# BGP Multicast Inter-AS (IAS) VPN

**First Published: August 9, 2004**
**Last Updated: December 5, 2006**

The BGP Multicast Inter-AS (IAS) VPN feature introduces the IPv4 multicast distribution tree (MDT) subaddress family identifier (SAFI) in Border Gateway Protocol (BGP). The MDT SAFI is a transitive multicast capable connector attribute that is defined as an IPv4 address family in BGP. The MDT SAFI is designed to support inter-autonomous-system (inter-AS) Virtual Private Network (VPN) peering sessions.

### History for the BGP Multicast Inter-AS (IAS) VPN Feature

| Release | Modification |
|---|---|
| 12.0(29)S | This feature was introduced. |
| 12.2(33)SRA | This feature was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2(31)SB2 | This feature was integrated into Cisco IOS Release 12.2(31)SB2. |

### 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.

# Contents



**Corporate Headquarters:**
**Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA**

# How to Configure an MDT Address Family Session in BGP

This section contains the following tasks:



## Configuring the MDT Address Family in BGP

The **mdt** keyword has been added to the **address-family ipv4** command to configure an MDT address-family session. Perform this task to configure an MDT address family session on a Provider Edge (PE) routers to establish VPN peering sessions with Customer Edge (CE) routers and to establish inter-AS multicast VPN peering sessions. The MDT address family must be configured on each participating PE router.

### Supported Policy

The following policy configuration parameters are supported under the MDT SAFI:

- Mandatory attributes and well-known attributes, such as the AS-path, multi-exit discriminator MED, BGP local-pref, and next hop attributes.
- Standard communities, community-lists, and route-maps.

### Prerequisites

Before Inter-AS VPN peering can be established through an MDT address family, MPLS and CEF must be configured in the BGP network and multiprotocol BGP on PE routers that provide VPN services to CE routers.

### Restrictions

The following policy configuration parameters are not supported:

- Route-originator attribute
- Network Layer Reachability Information (NLRI) prefix filtering (prefix-lists, distribute-lists)
- Extended community attributes (route target and site of origin)

#### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **router bgp** *as-number*
4. **address-family ipv4** [**mdt** | **multicast** | **tunnel** | **unicast** [**vrf** *vrf-name*] | **vrf** *vrf-name*]
5. **end**

### DETAILED STEPS

| | Command or Action | Purpose |
|---|---|---|
| **Step 1** | **enable**<br><br>**Example:**<br>`Router> enable` | Enables privileged EXEC mode.<br>• Enter your password if prompted. |
| **Step 2** | **configure terminal**<br><br>**Example:**<br>`Router# configure terminal` | Enters global configuration mode. |
| **Step 3** | **router bgp** *autonomous-system-number*<br><br>**Example:**<br>`Router(config)# router bgp 65535` | Enters router configuration mode and creates a BGP routing process. |
| **Step 4** | **address-family ipv4** [**mdt** \| **multicast** \| **tunnel** \| **unicast** [**vrf** *vrf-name*] \| **vrf** *vrf-name*]<br><br>**Example:**<br>`Router(config-router)# address-family ipv4 mdt` | Enters address family configuration mode to configure BGP peers to accept address family specific configurations.<br>• The example creates an IPv4 MDT address family session. |
| **Step 5** | **end**<br><br>**Example:**<br>`Router(config-router-af)# end` | Exits address-family configuration mode and enters privileged EXEC mode. |

# Clearing IPv4 MDT Peering Sessions in BGP

Perform this task to clear only MDT address-family routing tables using the new **mdt** keyword in one of the various forms of the **clear ip bgp** command. Due to the complexity of some of the keywords available for the clear ip bgp command, some of the keywords are documented as separate commands.

### SUMMARY STEPS

1. **enable**
2. **clear ip bgp ipv4** {**multicast** | **mdt** | **unicast**} *autonomous-system-number* [**in** [**prefix-filter**]] [**out**] [**soft** [**in** [**prefix-filter**] | **out**]]
3. **clear ip bgp** [**ipv4 mdt**] **peer-group** *peer-group-name* [**in** [**prefix-filter**]] [**out**] [**soft** [**in** [**prefix-filter**] | **out**]]
4. **clear ip bgp** [**ipv4 mdt**] **update-group** [*index-group* | *neighbor-address*]

### DETAILED STEPS

| | Command or Action | Purpose |
|---|---|---|
| **Step 1** | **enable**<br><br>**Example:**<br>`Router> enable` | Enables privileged EXEC mode.<br>• Enter your password if prompted. |
| **Step 2** | **clear ip bgp ipv4** {**multicast** \| **mdt** \| **unicast**} *autonomous-system-number* [**in** [**prefix-filter**]] [**out**] [**soft** [**in** [**prefix-filter**] \| **out**]]<br><br>**Example:**<br>`Router# clear ip bgp ipv4 mdt 65700` | (Optional) Resets BGP connections for IPv4 address family sessions.<br>• The example shows that a hard reset is initiated for all BGP connections in IPv4 MDT address family sessions in the autonomous system numbered 65700. |
| **Step 3** | **clear ip bgp** [**ipv4 mdt**] **peer-group** *peer-group-name* [**in** [**prefix-filter**]] [**out**] [**soft** [**in** [**prefix-filter**] \| **out**]]<br><br>**Example:**<br>`Router# clear ip bgp ipv4 mdt peer-group group12 soft in` | (Optional) Resets BGP connections using hard or soft reconfiguration for all the members of a BGP peer group.<br>• The example shows that a soft reconfiguration is initiated for the inbound MDT address family session with members of the peer group group12, and the outbound session is unaffected.<br>**Note** Only the syntax applicable to this step is displayed. For more details, see the *Cisco IOS IP Routing Protocols Command Reference*, Release 12.2SR, or the *Cisco IOS IP Routing Protocols Command Reference*, Release 12.2SB. |
| **Step 4** | **clear ip bgp** [**ipv4 mdt**] **update-group** [*index-group* \| *neighbor-address*]<br><br>**Example:**<br>`Router# clear ip bgp ipv4 mdt update-group 3` | (Optional) Resets BGP connections for all the members of a BGP update group.<br>• The example shows that a reset is initiated for the all BGP connections in the MDT address family session for all members of the update group 3.<br>**Note** Only the syntax applicable to this step is displayed. For more details, see the *Cisco IOS IP Routing Protocols Command Reference*, Release 12.2SR, or the *Cisco IOS IP Routing Protocols Command Reference*, Release 12.2SB. |

# Displaying Information about IPv4 MDT Sessions in BGP

The **show ip bgp ipv4 mdt** command can be used to display MDT address-family session information.

### SUMMARY STEPS

1. **enable**
2. **show ip bgp ipv4** {**mdt** {***** | **all** | **rd** | **vrf**} | **multicast** | **tunnel** | **unicast**}

**DETAILED STEPS**

| | Command or Action | Purpose |
|---|---|---|
| **Step 1** | **enable**<br><br>**Example:**<br>`Router> enable` | Enables privileged EXEC mode.<br>• Enter your password if prompted. |
| **Step 2** | **show ip bgp ipv4** {**mdt** {***** \| **all** \| **rd** \| **vrf**} \| **multicast** \| **tunnel** \| **unicast**}<br><br>**Example:**<br>`Router# show ip bgp ipv4 mdt all` | Displays entries in the IPv4 BGP routing table.<br>• The example displays all information about the IPv4 MDT session. |

# Configuration Examples for the MDT Address Family

The following example shows how to configure the MDT address family:

- Configuring an IPv4 MDT Address-Family Session: Example, page 5

## Configuring an IPv4 MDT Address-Family Session: Example

The following example creates an IPv4 MDT address family session:

```
enable
configure terminal
router bgp 65535
 address-family ipv4 mdt
 exit-address-family
```

# Additional References

The following sections provide references related to the BGP Multicast Inter-AS (IAS) VPN feature.

## Related Documents

| Related Topic | Document Title |
|---|---|
| BGP commands | • *Cisco IOS IP Routing Protocols Command Reference*, Release 12.2SB<br>• *Cisco IOS IP Routing Protocols Command Reference*, Release 12.2SR<br>• *Cisco IOS IP Routing Protocols Command Reference*, Release 12.4T |
| BGP configuration tasks | • *Cisco IOS IP Routing Protocols Configuration Guide*, Release 12.4 |

| Related Topic | Document Title |
|---|---|
| IP Multicast commands | • *Cisco IOS IP Multicast Command Reference*, Release 12.2SB<br>• *Cisco IOS IP Multicast Command Reference*, Release 12.2SR<br>• *Cisco IOS IP Multicast Command Reference*, Release 12.4T |
| IP Multicast configuration tasks | • *Cisco IOS IP Multicast Configuration Guide*, Release 12.4 |

## Standards

| Standards | Title |
|---|---|
| MDT SAFI | *MDT SAFI*<br>http://www.ietf.org/internet-drafts/draft-nalawade-idr-mdt-safi-01.txt |

## Technical Assistance

| Description | Link |
|---|---|
| The Cisco Technical Support & Documentation website contains thousands of pages of searchable technical content, including links to products, technologies, solutions, technical tips, and tools. Registered Cisco.com users can log in from this page to access even more content. | http://www.cisco.com/techsupport |

# Command Reference

This section documents modified commands only.

- **address-family ipv4 (BGP)**
- **clear ip bgp ipv4**
- **clear ip bgp peer-group**
- **clear ip bgp update-group**
- **show ip bgp ipv4**

# address-family ipv4 (BGP)

To enter address family configuration mode to configure a routing session using standard IP Version 4 address prefixes, use the **address-family ipv4** command in router configuration mode. To exit address family configuration mode and remove the IPv4 address family configuration from the running configuration, use the **no** form of this command.

**address-family ipv4** [**mdt** | **multicast** | **tunnel** | **unicast** [**vrf** *vrf-name*] | **vrf** *vrf-name*]

**no address-family ipv4** [**mdt** | **multicast** | **tunnel** | **unicast** [**vrf** *vrf-name*] | **vrf** *vrf-name*]

## Syntax Description

| | |
|---|---|
| **mdt** | (Optional) Specifies an IPv4 multicast discovery tree address-family session. |
| **multicast** | (Optional) Specifies IP Version 4 multicast address prefixes. |
| **tunnel** | (Optional) Specifies a IPv4 routing session for multipoint tunnelling. |
| **unicast** | (Optional) Specifies IP Version 4 unicast address prefixes. This is the default. |
| **vrf** *vrf-name* | (Optional) Specifies the name of the VPN routing and forwarding (VRF) instance to associate with subsequent IP Version 4 address family configuration mode commands. |

## Command Default

IP Version 4 address prefixes are not enabled.

## Command Modes

Router configuration

## Command History

| Release | Modification |
|---|---|
| 12.0(5)T | This command was introduced. This command replaced the **match nlri** and **set nlri** commands. |
| 12.0(28)S | This command was integrated into Cisco IOS 12.0(28)S, and the **tunnel** keyword was added. |
| 12.0(29)S | The **mdt** keyword was added. |
| 12.0(30)S | Support for the Cisco 12000 series Internet router was added. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2(31)SB2 | This command was integrated into Cisco IOS Release 12.2(31)SB2. |

## Usage Guidelines

The **address-family ipv4** command replaces the **match nlri** and **set nlri** commands.

The **address-family ipv4** command places the router in address family configuration mode (prompt: `(config-router-af)#` from which you can configure routing sessions that use standard IP Version 4 address prefixes. To leave address family configuration mode and return to router configuration mode, type **exit**.

**Note** Routing information for address family IPv4 is advertised by default for each BGP routing session configured with the **neighbor remote-as** command unless you enter the **no bgp default ipv4-unicast** command before configuring the **neighbor remote-as** command.

The **tunnel** keyword is used to enable the tunnel subaddress family identifier (SAFI) under the IPv4 address family identifier. This SAFI is used to advertise the tunnel endpoints and the SAFI specific attributes (which contain the tunnel type and tunnel capabilities). Redistribution of tunnel endpoints into the BGP IPv4 tunnel SAFI table occurs automatically when the tunnel address-family is configured. However, peers need to be activated under the tunnel address-family before the sessions can exchange tunnel information.

The **mdt** keyword is used to enable the multicast distribution tree (MDT) SAFI under the IPv4 address family identifier. This SAFI is used to advertise tunnel endpoints for inter-AS multicast VPN peering sessions.

To leave address family configuration mode and return to router configuration mode without removing the existing configuration, enter the **exit-address-family** command.

## Examples

The following example places the router in address family configuration mode for the IP Version 4 address family:

```
Router(config)# router bgp 50000
Router(config-router)# address-family ipv4
Router(config-router-af)#
```

### Multicast Example

The following example places the router in address family configuration mode and specifies only multicast address prefixes for the IP Version 4 address family:

```
Router(config)# router bgp 50000
Router(config-router)# address-family ipv4 multicast
Router(config-router-af)#
```

### Unicast Example

The following example places the router in address family configuration mode and specifies unicast address prefixes for the IP Version 4 address family:

```
Router(config)# router bgp 50000
Router(config-router)# address-family ipv4 unicast
Router(config-router-af)#
```

### VRF Example

The following example places the router in address family configuration mode and specifies **cisco** as the name of the VRF instance to associate with subsequent IP Version 4 address family configuration mode commands:

```
Router(config)# router bgp 50000
Router(config-router)# address-family ipv4 vrf cisco
Router(config-router-af)#
```

### Tunnel Example

The following example places the router in tunnel address family configuration mode:

```
Router(config)# router bgp 100
Router(config-router)# address-family ipv4 tunnel
Router(config-router-af)#
```

**Note** Use this form of the command, which specifies a VRF, only to configure routing exchanges between provider edge (PE) and customer edge (CE) devices.

## Related Commands

| Command | Description |
|---|---|
| **address-family ipv6** | Places the router in address family configuration mode for configuring routing sessions, such as BGP, that use standard IPv6 address prefixes. |
| **address-family nsap** | Places the router in address family configuration mode for configuring routing sessions, such as BGP, that use CLNS prefixes. |
| **address-family vpnv4** | Places the router in address family configuration mode for configuring routing sessions such as BGP, RIP, or static routing sessions that use standard VPN Version 4 address prefixes. |
| **bgp default ipv4-unicast** | Enables the IPv4 unicast address family on all neighbors. |
| **neighbor activate** | Enables the exchange of information with a BGP neighboring router. |

# clear ip bgp ipv4

To reset Border Gateway Protocol (BGP) connections using hard or soft reconfiguration for IPv4 address family sessions, use the **clear ip bgp ipv4** command in privileged EXEC mode.

**clear ip bgp ipv4** {**multicast** | **mdt** | **unicast**} *autonomous-system-number* [**in** [**prefix-filter**]] [**out**] [**soft** [**in** [**prefix-filter**] | **out**]]

## Syntax Description

| | |
|---|---|
| **multicast** | Resets multicast address family sessions. |
| **mdt** | Resets multicast distribution tree (MDT) address family sessions. |
| **unicast** | Resets unicast address family sessions. |
| *autonomous-system-number* | Resets BGP peers with the specified autonomous system number. |
| **in** | (Optional) Initiates inbound reconfiguration. If neither the **in** keyword nor the **out** keyword is specified, both inbound and outbound sessions are reset. |
| **prefix-filter** | (Optional) Clears the existing outbound route filter (ORF) prefix list to trigger a new route refresh or soft reconfiguration, which updates the ORF prefix list. |
| **out** | (Optional) Initiates outbound reconfiguration. If neither the **in** keyword nor the **out** keyword is specified, both inbound and outbound sessions are reset. |
| **soft** | (Optional) Initiates a soft reset. Does not tear down the session. |

## Command Modes

Privileged EXEC

## Command History

| Release | Modification |
|---|---|
| 12.0(22)S | This command was introduced. |
| 12.0(29)S | The **mdt** keyword was added. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2(31)SB2 | This command was integrated into Cisco IOS Release 12.2(31)SB2. |

## Usage Guidelines

The **clear ip bgp ipv4** command can be used to initiate a hard reset or soft reconfiguration. A hard reset tears down and rebuilds the specified peering sessions and rebuilds the BGP routing tables. A soft reconfiguration uses stored prefix information to reconfigure and activate BGP routing tables without tearing down existing peering sessions. Soft reconfiguration uses stored update information, at the cost of additional memory for storing the updates, to allow you to apply new BGP policy without disrupting the network. Soft reconfiguration can be configured for inbound or outbound sessions.

#### Generating Updates from Stored Information

To generate new inbound updates from stored update information (rather than dynamically generating inbound updates) without resetting the BGP session, you must preconfigure the local BGP router using the **neighbor soft-reconfiguration inbound** command. This preconfiguration causes the software to store all received updates without modification regardless of whether an update is accepted by the inbound policy. Storing updates is memory intensive and should be avoided if possible.

Outbound BGP soft configuration has no memory overhead and does not require any preconfiguration. You can trigger an outbound reconfiguration on the other side of the BGP session to make the new inbound policy take effect.

Use this command whenever any of the following changes occur:

- Additions or changes to the BGP-related access lists
- Changes to BGP-related weights
- Changes to BGP-related distribution lists
- Changes to BGP-related route maps

#### Dynamic Inbound Soft Reset

The route refresh capability, as defined in RFC 2918, allows the local router to reset inbound routing tables dynamically by exchanging route refresh requests to supporting peers. The route refresh capability does not store update information locally for nondisruptive policy changes. It instead relies on dynamic exchange with supporting peers. Route refresh is advertised through BGP capability negotiation. All BGP routers must support the route refresh capability.

To determine if a BGP router supports this capability, use the **show ip bgp neighbors** command. The following message is displayed in the output when the router supports the route refresh capability:

```
Received route refresh capability from peer.
```

If all BGP routers support the route refresh capability, use the **clear ip bgp ipv4** command with the **in** keyword. You need not use the **soft** keyword, because soft reset is automatically assumed when the route refresh capability is supported.

**Note** After configuring a soft reset (inbound or outbound), it is normal for the BGP routing process to hold memory. The amount of memory that is held depends on the size of the routing tables and the percentage of the memory chunks that are utilized. Partially used memory chunks will be used or released before more memory is allocated from the global router pool.

## Examples

In the following example, a soft reconfiguration is initiated for the inbound sessions for BGP neighbors in IPv4 unicast address family sessions in autonomous system 65400, and the outbound session is unaffected:

```
Router# clear ip bgp ipv4 unicast 65400 soft in
```

In the following example, the route refresh capability is enabled on the IPv4 multicast address family BGP neighbors in autonomous system 65000, a soft reconfiguration is initiated for all inbound sessions with the IPv4 multicast address family neighbors, and the outbound session is unaffected:

```
Router# clear ip bgp ipv4 multicast 65000 in
```

In the following example, a hard reset is initiated for all BGP neighbor in IPv4 MDT address family sessions in the autonomous system numbered 65700:

```
Router# clear ip bgp ipv4 mdt 65700
```

## Related Commands

| Command | Description |
|---|---|
| **neighbor soft-reconfiguration** | Configures the Cisco IOS software to start storing updates. |
| **show ip bgp ipv4** | Displays entries in the IPv4 BGP routing table. |
| **show ip bgp neighbors** | Displays information about BGP and TCP connections to neighbors. |

# clear ip bgp peer-group

To reset Border Gateway Protocol (BGP) connections using hard or soft reconfiguration for all the members of a BGP peer group, use the **clear ip bgp peer-group** command in privileged EXEC mode.

#### Syntax Without Address Family Syntax

**clear ip bgp peer-group** *peer-group-name* [**in** [**prefix-filter**]] [**out**] [**soft** [**in** [**prefix-filter**] | **out**]]

#### Syntax With Address Family Syntax

**clear ip bgp** [**all** | **ipv4** {**multicast** | **mdt** | **unicast**} | **ipv6** {**multicast** | **unicast**} | **vpnv4 unicast** | **vpnv6 unicast**] **peer-group** *peer-group-name* [**in** [**prefix-filter**]] [**out**] [**soft** [**in** [**prefix-filter**] | **out**]]

## Syntax Description

| | |
|---|---|
| peer-group-name | Peer group name. |
| **in** | (Optional) Initiates inbound reconfiguration. If neither the **in** keyword nor the **out** keyword is specified, both inbound and outbound sessions are reset. |
| **prefix-filter** | (Optional) Clears the existing outbound route filter (ORF) prefix list to trigger a new route refresh or soft reconfiguration, which updates the ORF prefix list. |
| **out** | (Optional) Initiates outbound reconfiguration. If neither the **in** keyword nor the **out** keyword is specified, both inbound and outbound sessions are reset. |
| **soft** | (Optional) Initiates a soft reset. Does not tear down the session. |
| **all** | (Optional) Specifies the reset of peer group members in all address families. |
| **ipv4** | (Optional) Specifies the reset of peer group members in IPv4 address family sessions. |
| **multicast** | (Optional) Specifies the reset of peer group members in multicast address family sessions. |
| **mdt** | (Optional) Specifies the reset of peer group members in multicast distribution tree (MDT) address family sessions. |
| **unicast** | (Optional) Specifies the reset of peer group members in unicast address family sessions. |
| **ipv6** | (Optional) Specifies the reset of peer group members in IPv6 address family sessions. |
| **vpnv4** | (Optional) Specifies the reset of peer group members in Virtual Private Network Version 4 (VPNv4) address family sessions. |
| **vpnv6** | (Optional) Specifies the reset of peer group members in Virtual Private Network Version 6 (VPNv6) address family sessions. |

## Command Modes

Privileged EXEC

## Command History

| Release | Modification |
|---|---|
| 11.0 | This command was introduced. |
| 12.0(2)S | This command was integrated into Cisco IOS Release 12.0(2)S, and dynamic inbound soft reset capability was added. |
| 12.0(7)T | The dynamic inbound soft reset capability was integrated into Cisco IOS Release 12.0(7)T. |
| 12.0(22)S | The **vpnv4** and **ipv4** keywords were added. |
| 12.0(29)S | The **mdt** keyword was added. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2(31)SB2 | This command was integrated into Cisco IOS Release 12.2(31)SB2. |

## Usage Guidelines

The **clear ip bgp peer-group** command is used to initiate a hard reset or soft reconfiguration for neighbor sessions for BGP peer groups. A hard reset tears down and rebuilds the specified peering sessions and rebuilds the BGP routing tables. A soft reconfiguration uses stored prefix information to reconfigure and activate BGP routing tables without tearing down existing peering sessions. Soft reconfiguration uses stored update information, at the cost of additional memory for storing the updates, to allow you to apply new BGP policy without disrupting the network. Soft reconfiguration can be configured for inbound or outbound sessions.

### Generating Updates from Stored Information

To generate new inbound updates from stored update information (rather than dynamically generating inbound updates) without resetting the BGP session, you must preconfigure the local BGP router using the **neighbor soft-reconfiguration inbound** command. This preconfiguration causes the software to store all received updates without modification regardless of whether an update is accepted by the inbound policy. Storing updates is memory intensive and should be avoided if possible.

Outbound BGP soft configuration has no memory overhead and does not require any preconfiguration. You can trigger an outbound reconfiguration on the other side of the BGP session to make the new inbound policy take effect.

Use this command whenever any of the following changes occur:

- Additions or changes to the BGP-related access lists
- Changes to BGP-related weights
- Changes to BGP-related distribution lists
- Changes to BGP-related route maps

### Dynamic Inbound Soft Reset

The route refresh capability, as defined in RFC 2918, allows the local router to reset inbound routing tables dynamically by exchanging route refresh requests to supporting peers. The route refresh capability does not store update information locally for nondisruptive policy changes. It instead relies on dynamic exchange with supporting peers. Route refresh is advertised through BGP capability negotiation. All BGP routers must support the route refresh capability.

To determine if a BGP router supports this capability, use the **show ip bgp neighbors** command. The following message is displayed in the output when the router supports the route refresh capability:

```
Received route refresh capability from peer.
```

If all BGP routers support the route refresh capability, use the **clear ip bgp peer-group** command with the **in** keyword. You need not use the **soft** keyword, because soft reset is automatically assumed when the route refresh capability is supported.

**Note** After configuring a soft reset (inbound or outbound), it is normal for the BGP routing process to hold memory. The amount of memory that is held depends on the size of the routing tables and the percentage of the memory chunks that are utilized. Partially used memory chunks will be used or released before more memory is allocated from the global router pool.

## Examples

In the following example, all members of the BGP peer group named INTERNAL are reset:

```
Router# clear ip bgp peer-group INTERNAL
```

In the following example, members of the peer group named EXTERNAL in IPv4 multicast address family sessions are reset:

```
Router# clear ip bgp ipv4 multicast peer-group EXTERNAL
```

In the following example, a soft reconfiguration is initiated for the inbound session with members of the peer group INTERNAL, and the outbound session is unaffected:

```
Router# clear ip bgp peer-group INTERNAL soft in
```

## Related Commands

| Command | Description |
|---|---|
| **clear ip bgp** | Resets a BGP connection or session. |
| **neighbor peer-group (assigning members)** | Configures a BGP neighbor to be a member of a peer group. |
| **neighbor soft-reconfiguration** | Configures the Cisco IOS software to start storing updates. |
| **show ip bgp neighbors** | Displays information about BGP and TCP connections to neighbors. |

# clear ip bgp update-group

To reset Border Gateway Protocol (BGP) connections for all the members of a BGP update group, use the **clear ip bgp update-group** command in privileged EXEC mode.

### Syntax Without Address Family Syntax

**clear ip bgp update-group** [*index-group* | *neighbor-address*]

### Syntax With Address Family Syntax

**clear ip bgp** [**all** | **ipv4** {**multicast** | **mdt** | **unicast**} | **ipv6** {**multicast** | **unicast**} | **vpnv4 unicast** | **vpnv6 unicast**] **update-group** [*index-group* | *neighbor-address*]

## Syntax Description

| | |
|---|---|
| *index-group* | (Optional) Specifies that the update group with the specified index number will be reset. The range of update group index numbers is from 1 to 4294967295. |
| *neighbor-address* | (Optional) Specifies the IP address of a single peer that will be reset. The value for this argument can be an IPv4 or IPv6 address. |
| **all** | (Optional) Specifies the reset of update group members in all address families. |
| **ipv4** | (Optional) Specifies the reset of update group members in IPv4 address family sessions. |
| **multicast** | (Optional) Specifies the reset of update group members in multicast address family sessions. |
| **mdt** | (Optional) Specifies the reset of update group members in multicast distribution tree (MDT) address family sessions. |
| **unicast** | (Optional) Specifies the reset of update group members in unicast address family sessions. |
| **ipv6** | (Optional) Specifies the reset of update group members in IPv6 address family sessions. |
| **vpnv4** | (Optional) Specifies the reset of update group members in Virtual Private Network Version 4 (VPNv4) address family sessions. |
| **vpnv6** | (Optional) Specifies the reset of update group members in Virtual Private Network Version 6 (VPNv6) address family sessions. |

## Command Modes

Privileged EXEC

## Command History

| Release | Modification |
|---|---|
| 12.0(24)S | This command was introduced. |
| 12.2(18)S | This command was integrated into Cisco IOS Release 12.2(18)S. |
| 12.3(4)T | This command was integrated into Cisco IOS Release 12.3(4)T. |
| 12.0(29)S | The **mdt** keyword was added. |

| Release | Modification |
|---|---|
| 12.2(27)SBC | This command was integrated into Cisco IOS Release 12.2(27)SBC. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |

## Usage Guidelines

The **clear ip bgp update-group** command is used to clear BGP update group member sessions. If no keywords or arguments are specified, entering this command will recalculate all update groups. Specific index numbers for update groups and information about update-group membership is displayed in the output of the **show ip bgp update-group** and **debug ip bgp groups** commands.

When a change to outbound policy occurs, the BGP routing process will automatically recalculate update-group memberships and apply changes by triggering an outbound soft reset after a 3-minute timer expires. This behavior is designed to provide the network operator with time to change the configuration before the soft reset is initiated. You can immediately initiate the outbound soft reset before the timer expires by entering the **clear ip bgp** *ip-address* **soft out** command or immediately initiate a hard reset by entering the **clear ip bgp** *ip-address* command.

## Examples

In the following example, the membership of the 10.0.0.1 peer is cleared from an update group:

```
Router# clear ip bgp update-group 10.0.0.1
```

In the following example, update-group information for all peers in the index 1 update group is cleared:

```
Router# clear ip bgp update-group 1
```

In the following example, update-group information for all MDT address family session peers in the index 6 update group is cleared:

```
Router# clear ip bgp ipv4 mdt update-group 6
```

## Related Commands

| Command | Description |
|---|---|
| **clear ip bgp** | Resets a BGP connection or session. |
| **debug ip bgp groups** | Displays information related to the processing of BGP update groups. |
| **show ip bgp replication** | Displays BGP update-group replication statistics. |
| **show ip bgp update-group** | Displays information about BGP update groups. |

# show ip bgp ipv4

To display entries in the IP version 4 (IPv4) Border Gateway Protocol (BGP) routing table, use the **show ip bgp ipv4** command in privileged EXEC mode.

**show ip bgp ipv4** {**mdt** {***** | **all** | **rd** | **vrf**} | **multicast** | **tunnel** | **unicast**}

## Syntax Description

| | |
|---|---|
| **mdt** | Displays entries for multicast discovery tree sessions. |
| ***** | Displays all multicast discovery tree information. |
| **all** | Displays all multicast discovery tree information. |
| **rd** | Displays information about the VPN route distinguisher in the MDT session. |
| **vrf** | Displays information about the VRF in the MDT session. |
| **multicast** | Displays entries for multicast sessions. |
| **tunnel** | Displays entries for tunnel sessions. |
| **unicast** | Displays entries for unicast sessions. |

## Command Modes

Privileged EXEC

## Command History

| Release | Modification |
|---|---|
| 12.0(7)T | This command was introduced. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
| 12.2(31)SB2 | This command was integrated into Cisco IOS Release 12.2(31)SB2. |

## Examples

The following is sample output from the **show ip bgp ipv4 unicast** command:

```
Router# show ip bgp ipv4 unicast

 BGP table version is 4, local router ID is 10.0.40.1
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop            Metric LocPrf Weight Path
*> 10.10.10.0/24   172.16.10.1              0             0  300 i
*> 10.10.20.0/24   172.16.10.1              0             0  300 i
*  10.20.10.0/24   172.16.10.1              0             0  300 i
```

The following is sample output from the **show ip bgp ipv4 multicast** command:

```
Router# show ip bgp ipv4 multicast

 BGP table version is 4, local router ID is 10.0.40.1
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop            Metric LocPrf Weight Path
*> 10.10.10.0/24   172.16.10.1              0             0  300 i
*> 10.10.20.0/24   172.16.10.1              0             0  300 i
*  10.20.10.0/24   172.16.10.1              0             0  300 i
```

Table 1 describes the significant fields shown in the display.

***Table 1 show ip bgp ipv4 unicast Field Descriptions***

| Field | Description |
|---|---|
| BGP table version | Internal version number of the table. This number is incremented whenever the table changes. |
| local router ID | IP address of the router. |
| Status codes | Status of the table entry. The status is displayed at the beginning of each line in the table. It can be one of the following values:<br>• s—The table entry is suppressed.<br>• d—The table entry is damped.<br>• h—The table entry history.<br>• *—The table entry is valid.<br>• >—The table entry is the best entry to use for that network.<br>• i—The table entry was learned via an internal BGP (iBGP) session. |
| Origin codes | Origin of the entry. The origin code is displayed at the end of each line in the table. It can be one of the following values:<br>• i—Entry originated from an Interior Gateway Protocol (IGP) and was advertised with a **network** router configuration command.<br>• e—Entry originated from an Exterior Gateway Protocol (EGP).<br>• ?—Origin of the path is not clear. Usually, this is a router that is redistributed into BGP from an IGP. |
| Network | IP address of a network entity. |
| Next Hop | IP address of the next system that is used when forwarding a packet to the destination network. An entry of 0.0.0.0 indicates that the router has some non-BGP routes to this network. |
| Metric | If shown, the value of the interautonomous system metric. |
| LocPrf | Local preference value as set with the **set local-preference** route-map configuration command. The default value is 100. |
| Weight | Weight of the route as set via autonomous system filters. |
| Path | Autonomous system paths to the destination network. There can be one entry in this field for each autonomous system in the path. |

## Related Commands

| Command | Description |
|---|---|
| **clear ip bgp ipv4 mdt** | Resets multicast discovery tree IPv4 BGP address-family sessions. |
| **show ip bgp** | Displays entries in the BGP routing table. |