



## BGP MIB Support

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The BGP MIB Support Enhancements feature introduces support in the CISCO-BGP4-MIB for new SNMP notifications.

- [Finding Feature Information, page 1](#)
- [Information About BGP MIB Support, page 1](#)
- [How to Enable BGP MIB Support, page 4](#)
- [Configuration Examples for BGP MIB Support, page 5](#)
- [Additional References, page 5](#)
- [Feature Information for BGP MIB Support, page 6](#)

## Finding Feature Information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see [Bug Search Tool](#) and the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the feature information table at the end of this module.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to [www.cisco.com/go/cfn](http://www.cisco.com/go/cfn). An account on Cisco.com is not required.

## Information About BGP MIB Support

### BGP MIB Support

The Management Information Base (MIB) that supports BGP is the CISCO-BGP4-MIB. The BGP MIB Support Enhancements feature introduces support in the CISCO-BGP4-MIB for new SNMP notifications. The following sections describe the objects and notifications (traps) that are supported:

#### **BGP FSM Transition Change Support**

The cbgpRouteTable supports BGP Finite State Machine (FSM) transition state changes.

The `cbgpFsmStateChange` object allows you to configure SNMP notifications (traps) for all FSM transition state changes. This notification contains the following MIB objects:

- `bgpPeerLastError`
- `bgpPeerState`
- `cbgpPeerLastErrorTxt`
- `cbgpPeerPrevState`

The `cbgpBackwardTransition` object supports all BGP FSM transition state changes. This object is sent each time the FSM moves to either a higher or lower numbered state. This notification contains the following MIB objects:

- `bgpPeerLastError`
- `bgpPeerState`
- `cbgpPeerLastErrorTxt`
- `cbgpPeerPrevState`

The `snmp-server enable bgp traps` command allows you to enable the traps individually or together with the existing FSM backward transition and established state traps as defined in [RFC 1657](#).

### BGP Route Received Route Support

The `cbgpRouteTable` object supports the total number of routes received by a BGP neighbor. The following MIB object is used to query the CISCO-BGP4-MIB for routes that are learned from individual BGP peers:

- `cbgpPeerAddrFamilyPrefixTable`

Routes are indexed by the address-family identifier (AFI) or subaddress-family identifier (SAFI). The prefix information displayed in this table can also be viewed in the output of the `show ip bgp` command.

### BGP Prefix Threshold Notification Support

The `cbgpPrefixMaxThresholdExceed` and `cbgpPrfrefixMaxThresholdClear` objects were introduced to allow you to poll for the total number of routes received by a BGP peer.

The `cbgpPrefixMaxThresholdExceed` object allows you to configure SNMP notifications to be sent when the prefix count for a BGP session has exceeded the configured value. This notification is configured on a per address family basis. The prefix threshold is configured with the `neighbor maximum-prefix` command. This notification contains the following MIB objects:

- `cbgpPeerPrefixAdminLimit`
- `cbgpPeerPrefixThreshold`

The `cbgpPrfrefixMaxThresholdClear` object allows you to configure SNMP notifications to be sent when the prefix count drops below the clear trap limit. This notification is configured on a per address family basis. This notification contains the following objects:

- `cbgpPeerPrefixAdminLimit`
- `cbgpPeerPrefixClearThreshold`

Notifications are sent when the prefix count drops below the clear trap limit for an address family under a BGP session after the `cbgpPrefixMaxThresholdExceed` notification is generated. The clear trap limit is calculated by subtracting 5 percent from the maximum prefix limit value configured with the **neighbor maximum-prefix** command. This notification will not be generated if the session goes down for any other reason after the `cbgpPrefixMaxThresholdExceed` is generated.

### VPNv4 Unicast Address Family Route Support

The `cbgpRouteTable` object allows you to configure SNMP GET operations for VPNv4 unicast address-family routes.

The following MIB object allows you to query for multiple BGP capabilities (for example, route refresh, multiprotocol BGP extensions, and graceful restart):

- `cbgpPeerCapsTable`

The following MIB object allows you to query for IPv4 and VPNv4 address family routes:

- `cbgpPeerAddrFamilyTable`

Each route is indexed by peer address, prefix, and prefix length. This object indexes BGP routes by the AFI and then by the SAFI. The AFI table is the primary index, and the SAFI table is the secondary index. Each BGP speaker maintains a local Routing Information Base (RIB) for each supported AFI and SAFI combination.

### cbgpPeerTable Support

The `cbgpPeerTable` has been modified to support the enhancements described in this document. The following new table objects are supported in the CISCO-BGP-MIB.my:

- `cbgpPeerLastErrorTxt`
- `cbgpPeerPrevState`

The following table objects are not supported. The status of these objects is listed as deprecated, and these objects are not operational:

- `cbgpPeerPrefixAccepted`
- `cbgpPeerPrefixDenied`
- `cbgpPeerPrefixLimit`
- `cbgpPeerPrefixAdvertised`
- `cbgpPeerPrefixSuppressed`
- `cbgpPeerPrefixWithdrawn`

# How to Enable BGP MIB Support

## Enabling BGP MIB Support

SNMP notifications can be configured on the router and GET operations can be performed from an external management station only after BGP SNMP support is enabled. Perform this task on a router to configure SNMP notifications for the BGP MIB.

### SUMMARY STEPS

1. `enable`
2. `configure terminal`
3. `snmp-server enable traps bgp` `[[state-changes [all] [backward-trans] [limited]] | [threshold prefix]]`
4. `exit`

### DETAILED STEPS

	Command or Action	Purpose
Step 1	<p><code>enable</code></p> <p><b>Example:</b></p> <pre>Device&gt; enable</pre>	<p>Enables privileged EXEC mode.</p> <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
Step 2	<p><code>configure terminal</code></p> <p><b>Example:</b></p> <pre>Device# configure terminal</pre>	<p>Enters global configuration mode.</p>
Step 3	<p><code>snmp-server enable traps bgp</code>  <code>[[state-changes [all] [backward-trans]</code>  <code>[limited]]   [threshold prefix]]</code></p> <p><b>Example:</b></p> <pre>Device(config)# snmp-server enable traps bgp</pre>	<p>Enables BGP support for SNMP operations. Entering this command with no keywords or arguments enables support for all BGP events.</p> <ul style="list-style-type: none"> <li>• The <b>state-changes</b> keyword is used to enable support for FSM transition events.</li> <li>• The <b>all</b> keyword enables support for FSM transitions events.</li> <li>• The <b>backward-trans</b> keyword enables support only for backward transition state change events.</li> <li>• The <b>limited</b> keyword enables support for backward transition state changes and established state events.</li> <li>• The <b>threshold</b> and <b>prefix</b> keywords are used to enable notifications when the configured maximum prefix limit is reached on the specified peer.</li> </ul>

	Command or Action	Purpose
Step 4	<b>exit</b>  <b>Example:</b> Device(config)# exit	Exits global configuration mode, and enters privileged EXEC mode.

## Configuration Examples for BGP MIB Support

### Example: Enabling BGP MIB Support

The following example enables SNMP support for all supported BGP events:

```
Device(config)# snmp-server enable traps bgp
```

The following verification example shows that SNMP support for BGP is enabled by displaying any lines in the running configuration file that include “snmp-server”:

```
Device# show run | include snmp-server
```

```
snmp-server enable traps bgp
```

## Additional References

### Related Documents

Related Topic	Document Title
Cisco IOS commands	<a href="#">Cisco IOS Master Command List, All Releases</a>
BGP commands	<a href="#">IP Routing: BGP Command Reference</a>
MIB objects supported in CISCO-BGP-MIBv8.1	“Cisco-BGP-MIBv2” module in the <i>IP Routing: BGP Configuration Guide</i>
Information about SNMP and SNMP operations	<a href="#">SNMP Configuration Guide</a> in the <i>Network Management Configuration Guide Library</i>

**MIBs**

MIB	MIBs Link
CISCO-BGP4-MIB	To locate and download MIBs for selected platforms, Cisco software releases, and feature sets, use Cisco MIB Locator found at the following URL: <a href="http://www.cisco.com/go/mibs">http://www.cisco.com/go/mibs</a>

**Technical Assistance**

Description	Link
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.	<a href="http://www.cisco.com/cisco/web/support/index.html">http://www.cisco.com/cisco/web/support/index.html</a>

## Feature Information for BGP MIB Support

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

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**Table 1: Feature Information for BGP MIB Support**

Feature Name	Releases	Feature Information
BGP MIB Support Enhancements	12.0(26)S 12.2(25)S 12.3(7)T 12.2(33)SRA 12.2(22)SXH 15.0(1)SY	The BGP MIB Support Enhancements feature introduced support in the CISCO-BGP4-MIB for new SNMP notifications.  The following command was introduced: <b>snmp-server enable traps bgp</b> .