Extreme 9920 Software MIB Reference

21.1.1.0

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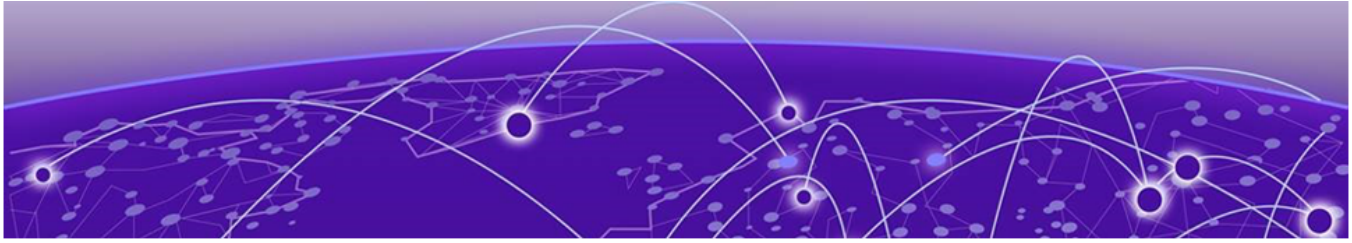

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Preface

Read the following topics to learn about:

- The meanings of text formats used in this document.
- Where you can find additional information and help.
- How to reach us with questions and comments.

Text Conventions

Unless otherwise noted, information in this document applies to all supported environments for the products in question. Exceptions, like command keywords associated with a specific software version, are identified in the text.

When a feature, function, or operation pertains to a specific hardware product, the product name is used. When features, functions, and operations are the same across an entire product family, such as ExtremeSwitching switches or SLX routers, the product is referred to as *the switch* or *the router*.

Table 1: Notes and warnings

Icon	Notice type	Alerts you to...
	Tip	Helpful tips and notices for using the product
	Note	Useful information or instructions
	Important	Important features or instructions
	Caution	Risk of personal injury, system damage, or loss of data
	Warning	Risk of severe personal injury

Table 2: Text

Convention	Description
`screen displays`	This typeface indicates command syntax, or represents information as it is displayed on the screen.
The words *enter* and *type*	When you see the word *enter* in this guide, you must type something, and then press the Return or Enter key. Do not press the Return or Enter key when an instruction simply says *type*.
Key names	Key names are written in boldface, for example **Ctrl** or **Esc**. If you must press two or more keys simultaneously, the key names are linked with a plus sign (+). Example: Press **Ctrl**+**Alt**+**Del**
Words in italicized type	Italics emphasize a point or denote new terms at the place where they are defined in the text. Italics are also used when referring to publication titles.
NEW!	New information. In a PDF, this is searchable text.

Table 3: Command syntax

Convention	Description
bold text	Bold text indicates command names, keywords, and command options.
italic text	Italic text indicates variable content.
`[ ]`	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.
`x | y`	A vertical bar separates mutually exclusive elements.
< >	Nonprinting characters, such as passwords, are enclosed in angle brackets.
...	Repeat the previous element, for example, *member*`[`*member*`...]`.
\	In command examples, the backslash indicates a “soft” line break. When a backslash separates two lines of a command input, enter the entire command at the prompt without the backslash.

Documentation and Training

Find Extreme Networks product information at the following locations:

- Current Product Documentation
- Release Notes
- Hardware and software compatibility for Extreme Networks products
- Extreme Optics Compatibility
- Other resources such as white papers, data sheets, and case studies

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Help and Support

If you require assistance, contact Extreme Networks using one of the following methods:

Extreme Portal

Search the GTAC (Global Technical Assistance Center) knowledge base; manage support cases and service contracts; download software; and obtain product licensing, training, and certifications.

The Hub

A forum for Extreme Networks customers to connect with one another, answer questions, and share ideas and feedback. This community is monitored by Extreme Networks employees, but is not intended to replace specific guidance from GTAC.

Call GTAC

For immediate support: (800) 998 2408 (toll-free in U.S. and Canada) or 1 (408) 579 2826. For the support phone number in your country, visit: www.extremenetworks.com/support/contact

Before contacting Extreme Networks for technical support, have the following information ready:

- Your Extreme Networks service contract number, or serial numbers for all involved Extreme Networks products
- A description of the failure
- A description of any actions already taken to resolve the problem
- A description of your network environment (such as layout, cable type, other relevant environmental information)
- Network load at the time of trouble (if known)
- The device history (for example, if you have returned the device before, or if this is a recurring problem)
- Any related RMA (Return Material Authorization) numbers

Subscribe to Product Announcements

You can subscribe to email notifications for product and software release announcements, Field Notices, and Vulnerability Notices.

1. Go to The Hub.
2. In the list of categories, expand the **Product Announcements** list.
3. Select a product for which you would like to receive notifications.
4. Select **Subscribe**.
5. To select additional products, return to the **Product Announcements** list and repeat steps 3 and 4.

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The Information Development team at Extreme Networks has made every effort to ensure that this document is accurate, complete, and easy to use. We strive to improve our documentation to help you in your work, so we want to hear from you. We welcome all feedback, but we especially want to know about:

- Content errors, or confusing or conflicting information.

- Improvements that would help you find relevant information.
- Broken links or usability issues.

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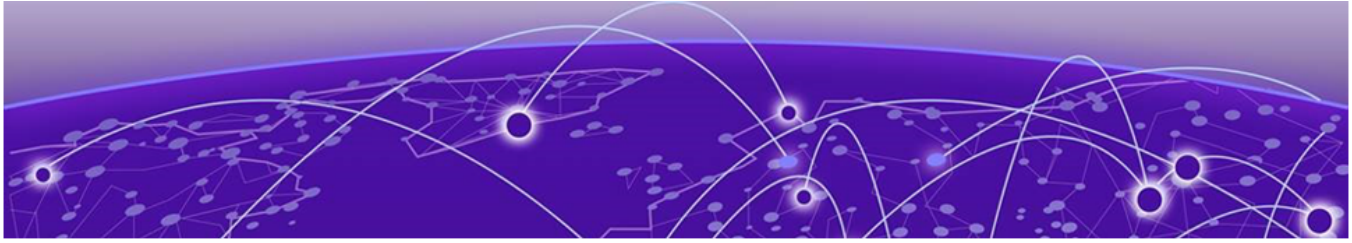
Provide the publication title, part number, and as much detail as possible, including the topic heading and page number if applicable, as well as your suggestions for improvement.



What's New in this Document

This document had no changes for this release of the Extreme 9920 software with the NPB application.

For more information about this software release, see the *Extreme 9920 Software Release Notes, 21.1.1.0*.

MIB Overview

The following topics provide conceptual information about MIBs operation and structure on Extreme 9920.

Understanding MIBs

The management information base (MIB) is a database of monitored and managed information on an Extreme device.

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)
- Joint ISO and CCITT

These branches have short text strings and integers (object identifiers) to identify them. Text strings describe object names. Integers allow software to create compact, encoded representations of the names.

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.system.sysDescr
```

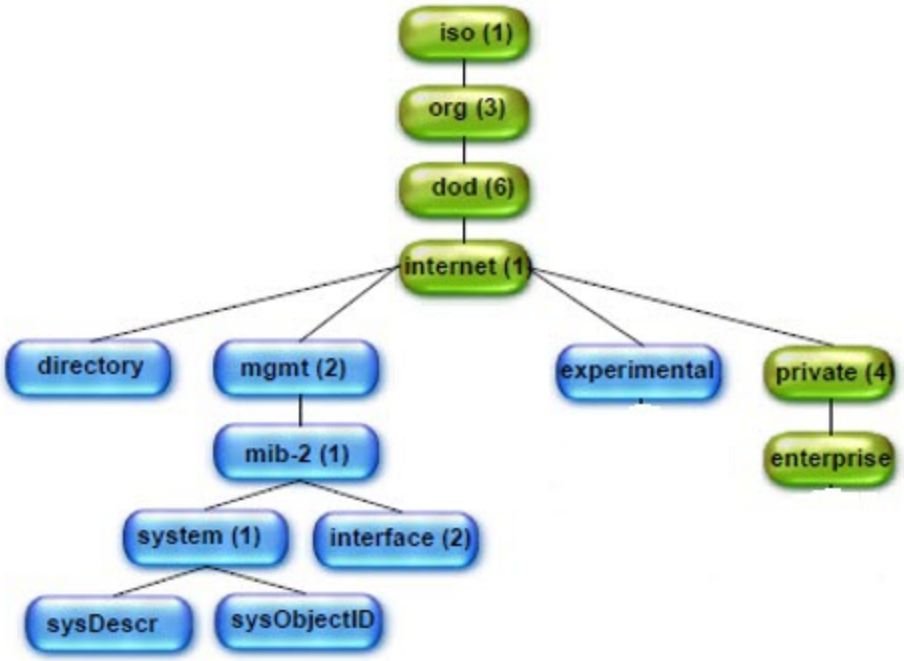
```
1.3.6.1.2.1.47
```

The corresponding name is:

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

The other branches are part of the standard MIBs.

Figure 1: 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 the MIBs are loaded, read-only access provides access levels between the agent and management station. The access levels are described in the following table.

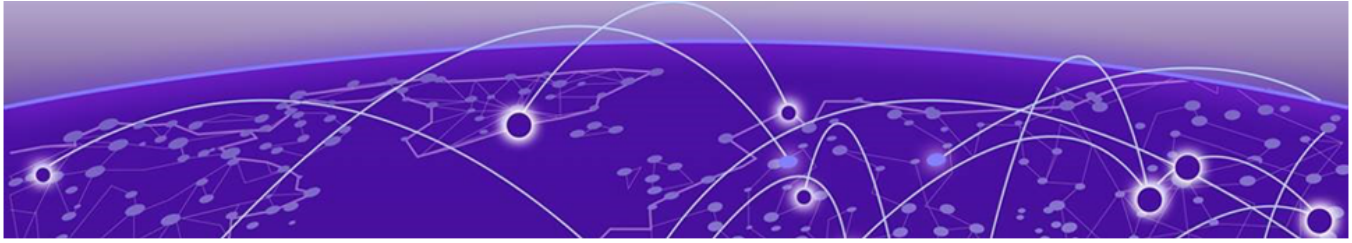
Table 4: MIB access levels

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.

Supported MIBs

The following MIBs are distributed with Extreme 9920 software in a concatenated file.

- Entity MIB. For more information, see Entity MIB on page 16.
- Interface Group MIB. For more information, see Interface Group MIB on page 13.
- System Group MIB . For more information, see System Group MIB on page 15.
- ifXTable Extended MIB. For more information, see ifXTable Extended MIB on page 18.



Supported MIBs

The following topics list the MIBs and MIB objects supported by Extreme 9920.

Interface Group MIB

The Interface Group MIB defines the managed objects for an interface.

The Interfaces Group MIB (ifMIB) is specified in RFC 2863. Extreme 9920 software supports the following.

Table 5: Supported MIB objects

Name	OID	Syntax	Description
ifNumber	.1.3.6.1.2.1.2.1	Integer32	Number of network interfaces on the system
ifIndex	.1.3.6.1.2.1.2.2.1.1	InterfaceIndex	Value between 1 and the value of the ifNumber
ifDescr	.1.3.6.1.2.1.2.2.1.2	DisplayString (Octet string)	Description of the interface
ifType	.1.3.6.1.2.1.2.2.1.3	IANAifType	
ifMtu	.1.3.6.1.2.1.2.2.1.4	Integer32	Size of the largest packet that can be sent or received on the interface
ifSpeed	.1.3.6.1.2.1.2.2.1.5	Gauge32	Estimation of the interface bandwidth in bits per second
ifPhysAddress	.1.3.6.1.2.1.2.2.1.6	PhysAddress(Octet string)	Interface address at the protocol sub-layer
ifAdminStatus	.1.3.6.1.2.1.2.2.1.7	Integer	Administrative state of the interface: up (1), down (2), testing (3)
ifOperStatus	.1.3.6.1.2.1.2.2.1.8	Integer	Operational state of the interface: up (1), down (2), testing (3), unknown (4), dormant (5), not present (6) lower layer down (7)
ifLastChange	.1.3.6.1.2.1.2.2.1.9	TimeTicks	Value of sysUpTime when the interface entered the current operational state
ifInOctets	.1.3.6.1.2.1.2.2.1.10	Counter32	Number of octets received on the interface
ifInUcastPkts	.1.3.6.1.2.1.2.2.1.11	Counter32	Number of unicast packets delivered by the sublayer to a higher sublayer
ifInNUcastPkts	.1.3.6.1.2.1.2.2.1.12	Counter32	Number of multicast or broadcast packets delivered by the sublayer to a higher sublayer
ifInDiscards	.1.3.6.1.2.1.2.2.1.13	Counter32	Number of discarded inbound packets
ifInErrors	.1.3.6.1.2.1.2.2.1.14	Counter32	Number of inbound packets containing errors that prevented delivery to a higher-layer protocol
ifInUnknownProtos	.1.3.6.1.2.1.2.2.1.15	Counter32	Number of packets received from the interface that were discarded for an unknown or unsupported protocol
ifOutOctets	.1.3.6.1.2.1.2.2.1.16	Counter32	Number of octets sent from the interface

Table 5: Supported MIB objects (continued)

ifOutUcastPkts	.1.3.6.1.2.1.2.2.1.17	Counter32	Number of packets requested by a higher-level protocol that were addressed to a unicast address
ifOutNUcastPkts	.1.3.6.1.2.1.2.2.1.18	Counter32	Number of packets requested by a higher-level protocol that were addressed to a multicast or broadcast address
ifOutDiscards	.1.3.6.1.2.1.2.2.1.19	Counter32	Number of discarded outbound packets
ifOutErrors	.1.3.6.1.2.1.2.2.1.20	Counter32	Number of outbound packets containing errors that prevented transmission
ifOutQLen	.1.3.6.1.2.1.2.2.1.21	Gauge32	Length of the outbound packet queue
ifSpecific	.1.3.6.1.2.1.2.2.1.22	Object Identifier	OID of the MIB

System Group MIB

The System Group MIB defines the essential managed objects, or entities, for a system.

The System Group MIB is specified in RFC 1213. Extreme 9920 software supports the following.

Table 6: Supported MIB objects

Name	OID	Syntax	Description
sysDescr	.1.3.6.1.2.1.1.1	DisplayString (Octet string)	Description of the entity
sysObjectID	.1.3.6.1.2.1.1.2	Object Identifier	OID of the device model
sysUpTime	.1.3.6.1.2.1.1.3	TimeTicks	Amount of time since the network management subsystem was last initialized
sysContact	.1.3.6.1.2.1.1.4	DisplayString (octet string)	Description of the contact person for the entity
sysName	.1.3.6.1.2.1.1.5	DisplayString (octet string)	Name of the entity. Usually the FQDN.
sysLocation	.1.3.6.1.2.1.1.6	DisplayString (octet string)	Physical location of the entity
sysServices	.1.3.6.1.2.1.1.7	Integer	Description of the services that the entity offers

Entity MIB

The Entity MIB identifies the physical entities that are supported by an SNMP agent.

The Entity MIB is specified in RFC 4133. Extreme 9920 software supports the following.

Table 7: Supported MIB objects

Name	OID	Syntax	Description
entPhysicalIndex	.1.3.6.1.2.1.47.1.1.1.1.1	PhysicalIndex	Value that uniquely identifies the physical entity
entPhysicalDescr	.1.3.6.1.2.1.47.1.1.1.1.2	SnmpAdminString	Description of the physical entity
entPhysicalVendorType	.1.3.6.1.2.1.47.1.1.1.1.3	AutonomousType	Vendor-specific indicator of the hardware type for the physical entity
entPhysicalContainedIn	.1.3.6.1.2.1.47.1.1.1.1.4	PhysicalIndexOrZero	Value of entPhysicalIndex of the physical entity that contains this physical entity
entPhysicalClass	.1.3.6.1.2.1.47.1.1.1.1.5	PhysicalClass	Indicator of the hardware type of the physical entity
entPhysicalParentRelPos	.1.3.6.1.2.1.47.1.1.1.1.6	Integer32	Indicator of this child component relative to its sibling components
entPhysicalName	.1.3.6.1.2.1.47.1.1.1.1.7	SnmpAdminString	Name of the physical entity
entPhysicalHardwareRev	.1.3.6.1.2.1.47.1.1.1.1.8	SnmpAdminString	Vendor-specific identifier of the hardware revision for the physical entity
entPhysicalFirmwareRev	.1.3.6.1.2.1.47.1.1.1.1.9	SnmpAdminString	Vendor-specific identifier of the firmware revision for the physical entity
entPhysicalSoftwareRev	.1.3.6.1.2.1.47.1.1.1.1.10	SnmpAdminString	Vendor-specific identifier of the software revision for the physical entity
entPhysicalSerialNum	.1.3.6.1.2.1.47.1.1.1.1.11	SnmpAdminString	Vendor-specific serial number for the physical entity
entPhysicalMfgName	.1.3.6.1.2.1.47.1.1.1.1.12	SnmpAdminString	Name of the manufacturer of the physical entity
entPhysicalModelName	.1.3.6.1.2.1.47.1.1.1.1.13	SnmpAdminString	Vendor-specific model name for the physical entity
entPhysicalAlias	.1.3.6.1.2.1.47.1.1.1.1.14	SnmpAdminString	Alias for the physical entity, as specified by the network manager
entPhysicalAssetID	.1.3.6.1.2.1.47.1.1.1.1.15	SnmpAdminString	Tracking identifier for the physical entity, as specified by the network manager
entPhysicalIsFRU	.1.3.6.1.2.1.47.1.1.1.1.16	TruthValue	Indicates whether the vendor considers this physical entity to be a field replaceable unit

Table 7: Supported MIB objects (continued)

entPhysicalMfgDate	.1.3.6.1.2.1.47.1.1.1.1.17	DateAndTime	Date that the physical entity was manufactured
entPhysicalUris	.1.3.6.1.2.1.47.1.1.1.1.18	Octet String	Extra information about the physical entity

ifXTable Extended MIB

The ifXTable is a list of interface entries, the number of which is determined by the value of ifNumber.

The ifXTable Extended MIB is specified in RFC 2863, which also specifies the Interface Group MIB. Extreme 9920 software supports the following.

Table 8: Supported MIB objects

Name	OID	Syntax	comments
ifName	.1.3.6.1.2.1.31.1.1.1.1	DisplayString (Octet string)	Name of the interface
ifInMulticastPkts	.1.3.6.1.2.1.31.1.1.1.2	Counter32	Number of packets addressed to a multicast address at this sublayer
ifInBroadcastPkts	.1.3.6.1.2.1.31.1.1.1.3	Counter32	Number of packets addressed to a broadcast address at this sublayer
ifOutMulticastPkts	.1.3.6.1.2.1.31.1.1.1.4	Counter32	Number of packets requested by a higher-level protocol that were addressed to a multicast address at this sublayer
ifOutBroadcastPkts	.1.3.6.1.2.1.31.1.1.1.5	Counter32	Number of packets requested by a higher-level protocol that were addressed to a broadcast address at this sublayer
ifHCInOctets	.1.3.6.1.2.1.31.1.1.1.6	Counter64	Number of octets received on the interface
ifHCInUcastPktss	.1.3.6.1.2.1.31.1.1.1.7	Counter64	Number of unicast packets delivered by the sublayer to a higher sublayer
ifHCInMulticastPkts	.1.3.6.1.2.1.31.1.1.1.8	Counter64	Number of multicast packets delivered by the sublayer to a higher sublayer
ifHCInBroadcastPkts	.1.3.6.1.2.1.31.1.1.1.9	Counter64	Number of broadcast packets delivered by the sublayer to a higher sublayer
ifHCOutOctets	.1.3.6.1.2.1.31.1.1.1.10	Counter64	Number of octets sent from the interface
ifHCOutUcastPkts	.1.3.6.1.2.1.31.1.1.1.11	Counter64	Number of packets requested by a higher-level protocol that were addressed to a unicast address at this sublayer
ifHCOutMulticastPkts	.1.3.6.1.2.1.31.1.1.1.11	Counter64	Number of packets requested by a higher-level protocol that were addressed to a multicast address at this sublayer
ifHCOutBroadcastPkts	.1.3.6.1.2.1.31.1.1.1.12	Counter64	Number of packets requested by a higher-level protocol that were addressed to a broadcast address at this sublayer

Table 8: Supported MIB objects (continued)

ifLinkUpDownTrapEnable	.1.3.6.1.2.1.31.1.1.1.13	Integer	Indicates whether linkUp and linkDown traps are generated for the interface
ifHighSpeed	.1.3.6.1.2.1.31.1.1.1.14	Gauge32	Estimation of the interface's current bandwidth
ifPromiscuousMode	.1.3.6.1.2.1.31.1.1.1.16	TruthValue	Value of false (2) if the interface accepts only those packets or frames that are addressed to the interface. Value of true (1) if the interface accepts all packets and frames.
ifConnectorPresent	.1.3.6.1.2.1.31.1.1.1.17	TruthValue	Value of true (1) if the sublayer has a physical connector. Value of false (2) if the sublayer does not have a physical connector.
ifAlias	.1.3.6.1.2.1.31.1.1.1.18	DisplayString	Alias for the interface, as specified by the network manager
ifCounterDiscontinuityTime	.1.3.6.1.2.1.31.1.1.1.19	TimeStamp	Value of sysUpTime at the most recent occurrence of discontinuity for any of the interface's counters