syntax: DisplayString	Read-write	The group name with which this administrative group is associated.
brcdMplsAdminGroupRowStatus 1.3.6.1.4.1.1991.1.2.15.1.1.2.1.3 Syntax: RowStatus	Read-only	The row status of an entry. A set request to this table is not supported. Always returns "active" for the existing entries.

History

Release version	History
16r.1.00	This MIB was introduced.

MPLS interface table

The MPLS interface table contains all configured MPLS interfaces.

Objects and OID	Access	Description
brcdMplsInterfaceTable 1.3.6.1.4.1.1991.1.2.15.1.1.3	None	The list of MPLS-enabled interfaces.
brcdMplsInterfaceIndex 1.3.6.1.4.1.1991.1.2.15.1.1.3.1.1 Syntax: Unsigned32	None	The ifIndex of the MPLS-enabled port or VE interface.
brcdMplsInterfaceAdminGroup 1.3.6.1.4.1.1991.1.2.15.1.1.3.1.2 Syntax: MplsTunnelAffinity	Read-write	Specifies to which administrative groups this MPLS-enabled interface belongs to. It is represented in bitmapped format where each bit from 0 through 31 maps to the (internal) group ID. If a bit is set, it indicates that the corresponding group ID is configured for a particular MPLS interface.
brcdMplsInterfaceRowStatus 1.3.6.1.4.1.1991.1.2.15.1.1.3.1.3 Syntax: RowStatus	Read-only	The row status of an entry. A set request to this table is not supported. Always returns “active” for the existing entries.

History

Release version	History
16r.1.00	This MIB was introduced.

MPLS LSP table

The following table contains objects for the MPLS LSPs table.

Objects and OID	Access	Description
mplsLspTable 1.3.6.1.4.1.1991.1.2.15.1.2.3	None	The MPLS LSP table.
mplsLspSignalingProto 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.1 Syntax: Integer	None	MPLS signaling protocol used by this LSP: • ldp(1) • rsvp(2)
mplsLspIndex 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.2 Syntax: Unsigned32	None	The unique index of the LSP in the system for a given signaling protocol. The ifIndex value of the LSP's tunnel interface index holds true.
mplsLspName 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.3 Syntax: DisplayString	Read-only	The name of the label switched path (LSP).
mplsLspState 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.4 Syntax: Integer	Read-only	The operational state of the LSP: • unknown(1) • up(2) • down(3)
mplsLspPackets 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.5 Syntax: Counter64	Read-only	The number of egress Layer 3 VPN and IP MPLS packets that has been sent to outbound, meeting the in-label and tunnel criteria. This object is equivalent to show mpls statistics tunnel or show mpls ldp traffic command.
mplsLspAge 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.6 Syntax: TimeStamp	Read-only	The age in 10-millisecond periods since the creation of the LSP.
mplsLspTimeUp 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.7 Syntax: TimeStamp	Read-only	The total time in 10-millisecond units that this LSP has been operational. Calculate the percentage up-time using the following equation: mplsLspTimeUp or mplsLspAge x 100%
mplsLspPrimaryTimeUp 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.8 Syntax: TimeStamp	Read-only	The total time in 10-millisecond units that the primary path of the LSP has been operational. The percentage contribution of the primary path to the operational time is calculated using the following equation: mplsLspPrimaryTimeUp or mplsLspTimeUp x 100%
mplsLspTransitions 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.9 Syntax: Counter32	Read-only	The number of times the state of the LSP transitioned from up to down and down to up.
mplsLspLastTransition 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.10 Syntax: TimeStamp	Read-only	The time in 10-millisecond units since the last transition occurred on this LSP.
mplsLspFrom 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.11	Read-only	Source IP address of this LSP.

Objects and OID	Access	Description
Syntax: IpAddress		
mplsLspTo 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.12 Syntax: IpAddress	Read-only	Destination IP address of this LSP.
mplsPathName 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.13 Syntax: DisplayString	Read-only	The name of the active path for this LSP. If there is no name, this field should be empty and all the fields in this table do not apply.
mplsPathType 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.14 Syntax: Integer	Read-only	The type of path that is active. This field is meaningless unless mplsPathName contains no value. Paths can be the following types: • other(1) • primary(2) • standby(3) • secondary(4)
mplsLspAdaptive 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.15 Syntax: TruthVal	Read-only	Indicates if this LSP supports the Adaptive mechanism.
mplsLspBfdSessionId 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.16 Syntax: Unsigned32	Read-only	The BFD session associated to this LSP: • Zero indicates that no BFD session exists for this LSP. • Non-zero is an index to an entry in bfdSessTable.
mplsLspReoptimizeTimer 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.17 Syntax: Unsigned32	Read-only	The number of seconds from the beginning of one reoptimization attempt to the beginning of the next attempt.
mplsLspCoS 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.18 Syntax: ClassOfService	Read-only	The Class of Service.
mplsLspHopLimit 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.19 Syntax: Unsigned32	Read-only	The number of hops this LSP can traverse.
mplsLspCspf 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.20 Syntax: Integer	Read-only	Indicates if the CSPF path calculation is enabled on this LSP.
mplsLspCspfTieBreaker 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.21 Syntax: Integer	Read-only	The tie-breaker to use for selecting the CSPF equal-cost paths. This field is not applicable if mplsLspCspf is disabled.
mplsLspFrrMode 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.22 Syntax: Integer	Read-only	Indicates which protection method is to be used for MPLS Fast Reroute: • “detour” for one-to-one backup • “facility” for facility backup
mplsLspFrrSetupPriority 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.23 Syntax: Unsigned32	Read-only	The setup priority for the MPLS Fast Reroute. The value of this variable is not applicable if mplsLspFrrMode is “none”.

Objects and OID	Access	Description
mplsLspFrrHoldingPriority 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.24 Syntax: Unsigned32	Read-only	The hold priority for the MPLS Fast Reroute. The value of this variable is not applicable if mplsLspFrrMode is “none”.
mplsLspFrrHopLimit 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.25 Syntax: Unsigned32	Read-only	The hop limit for the MPLS Fast Reroute. The value of this variable is not applicable if mplsLspFrrMode is “none”.
mplsLspFrrBandwidth 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.26 Syntax: Unsigned32	Read-only	The bandwidth constraint for the MPLS Fast Reroute. The value zero indicates that the detour route uses a best- effort value for bandwidth. The value of this variable is not applicable if mplsLspFrrMode is “none”.
mplsLspFrrAdmGrpIncludeAny 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.27 Syntax: MplsTunnelAffinity	Read-only	The administrative group setting that the device includes any of the interfaces that are members of the group when calculating detour routes for this LSP. The value of this variable is not applicable if mplsLspFrrMode is “none”.
mplsLspFrrAdmGrpIncludeAll 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.28 Syntax: MplsTunnelAffinity	Read-only	The administrative group setting that an interface must be a member of all of the groups to be considered in a detour route for the LSP. Any interface that is not a member of all the groups is eliminated from consideration. The value of this variable is not applicable if mplsLspFrrMode is “none”.
mplsLspFrrAdmGrpExcludeAny 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.29 Syntax: MplsTunnelAffinity	Read-only	The administrative group setting that the device excludes any of the interfaces that are members of the group when calculating detour routes for this LSP. The value of this variable is not applicable if mplsLspFrrMode is “none”.
mplsLspPathSelectMode 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.30 Syntax: Integer	Read-only	Indicates the path selection mode to use: • Auto-select is the default mode. In this mode, the primary path is always selected to carry traffic when the primary path has stayed operating in the working state for at least the amount of time specified in mplsLspPathSelectRevertTimer. • For manual-select, the traffic is switched to a user-selected path specified in mplsLspPathSelectPathname after the selected path has stayed operating in the working state for at least the amount of time specified in mplsLspPathSelectRevertTimer. • For unconditional-select, the traffic is switched to and stays on the selected path regardless of the path’s condition, even if it is in a failure state.
mplsLspPathSelectPathname 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.31 Syntax: DisplayString	Read-only	The user-selected secondary path for pathselect mode "manual" and "unconditional".
mplsLspPathSelectRevertTimer 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.32 Syntax: Unsigned32	Read-only	The number of seconds to wait after the primary or selected path comes up before traffic reverts to that path. A value of zero indicates that it will switch immediately after the current working path goes down.
mplsLspShortcutOspfAllowed 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.33	Read-only	Indicates that this LSP allows a shortcut between nodes in an autonomous system (AS).

Objects and OID	Access	Description
Syntax: TruthVal		The OSPF route includes the LSP in its SPF calculation.
mplsLspShortcutIsisAllowed 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.34 Syntax: TruthVal	Read-only	Indicates that this LSP allows a shortcut through the network to a destination based on the path's cost (metric). The traffic is forwarded through this LSP to destinations within the IS-IS routing domain. The IS-IS route includes the LSP in its SPF calculation.
mplsLspShortcutIsisLevel 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.35 Syntax: Integer	Read-only	Indicates the level of the IS-IS routing enabled on the device. The value of this variable is not applicable if mplsLspShortcutIsisAllowed is "False".
mplsLspShortcutIsisAnnounce 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.36 Syntax: TruthVal	Read-only	Indicates that this IS-IS shortcut will be announced or advertised. The metric to announce is specified by mplsLspShortcutIsisAnnounceMetric. The value of this variable is not applicable if mplsLspShortcutIsisAllowed is "False".
mplsLspShortcutIsisAnnounceMetric 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.37 Syntax: Unsigned32	Read-only	Indicates the metric value to announce for this shortcut. The value of this variable is not applicable if mplsLspShortcutIsisAnnounce is "False".
mplsLspShortcutIsisRelativeMetric 1.3.6.1.4.1.1991.1.2.15.1.2.3.1.38 Syntax: Unsigned32	Read-only	Indicates the relative metric used to compute the LSP cost when announce is not enabled. The value of this variable is not applicable if mplsLspShortcutIsisAllowed is "False".

History

Release version	History
16r.1.00	This MIB was introduced.

Optical Lane Monitoring table

The following table displays the optical parameters table per lane for a 100G LR4 and LR10 optic.

Objects and OID	Access	Description
snIfOpticalLaneMonitoringTable 1.3.6.1.4.1.1991.1.1.3.3.10	None	This table lists the instrumented parameters of all lanes within a 40 G optic of type SR4 and LR4, 100G optic of type LR4 and LR10. LR4 and SR4 have 4 lanes per optic and LR10 has 10 lanes per optic.
snIfOpticalLaneMonitoringLane 1.3.6.1.4.1.1991.1.1.3.3.10.1.1 Syntax: Unsigned32	None	This objects is the lane number of the 40G and 100G optic. LR4 and SR4 have 4 lanes per optic and LR10 has 10 lanes per optic.
snIfOpticalLaneMonitoringTemperature 1.3.6.1.4.1.1991.1.1.3.3.10.1.2 Syntax: DisplayString	Read-only	This object holds the value of the transmitter laser diode temperature for the lane in the interface. Indicates the health of the transmitter. The format is xxx.yyyy C (Celcius), followed by whether the measured value is normal, high/low alarm, or high/low warning.
snIfOpticalLaneMonitoringTxPower 1.3.6.1.4.1.1991.1.1.3.3.10.1.3 Syntax: DisplayString	Read-only	This object holds the value of the transmitter optical signal power for the lane in the interface, measured in dBm, followed by whether this is a this is a normal value, or high or low warning or alarm.
snIfOpticalLaneMonitoringRxPower 1.3.6.1.4.1.1991.1.1.3.3.10.1.4 Syntax: DisplayString	Read-only	This object holds the value of the receiver optical signal power for the lane in the interface, measured in dBm, followed by whether this is a normal value, or high/low warning or alarm.
snIfOpticalLaneMonitoringTxBiasCurrent 1.3.6.1.4.1.1991.1.1.3.3.10.1.5 Syntax: DisplayString	Read-only	The Tx Bias Current. It is measured in mA, and is followed by whether this is a normal value, or high/low warning or alarm.

History

Release version	History
16r.1.00	This MIB was introduced.

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.

TABLE 7 Switch base MIB

Objects and OID	Access	Description
sw 1.3.6.1.4.1.1588.2.1.1.1	None	The OID sub-tree for the Brocade Silkworm Series of Fibre Channel Switches.

TABLE 8 Switch system group MIBs

Objects and OID	Access	Description
swSystem 1.3.6.1.4.1.1588.2.1.1.1.1	None	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.
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: • 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.
swFlashDLOperStatus 1.3.6.1.4.1.1588.2.1.1.1.1.11	Read-only	The operational status of the flash. Possible values: • 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.

TABLE 8 Switch system group MIBs (continued)

Objects and OID	Access	Description
		• 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: • 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.
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: • 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: • 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: • 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.
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	None	The IPv6 address.
swIPv6Status 1.3.6.1.4.1.1588.2.1.1.1.1.30	None	The current status of the IPv6 address. Possible values: • tentative (1) • preferred (2) • ipdeprecated (3)

TABLE 8 Switch system group MIBs (continued)

Objects and OID	Access	Description
		• inactive (4)

History

Release version	History
16r.1.00	This MIB was introduced.

swSensorTable

Objects and OID	Access	Description
swSensorTable 1.3.6.1.4.1.1588.2.1.1.1.1.22	None	The table of sensor entries.
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: • 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: • 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. The temperature sensor value is in Celsius, the fan value is in RPM (revolutions per minute), and the power supply sensor reading is unknown.
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.

History

Release version	History
16r.1.00	This MIB was introduced.

swEventTable

Objects and OID	Access	Description
swEvent 1.3.6.1.4.1.1588.2.1.1.1.8	None	The OID sub-tree for the switch event group.
swEventTable 1.3.6.1.4.1.1588.2.1.1.1.8.5	Read-only	The table of event entries.
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: • 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.

History

Release version	History
16r.1.00	This MIB was introduced.