



CBQoS MIB Index Enhancements

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The Class-Based Quality of Service (CBQoS) MIB Index Enhancements feature introduces persistence across all CBQoS MIB indexes including `cbQosConfigIndex`, `cbQosObjectsIndex`, and `cbQosPolicyIndex`.

Finding Feature Information in This Module

Your Cisco IOS software release may not support all of the features documented in this module. For the latest feature information and caveats, see the release notes for your platform and software release. To reach links to specific feature documentation in this module and to see a list of the releases in which each feature is supported, use the “[Feature Information for the CBQoS MIB Index Enhancements](#)” section on [page 8](#).

Finding Support Information for Platforms and Cisco IOS and Catalyst OS Software Images

Use Cisco Feature Navigator to find information about platform support and software image support. Cisco Feature Navigator enables you to determine which Cisco IOS and Catalyst OS software images support a specific software release, feature set, or platform. To access Cisco Feature Navigator, go to <http://www.cisco.com/go/cfn>. An account on Cisco.com is not required.

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Prerequisites for the CBQoS MIB Index Enhancements

- Simple Network Management Protocol (SNMP) must be installed and enabled on the label switch routers (LSRs).
- You must enable ifMIB persistence by issuing the **snmp-server ifindex persist** command. Then issue the **snmp mib persist cbqos** command to enable CBQoS MIB index persistence.

**Note**

If you issue the **snmp mib persist cbqos** command before the **snmp-server ifindex persist** command, you receive a prompt requesting you to enable ifIndex persistence first.

Restrictions for the CBQoS MIB Index Enhancements

If the internal hashing of configuration strings causes too many collisions, NVRAM storage may become tight. You can issue the **more nvram** command to display a new collision file called `cbqos-mib` to help you keep track of the size.

Information About the CBQoS MIB Index Enhancements

Feature Overview of the CBQoS MIB Index Enhancements

The `cbQosConfigIndex`, `cbQosObjectsIndex`, and `cbQosPolicyIndex` are volatile because when a networking device reboots, the index numbers may change. This happens because system rebooting can cause the order of the Modular QoS CLI (MQC) configuration to differ from the actual configuration order, which is user-driven and unpredictable. As a result, you must read the MIB frequently to extract statistical and configuration information. Therefore, once a reload has occurred, the MIB has to be repolled to reestablish the indexes to the data stored in the CBQoS MIB.

Traditionally, MIB persistence is handled by Cisco IOS APIs, which save the index and key information to NVRAM. The data is then retrieved and repopulated after reloading. However, this approach does not work well for the current implementation of the `cbQosObjectsIndex` because of the large amount of information that needs to be saved.

An index encoding scheme based on configuration entries instead of operational sequence is being implemented to provide persistent indexes on router reload so that MIB information retains the same set of object values each time that a networking device reboots.

Benefits of the CBQoS MIB Index Enhancements

These enhancements provide a repeatable method for generating MIB indexes so that they do not change between reboots.

The complexity of configuring and correlating statistics objects is reduced, making it easier for network management applications to gather accurate information.

You do not need to make any changes to your Network Management Station (NMS) software since this feature is an infrastructure improvement that is backward compatible with older MIBs.

How to Configure the CBQoS MIB Index Enhancements

Enabling Cisco IOS MIB and CBQoS MIB Index Persistence

SUMMARY STEPS

1. `enable`
2. `configure terminal`
3. `snmp-server ifindex persist`
4. `snmp mib persist [event | expression | circuit | cbqos]`
5. `end`
6. `write mib-data`
or
`write`

DETAILED STEPS

	Command or Action	Purpose
Step 1	<code>enable</code> Example: Router> <code>enable</code>	Enables privileged EXEC mode. <ul style="list-style-type: none">• Enter your password if prompted.
Step 2	<code>configure terminal</code> Example: Router# <code>configure terminal</code>	Enters global configuration mode.
Step 3	<code>snmp-server ifindex persist</code> Example: Router(config)# <code>snmp-server ifindex persist</code>	Enables Cisco IOS MIB index (ifIndex) persistence.

Command or Action	Purpose
<p>Step 4 <code>snmp mib persist [event expression circuit cbqos]</code></p> <p>Example: Router(config)# snmp mib persist cbqos</p>	<p>Enables MIB persistence.</p> <ul style="list-style-type: none"> The optional event keyword enables Event MIB persistence. The optional expression keyword enables Expression MIB persistence. The optional circuit keyword enables Circuit MIB persistence. The optional cbqos keyword enables CBQoS MIB persistence. <p>Note If you have not enabled Cisco IOS MIB index (ifIndex) persistence (Step 3), the following message appears when you issue the snmp mib persist cbqos command: Enable 'snmp-server ifindex persist' for persist cbqos index</p>
<p>Step 5 <code>end</code></p> <p>Example: Router(config)# end</p>	<p>Returns to privileged EXEC mode.</p>
<p>Step 6 <code>write mib-data</code></p> <p style="padding-left: 40px;"><code>or</code></p> <p><code>write</code></p> <p>Example: Router# write mib-data</p> <p style="padding-left: 40px;"><code>or</code></p> <p>Router# write</p>	<p>Saves CBQoS MIB data to NVRAM.</p>

Verifying CBQoS MIB Index Persistence

SUMMARY STEPS

1. `enable`
2. `show running-config | include cbqos`
3. `exit`

DETAILED STEPS

	Command or Action	Purpose
Step 1	<p><code>enable</code></p> <p>Example: Router> <code>enable</code></p>	<p>Enables privileged EXEC mode.</p> <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	<p><code>show running-config include cbqos</code></p> <p>Example: Router# <code>show running-config include cbqos</code></p>	<p>Displays the configuration information currently running on the router.</p> <p>Note The information should include <code>snmp mib persist cbqos</code>.</p>
Step 3	<p><code>exit</code></p> <p>Example: Router# <code>exit</code></p>	<p>Returns to user EXEC mode.</p>

Configuration Examples for the CBQoS MIB Index Enhancements

Example: Enabling Cisco IOS MIB and CBQoS MIB Index Persistence

The following example enables Cisco IOS MIB (ifIndex) and CBQoS MIB index persistence:

```
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# snmp-server ifindex persist
Router(config)# snmp mib persist cbqos
```

Examples: Verifying Cisco IOS MIB and CBQoS MIB Index Persistence

The following examples verify that Cisco IOS MIB (ifIndex) and CBQoS MIB index persistence have been configured:

```
Router# show running-config | include cbqos
snmp mib persist cbqos

Router# show running-config | include persist
snmp-server ifindex persist
snmp mib persist cbqos
```

Additional References

The following sections provide references related to the CBQoS MIB Index Enhancements.

Related Documents

Related Topic	Document Title
SNMP commands	Cisco IOS Network Management Command Reference
SNMP configuration tasks, MIB persistence	“Configuring SNMP Support” module
Other documentation	For information on using SNMP MIB features, see the appropriate documentation for your network management system.

Standards

Standard	Title
No new or modified standards are supported by this feature, and support for existing standards has not been modified by this feature.	—

MIBs

MIB	MIBs Link
<p>CISCO-CLASS-BASED-QOS-MIB, Revision 13</p> <p>Note The CISCO-CLASS-BASED-QOS-MIB is actually two MIBs: the CISCO-CLASS-BASED-QOS-MIB and the CISCO-CLASS-BASED-QOS-CAPABILITY-MIB.</p>	<p>To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL:</p> <p>http://www.cisco.com/go/mibs</p>

RFCs

RFC	Title
RFC 2233	The Interfaces Group MIB using SMIV2

Technical Assistance

Description	Link
<p>The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.</p>	<p>http://www.cisco.com/cisco/web/support/index.html</p>

Command Reference

The following commands are introduced or modified in the feature or features documented in this module. For information about these commands, see the *Cisco IOS Quality of Service Solutions Command Reference* at http://www.cisco.com/en/US/docs/ios/qos/command/reference/qos_book.html. For information about all Cisco IOS commands, use the Command Lookup Tool at <http://tools.cisco.com/Support/CLILookup> or a Cisco IOS master commands list.

- `snmp mib persist`

Feature Information for the CBQoS MIB Index Enhancements

Table 1 lists the release history for this feature.

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Note

Table 1 lists only the Cisco IOS software release that introduced support for a given feature in a given Cisco IOS software release train. Unless noted otherwise, subsequent releases of that Cisco IOS software release train also support that feature.

Table 1 Feature Information for the CBQoS MIB Index Enhancements

Feature Name	Releases	Feature Information
CBQoS MIB Index Enhancements	12.4(4)T, 12.0(32)S, 12.2(31)SB2	The CBQoS MIB Index Enhancements feature introduces persistence across all CBQoS MIB indexes including <code>cbQosConfigIndex</code> , <code>cbQosObjectsIndex</code> , and <code>cbQosPolicyIndex</code> . In 12.4(4)T, this feature was introduced. In 12.0(32)S, this feature was integrated into the release. In 12.2(31)SB2, support for the Cisco 10000 Series routers and the Cisco 7304 router was introduced.

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