Distributed Management Event and Expression MIB Persistence

Feature History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.0(5)T</td>
<td>Expression MIB Support was introduced.</td>
</tr>
<tr>
<td>12.1(3)T, 12.0(12)S</td>
<td>Event MIB Support was introduced.</td>
</tr>
<tr>
<td>12.2(4)T</td>
<td>Expression MIB Persistence is introduced.</td>
</tr>
<tr>
<td></td>
<td>Event MIB Persistence is introduced.</td>
</tr>
<tr>
<td></td>
<td>Event MIB is made compliant with RFC 2981.</td>
</tr>
<tr>
<td>12.2(4)T3</td>
<td>Support was added for the Cisco 7500 series.</td>
</tr>
<tr>
<td>12.2(11)T</td>
<td>Support was added for the Cisco 1760, AS5300, AS5400, and AS5800 platforms.</td>
</tr>
<tr>
<td>12.2(27)SBA</td>
<td>This feature was integrated into Cisco IOS Release 12.2(27)SBA.</td>
</tr>
</tbody>
</table>

Finding Support Information for Platforms and Cisco IOS Software Images

Use Cisco Feature Navigator to find information about platform support and Cisco IOS software image support. Access Cisco Feature Navigator at http://www.cisco.com/go/fn. You must have an account on Cisco.com. If you do not have an account or have forgotten your username or password, click Cancel at the login dialog box and follow the instructions that appear.
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- Supported Standards, MIBs, and RFCs, page 4
- Prerequisites, page 4
- Configuration Tasks, page 4
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Feature Overview

The MIB Persistence features allow the SNMP data of a MIB to be persistent across reloads; that is, MIB information retains the same set object values each time a networking device reboots. MIB Persistence is enabled by using the `snmp mib persist` command, and the MIB data of all MIBs that have had persistence enabled using this command is then written to NVRAM storage by using the `write mib-data` command. Any modified MIB data must be written to NVRAM memory using the `write mib-data` command.

Both Event and Expression MIBs allow you to configure a value for an object and to set up object definitions. Both also allow rows of data to be modified while the row is in an active state.

Scalar objects are stored every time they are changed, and table entries are stored only if the row is in an active state. Event MIB has two scalar objects and nine tables to be persisted into NVRAM. The tables are `mteTriggerTable`, `mteTriggerDeltaTable`, `mteTriggerExistenceTable`, `mteTriggerBooleanTable`, `mteTriggerThresholdTable`, `mteObjectsTable`, `mteEventTable`, `mteEventNotificationTable`, and `mteEventSetTable`.

Expression MIB has two scalar objects and three tables to be stored in NVRAM. The scalars are `expResourceDeltaMinimum` and `expResourceDeltaWildcardInstanceMaximum`. The tables are `expNameTable`, `expExpressionTable`, and `expObjectTable`.

It may take several seconds for the MIB data to be written to NVRAM. The length of time taken depends on the amount of MIB data.

Benefits

Event MIB Persistence and Expression MIB Persistence both allow MIB objects to be saved from reboot to reboot, which allows long-term monitoring of specific devices and interfaces. You can configure object values that are preserved across reboots.

Restrictions

If the number of MIB objects to persist increases, NVRAM storage capacity may be strained. Occasionally, the time taken to write MIB data to NVRAM may be longer than expected.
Related Features and Technologies

- Event MIB
- Expression MIB
- SNMP
- Network management

Related Documents

For detailed information about configuring SNMP, see the following documents:

- The “Configuring SNMP Support” chapter of *Cisco IOS Configuration Fundamentals Configuration Guide*, Release 12.2
Supported Standards, MIBs, and RFCs

Standards
No new or modified standards are supported by these features.

MIBs
Two MIBs are supported by these features:
  • Expression MIB
  • Event MIB (EVENT-MIB.my)
  
  Prior to this release, Event MIB support in Cisco IOS software was based on the IETF internet draft version. In Cisco IOS Release 12.2(4)T3, the Cisco implementation of the EVENT-MIB has been modified to comply with the finalized version of the Event MIB, as defined in RFC 2981. For details, see RFC 2981, available through the IETF web site at http://www.ietf.org.

To obtain lists of supported MIBs by platform and Cisco IOS release, and to download MIB modules, go to the Cisco MIB website on Cisco.com at the following URL:

Note that these features do not change any existing MIBs or add any new MIBs.

RFCs
  • Event MIB: RFC 2981, “Event MIB”
  • Expression MIB: RFC 2982, “Distributed Management Expression MIB”

Prerequisites
The configuration tasks described in the next section assume that you have configured SNMP on your networking device and that values for Event MIB and Expression MIB have been configured by you or your application.

Configuration Tasks
See the following sections for configuration tasks for the Distributed Management Event and Expression MIB Persistence features. Each task in the list is identified as either required or optional.
  • Configuring Event MIB Persistence (optional)
  • Configuring Expression MIB Persistence (optional)

Configuring Event MIB Persistence
Event MIB Persistence is disabled by default. To enable Event MIB Persistence, use the following commands:
To disable Event MIB Persistence after enabling it, use the following commands:

<table>
<thead>
<tr>
<th>Command</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1: <strong>Router(config)# snmp mib persist event</strong></td>
<td>Enables MIB Persistence for Event MIB.</td>
</tr>
<tr>
<td>Step 2: <strong>Router# write mib-data</strong></td>
<td>Saves Event MIB Persistence configuration data to NVRAM.</td>
</tr>
<tr>
<td>Step 3: <strong>Router# copy running-config startup-config</strong></td>
<td>Copies the running configuration to the startup configuration.</td>
</tr>
</tbody>
</table>

To disable Expression MIB Persistence after enabling it, use the following commands:

<table>
<thead>
<tr>
<th>Command</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1: <strong>Router(config)# no snmp mib persist expression</strong></td>
<td>Disables MIB Persistence for Event MIB.</td>
</tr>
<tr>
<td>Step 2: <strong>Router# copy running-config startup-config</strong></td>
<td>Copies the running configuration to the startup configuration.</td>
</tr>
</tbody>
</table>

Configuring Expression MIB Persistence

Expression MIB Persistence is disabled by default. To enable Event MIB Persistence, use the following commands:

<table>
<thead>
<tr>
<th>Command</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1: <strong>Router(config)# snmp mib persist expression</strong></td>
<td>Enables MIB Persistence for Expression MIB.</td>
</tr>
<tr>
<td>Step 2: <strong>Router# write mib-data</strong></td>
<td>Saves Expression MIB Persistence configuration data to NVRAM.</td>
</tr>
<tr>
<td>Step 3: <strong>Router# copy running-config startup-config</strong></td>
<td>Copies the running configuration to the startup configuration.</td>
</tr>
</tbody>
</table>

To disable Expression MIB Persistence after enabling it, use the following commands:

<table>
<thead>
<tr>
<th>Command</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Step 1: <strong>Router(config)# no snmp mib persist expression</strong></td>
<td>Disables MIB Persistence for Expression MIB.</td>
</tr>
<tr>
<td>Step 2: <strong>Router# write mib-data</strong></td>
<td>Saves Expression MIB Persistence configuration data to NVRAM.</td>
</tr>
<tr>
<td>Step 3: <strong>Router# copy running-config startup-config</strong></td>
<td>Copies the running configuration to the startup configuration.</td>
</tr>
</tbody>
</table>

Verifying Event and Expression MIB Persistence

To verify that Event MIB Persistence and Expression MIB Persistence configurations have been set, enter the `more system:running-config` command.
Configuration Examples

This section provides the following configuration examples:

- Enabling Event MIB Persistence Example
- Enabling Expression MIB Persistence Example

Enabling Event MIB Persistence Example

To enable Event MIB Persistence, use the `snmp mib persist event` command in global configuration mode:

```
Router(config)# snmp mib persist event
Router# write mib-data
```

Enabling Expression MIB Persistence Example

To enable Expression MIB Persistence, use the `snmp mib persist expression` command in global configuration mode:

```
Router(config)# snmp mib persist expression
Router# write mib-data
```

Command Reference

This section documents new commands only.

- `snmp mib persist`
- `write mib-data`
Distributed Management Event and Expression MIB Persistence

**snmp mib persist**

To enable MIB Persistence, use the `snmp mib persist` command in global configuration mode. To disable MIB Persistence, use the `no` form of this command.

```
snmp mib persist [event | expression | circuit]

no snmp mib persist [event | expression | circuit]
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>event</td>
<td>(Optional) Enables Event MIB Persistence.</td>
</tr>
<tr>
<td>expression</td>
<td>(Optional) Enables Expression MIB Persistence.</td>
</tr>
<tr>
<td>circuit</td>
<td>Enables circuit interface identification values.</td>
</tr>
</tbody>
</table>

**Defaults**

Disabled by default.

**Command Modes**

Global configuration

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.2(2)T</td>
<td>This command was introduced.</td>
</tr>
<tr>
<td>12.2(4)T3</td>
<td>Support for event and expression MIBs was added.</td>
</tr>
<tr>
<td>12.2(27)SBA</td>
<td>This command was integrated into Cisco IOS Release 12.2(27)SBA.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

After entering the `snmp mib persist` command, you must enter the `write mib-data` command to save MIB Persistence configuration data to NVRAM.

The Circuit Interface MIB provides a MIB object (cciDescr) that can be used to identify individual circuit-based interfaces for SNMP monitoring. Circuit interface identification persistence maintains the user-defined name of the circuit across reboots by retaining the value of the cciDescr object in the Circuit Interface MIB (CISCO-CIRCUIT-INTERFACE-MIB). A consistent value for specific circuits is useful for network management applications that use SNMP. Circuit interface identification persistence is enabled using the `snmp mib persist circuit` global configuration command. This command is disabled by default because this feature uses NVRAM memory.

To enable both MIB Persistence for all available MIB types, use the `snmp mib persist` command without keywords.

**Examples**

The following example enables Event MIB Persistence:

```
Router(config)# snmp mib persist event
Router(config)# end
Router# write mib-data
```
### snmp mib persist

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>snmp ifindex persist</code></td>
<td>Enables or disables SNMP interface index values that remain constant across reboots only on a specific interface.</td>
</tr>
<tr>
<td><code>snmp-server ifindex persist</code></td>
<td>Globally enables SNMP interface index values that remain constant across reboots.</td>
</tr>
<tr>
<td><code>write mib-data</code></td>
<td>Saves MIB Persistence configuration data to NVRAM.</td>
</tr>
</tbody>
</table>
write mib-data

To save MIB data to system memory (NVRAM) for MIB Data Persistence, use the write mib-data command in EXEC mode.

write mib-data

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.2(2)T</td>
<td>This command was introduced as part of the “Circuit Interface Identification Persistence for SNMP” feature.</td>
</tr>
<tr>
<td>12.2(4)T</td>
<td>MIB Data Persistence for the Event and Expression MIBs was introduced as part of the “Distributed Management Event and Expression MIB Persistence” feature.</td>
</tr>
<tr>
<td>12.2(27)SBA</td>
<td>This command was integrated into Cisco IOS Release 12.2(27)SBA.</td>
</tr>
</tbody>
</table>

Usage Guidelines

The MIB Data Persistence feature allows the SNMP data of a MIB to be persistent across reloads; that is, the values of certain MIB objects are retained even if your networking device reboots.

To determine which MIBs support MIB Persistence in your release, use the snmp mib persist ? command in global configuration mode.

Any modified MIB data must be written to NVRAM memory using the write mib-data command. If the write mib-data command is not used, modified MIB data is not saved automatically, even if MIB Persistence is enabled. Executing the write mib-data command saves only the current MIB data; if the MIB object values are changed, you should reenter the write mib-data command to ensure that those values are persistent across reboots.

Examples

In the following example, Event MIB Persistence and Circuit MIB persistence are enabled, and any currently set object values for those MIBs are saved to NVRAM:

Router# configure terminal
Router(config)# snmp mib persist circuit
Router(config)# snmp mib persist event
Router(config)# end
Router# write mib-data

Related Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>snmp mib persist</td>
<td>Enables MIB data persistence.</td>
</tr>
</tbody>
</table>
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