neighbor peer-group (creating)

To create a BGP or multiprotocol BGP peer group, use the **neighbor peer-group** command in address family or router configuration mode. To remove the peer group and all of its members, use the **no** form of this command.

neighbor *peer-group-name* **peer-group**

no neighbor *peer-group-name* **peer-group**

Syntax Description

peer-group-name	Name of the BGP peer group.

Defaults

There is no BGP peer group.

Command Modes

Address family configuration

Router configuration

Command History

Release	Modification
11.0	This command was introduced.
11.1(20)CC	The **nlri unicast**, **nlri multicast**, and **nlri unicast multicast** keywords were added.
12.0(2)S	The **nlri unicast**, **nlri multicast**, and **nlri unicast multicast** keywords were added.
12.0(7)T	The **nlri unicast**, **nlri multicast**, and **nlri unicast multicast** keywords were removed. Address family configuration mode was added.

Usage Guidelines

Often in a BGP or multiprotocol BGP speaker, many neighbors are configured with the same update policies (that is, same outbound route maps, distribute lists, filter lists, update source, and so on). Neighbors with the same update policies can be grouped into peer groups to simplify configuration and make update calculation more efficient.

Note Peer group members can span multiple logical IP subnets, and can transmit, or pass along, routes from one peer group member to another.

Once a peer group is created with the **neighbor peer-group** command, it can be configured with the **neighbor** commands. By default, members of the peer group inherit all the configuration options of the peer group. Members also can be configured to override the options that do not affect outbound updates.

Peer group members will always inherit the following configuration options: remote-as (if configured), version, update-source, out-route-map, out-filter-list, out-dist-list, minimum-advertisement-interval, and next-hop-self. All the peer group members will inherit changes made to the peer group.

If a peer group is not configured with a remote-as option, the members can be configured with the **neighbor** {*ip-address* | *peer-group-name*} **remote-as** command. This command allows you to create peer groups containing external BGP (eBGP) neighbors.

Examples

The following example configurations show how to create these types of neighbor peer group:

- internal Border Gateway Protocol (iBGP) peer group
- eBGP peer group
- Multiprotocol BGP peer group

iBGP Peer Group

In the following example, the peer group named internal configures the members of the peer group to be iBGP neighbors. By definition, this is an iBGP peer group because the **router bgp** command and the **neighbor remote-as** command indicate the same autonomous system (in this case, autonomous system 100). All the peer group members use loopback 0 as the update source and use set-med as the outbound route map. The **neighbor internal filter-list 2 in** command shows that, except for 171.69.232.55, all the neighbors have filter list 2 as the inbound filter list.

```
router bgp 100
 neighbor internal peer-group
 neighbor internal remote-as 100
 neighbor internal update-source loopback 0
 neighbor internal route-map set-med out
 neighbor internal filter-list 1 out
 neighbor internal filter-list 2 in
 neighbor 171.69.232.53 peer-group internal
 neighbor 171.69.232.54 peer-group internal
 neighbor 171.69.232.55 peer-group internal
 neighbor 171.69.232.55 filter-list 3 in
```

eBGP Peer Group

The following example defines the peer group named external-peers without the **neighbor remote-as** command. By definition, this is an eBGP peer group because each individual member of the peer group is configured with its respective autonomous system number separately. Thus the peer group consists of members from autonomous systems 200, 300, and 400. All the peer group members have the set-metric route map as an outbound route map and filter list 99 as an outbound filter list. Except for neighbor 171.69.232.110, all of them have 101 as the inbound filter list.

```
router bgp 100
 neighbor external-peers peer-group
 neighbor external-peers route-map set-metric out
 neighbor external-peers filter-list 99 out
 neighbor external-peers filter-list 101 in
 neighbor 171.69.232.90 remote-as 200
 neighbor 171.69.232.90 peer-group external-peers
 neighbor 171.69.232.100 remote-as 300
 neighbor 171.69.232.100 peer-group external-peers
 neighbor 171.69.232.110 remote-as 400
 neighbor 171.69.232.110 peer-group external-peers
 neighbor 171.69.232.110 filter-list 400 in
```

Multiprotocol BGP Peer Group

In the following example, all members of the peer group are multicast-capable:

```
router bgp 100
neighbor 10.1.1.1 remote-as 1
neighbor 172.16.2.2 remote-as 2
address-family ipv4 multicast
 neighbor mygroup peer-group
 neighbor 10.1.1.1 peer-group mygroup
 neighbor 172.16.2.2 peer-group mygroup
 neighbor 10.1.1.1 activate
 neighbor 172.16.2.2 activate
```

Related Commands

Command	Description
address-family ipv4	Places the router in address family configuration mode for configuring routing sessions such as BGP, RIP, or static routing sessions that use standard IPv4 address 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 VPNv4 address prefixes.
clear ip bgp peer-group	Removes all the members of a BGP peer group.
show ip bgp peer-group	Displays information about BGP peer groups.

neighbor prefix-list

To distribute BGP neighbor information as specified in a prefix list, use the **neighbor prefix-list** command in address family or router configuration mode. To remove an entry, use the **no** form of this command.

neighbor {*ip-address* | *peer-group-name*} **prefix-list** *prefix-list-name* {**in** | **out**}

no neighbor {*ip-address* | *peer-group-name*} **prefix-list** *prefix-list-name* {**in** |**out**}

Syntax Description

ip-address	IP address of neighbor.
peer-group-name	Name of a BGP peer group.
prefix-list-name	Name of a prefix list.
in	Access list is applied to incoming advertisements to that neighbor.
out	Access list is applied to outgoing advertisements to that neighbor.

Defaults

No BGP neighbor is specified.

Command Modes

Address family configuration

Router configuration

Command History

Release	Modification
12.0	This command was introduced.
11.0	The *peer-group-name* argument was added.
12.0(7)T	Address family configuration mode was added.

Usage Guidelines

Using prefix lists is one of two ways to filter BGP advertisements. The other way is to use AS-path filters, as with the **ip as-path access-list** global configuration command and the **neighbor filter-list** command, and access or prefix lists, as with the **neighbor distribute-list** command.

If you specify a BGP peer group by using the *peer-group-name* argument, all the members of the peer group will inherit the characteristic configured with this command. Specifying the command with an IP address will override the value inherited from the peer group.

Note Do not apply both a **neighbor distribute-list** and a **neighbor prefix-list** command to a neighbor in any given direction (inbound or outbound). These two commands are mutually exclusive, and only one command (**neighbor prefix-list** or **neighbor distribute-list**) can be applied to each inbound or outbound direction.

Examples

The following router configuration mode example applies the prefix list named abc to incoming advertisements to neighbor 120.23.4.1:

```
router bgp 109
 network 10.108.0.0
 neighbor 120.23.4.1 prefix-list abc in
```

The following address family configuration mode example applies the prefix list named abc to incoming advertisements to neighbor 120.23.4.1:

```
router bgp 109
address-family ipv4 unicast
 network 10.108.0.0
 neighbor 120.23.4.1 prefix-list abc in
```

The following example applies the prefix list named CustomerA to outgoing advertisements to neighbor 120.23.4.1:

```
router bgp 109
 network 10.108.0.0
 neighbor 120.23.4.1 prefix-list CustomerA out
```

Related Commands

Command	Description
address-family ipv4	Places the router in address family configuration mode for configuring routing sessions such as BGP, RIP, or static routing sessions that use standard IPv4 address 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 VPNv4 address prefixes.
clear ip prefix-list	Resets the hit count of the prefix list entries.
ip as-path access-list	Defines a BGP-related access list.
ip prefix-list	Creates an entry in a prefix list.
ip prefix-list description	Adds a text description of a prefix list.
ip prefix-list sequence-number	Enables the generation of sequence numbers for entries in a prefix list.
neighbor filter-list	Sets up a BGP filter.
neighbor remote-as	Creates a BGP peer group.
show ip bgp peer-group	Displays information about BGP peer groups.
show ip prefix-list	Displays information about a prefix list or prefix list entries.

neighbor remote-as

To add an entry to the BGP or multiprotocol BGP neighbor table, use the **neighbor remote-as** command in router configuration mode. To remove an entry from the table, use the **no** form of this command.

neighbor {*ip-address* | *peer-group-name*} **remote-as** *as-number*

no neighbor {*ip-address* | *peer-group-name*} **remote-as** *as-number*

Syntax Description

ip-address	IP address of the neighbor.
peer-group-name	Name of a BGP peer group.
as-number	Autonomous system to which the neighbor belongs.

Defaults

There are no BGP or multiprotocol BGP neighbor peers.

Command Modes

Router configuration

Command History

Release	Modification
10.0	This command was introduced.
11.0	The *peer-group-name* argument was added.
11.1(20)CC	The **nlri unicast**, **nlri multicast**, and **nlri unicast multicast** keywords were added.
12.0(7)T	The **nlri unicast**, **nlri multicast**, and **nlri unicast multicast** keywords were removed.

Usage Guidelines

Specifying a neighbor with an autonomous system number that matches the autonomous system number specified in the **router bgp** global configuration command identifies the neighbor as internal to the local autonomous system. Otherwise, the neighbor is considered external.

If you specify a BGP peer group by using the *peer-group-name* argument, all the members of the peer group will inherit the characteristic configured with this command.

By default, neighbors that are defined using the **neighbor remote-as** command in router configuration mode exchange only unicast address prefixes. To exchange other address prefix types, such as multicast and Virtual Private Network (VPN) Version 4, neighbors must also be activated using the **neighbor activate** command in address family configuration mode.

Examples

The following example specifies that a router at the address 10.108.1.2 is a neighbor in autonomous system number 109:

```
router bgp 110
 network 10.108.0.0
 neighbor 10.108.1.2 remote-as 109
```

The following example assigns a BGP router to autonomous system 109, and two networks are listed as originating in the autonomous system. Then the addresses of three remote routers (and their autonomous systems) are listed. The router being configured will share information about networks 10.108.0.0 and 192.31.7.0 with the neighbor routers. The first router listed is in the same Class B network address space, but in a different autonomous system; the second **neighbor remote-as** command illustrates specification of an internal neighbor (with the same autonomous system number) at address 10.108.234.2; and the last **neighbor remote-as** command specifies a neighbor on a different network.

```
router bgp 109
 network 10.108.0.0
 network 192.31.7.0
 neighbor 10.108.200.1 remote-as 167
 neighbor 10.108.234.2 remote-as 109
 neighbor 150.136.64.19 remote-as 99
```

The following example configures neighbor 10.108.1.1 in autonomous system 1 to exchange only multicast routes:

```
router bgp 109
neighbor 10.108.1.1 remote-as 1
neighbor 131.108 1.2 remote-as 1
neighbor 172.16.2.2 remote-as 2
address-family ipv4 multicast
  neighbor 10.108.1.1 activate
  neighbor 131.108 1.2 activate
  neighbor 172.16.2.2 activate
```

The following example configures neighbor 10.108.1.1 in autonomous system 1 to exchange only unicast routes:

```
router bgp 109
neighbor 10.108.1.1 remote-as 1
neighbor 131.108 1.2 remote-as 1
neighbor 172.16.2.2 remote-as 2
```

Related Commands

Command	Description
neighbor remote-as	Creates a BGP peer group.
router bgp	Configures the BGP routing process.

neighbor remove-private-as

To remove private autonomous system numbers from t in outbound routing updates, use the **neighbor remove-private-as** command in router configuration mode. To disable this function, use the **no** form of this command.

neighbor {*ip-address* | *peer-group-name*} **remove-private-as**

no neighbor {*ip-address* | *peer-group-name*} **remove-private-as**

Syntax Description

ip-address	IP address of the BGP-speaking neighbor.
peer-group-name	Name of a BGP peer group.

Defaults

This command is disabled by default.

Command Modes

Router configuration

Command History

Release	Modification
10.3	This command was introduced.
11.0	The *peer-group-name* argument was added.

Usage Guidelines

This command is available for external BGP (eBGP) neighbors only.

When an update is passed to the external neighbor, if the autonomous system path includes private autonomous system numbers, the software will drop the private autonomous system numbers.

If the autonomous system path includes both private and public autonomous system numbers, the software considers this to be a configuration error and does not remove the private autonomous system numbers.

If the autonomous system path contains the autonomous system number of the eBGP neighbor, the private autonomous system numbers will not be removed.

If this command is used with confederation, it will work as long as the private autonomous system numbers follow the confederation portion of the autonomous path.

The private autonomous system values are from 64512 to 65535.

Examples

The following example shows a configuration that will remove the private autonomous system number from the updates sent to 172.16.2.33. The result is that the autonomous system path for the paths advertised by 10.108.1.1 through autonomous system 100 will just contain "100" (as seen by autonomous system 2051).

```
router bgp 100
 neighbor 10.108.1.1 description peer with private-as
 neighbor 10.108.1.1 remote-as 65001
 neighbor 172.16.2.33 description eBGP peer
 neighbor 172.16.2.33 remote-as 2051
 neighbor 172.16.2.33 remove-private-as

router-in-AS100# show ip bgp 10.0.0.0

BGP routing table entry for 10.0.0.0/8, version 15
Paths: (1 available, best #1)
  Advertised to non peer-group peers:
    172.16.2.33
  65001
    10.108.1.1 from 10.108.1.1
      Origin IGP, metric 0, localpref 100, valid, external, best

router-in-AS2501# show ip bgp 10.0.0.0

BGP routing table entry for 10.0.0.0/8, version 3
Paths: (1 available, best #1)
  Not advertised to any peer
  2
    172.16.2.32 from 172.16.2.32
      Origin IGP, metric 0, localpref 100, valid, external, best
```

Related Commands

Command	Description
neighbor remote-as	Allows entries to the BGP neighbor table.
show ip bgp	Displays entries in the BGP routing table.

neighbor route-map

To apply a route map to incoming or outgoing routes, use the **neighbor route-map** command in address family or router configuration mode. To remove a route map, use the **no** form of this command.

neighbor {*ip-address* | *peer-group-name*} **route-map** *map-name* {**in** | **out**}

no neighbor {*ip-address* | *peer-group-name*} **route-map** *map-name* {**in** | **out**}

Syntax Description

ip-address	IP address of the neighbor.
peer-group-name	Name of a BGP or multiprotocol BGP peer group.
map-name	Name of a route map.
in	Applies route map to incoming routes.
out	Applies route map to outgoing routes.

Defaults

No route maps are applied to a peer.

Command Modes

Address family configuration

Router configuration

Command History

Release	Modification
10.0	This command was introduced.
12.0(7)T	Address family configuration mode was added.

Usage Guidelines

When specified in address family configuration mode, this command applies a route map to that particular address family only. When specified in router configuration mode, this command applies a route map to IP Version 4 unicast routes only.

If an outbound route map is specified, it is proper behavior to only advertise routes that match at least one section of the route map.

If you specify a BGP or multiprotocol BGP peer group by using the *peer-group-name* argument, all the members of the peer group will inherit the characteristic configured with this command. Specifying the command for a neighbor overrides the inbound policy that is inherited from the peer group.

Examples

The following router configuration mode example applies a route map named internal-map to a BGP incoming route from 172.16.70.24:

```
router bgp 5
 neighbor 172.16.70.24 route-map internal-map in

route-map internal-map
 match as-path 1
 set local-preference 100
```

The following address family configuration mode example applies a route map named internal-map to a multiprotocol BGP incoming route from 172.16.70.24:

```
router bgp 5
address-family ipv4 multicast
 neighbor 172.16.70.24 route-map internal-map in

route-map internal-map
 match as-path 1
 set local-preference 100
```

Related Commands

Command	Description
address-family ipv4	Places the router in address family configuration mode for configuring routing sessions such as BGP, RIP, or static routing sessions that use standard IP Version 4 address 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.
neighbor remote-as	Creates a BGP peer group.

neighbor route-reflector-client

To configure the router as a BGP route reflector and configure the specified neighbor as its client, use the **neighbor route-reflector-client** command in address family or router configuration mode. To indicate that the neighbor is not a client, use the **no** form of this command.

neighbor *ip-address* **route-reflector-client**

no neighbor *ip-address* **route-reflector-client**

Syntax Description

ip-address	IP address of the BGP neighbor being identified as a client.

Defaults

There is no route reflector in the autonomous system.

Command Modes

Address family configuration

Router configuration

Command History

Release	Modification
11.1	This command was introduced.
12.0(7)T	Address family configuration mode was added.

Usage Guidelines

By default, all internal BGP (iBGP) speakers in an autonomous system must be fully meshed, and neighbors do not readvertise iBGP learned routes to neighbors, thus preventing a routing information loop. When all the clients are disabled, the local router is no longer a route reflector.

If you use route reflectors, all iBGP speakers need not be fully meshed. In the route reflector model, an Interior BGP peer is configured to be a *route reflector* responsible for passing iBGP learned routes to iBGP neighbors. This scheme eliminates the need for each router to talk to every other router.

Use the **neighbor route-reflector-client** command to configure the local router as the route reflector and the specified neighbor as one of its clients. All the neighbors configured with this command will be members of the client group and the remaining iBGP peers will be members of the nonclient group for the local route reflector.

The **bgp client-to-client reflection** command controls client-to-client reflection.

Examples

In the following router configuration mode example, the local router is a route reflector. It passes learned iBGP routes to the neighbor at 172.16.70.24.

```
router bgp 5
 neighbor 172.16.70.24 route-reflector-client
```

In the following address family configuration mode example, the local router is a route reflector. It passes learned iBGP routes to the neighbor at 172.16.70.24.

```
router bgp 5
address-family ipv4 unicast
 neighbor 172.16.70.24 route-reflector-client
```

Related Commands

Command	Description
address-family ipv4	Places the router in address family configuration mode for configuring routing sessions such as BGP, RIP, or static routing sessions that use standard IP Version 4 address 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 client-to-client reflection	Restores route reflection from a BGP route reflector to clients.
bgp cluster-id	Configures the cluster ID if the BGP cluster has more than one route reflector.
neighbor route-reflector-client	Configures the router as a BGP route reflector and configures the specified neighbor as its client.
show ip bgp	Displays entries in the BGP routing table.

neighbor send-community

To specify that a communities attribute should be sent to a BGP neighbor, use the **neighbor send-community** command in address family or router configuration mode. To remove the entry, use the **no** form of this command.

neighbor {*ip-address* | *peer-group-name*} **send-community** [**both** | **standard** | **extended**]

no neighbor {*ip-address* | *peer-group-name*} **send-community**

Syntax Description

ip-address	IP address of the neighbor.
peer-group-name	Name of a BGP peer group.
both	(Optional) Specifies that both standard and extended communities will be sent.
standard	(Optional) Specifies that only standard communities will be sent.
extended	(Optional) Specifies that only extended communities will be sent.

Defaults

No communities attribute is sent to any neighbor.

Command Modes

Address family configuration

Router configuration

Command History

Release	Modification
10.3	This command was introduced.
11.0	The *peer-group-name* argument was added.
12.0(7)T	Address family configuration mode was added.

Usage Guidelines

If you specify a BGP peer group by using the *peer-group-name* argument, all the members of the peer group will inherit the characteristic configured with this command.

Examples

In the following router configuration mode example, the router belongs to autonomous system 109 and is configured to send the communities attribute to its neighbor at IP address 172.16.70.23:

```
router bgp 109
 neighbor 172.16.70.23 send-community
```

In the following address family configuration mode example, the router belongs to autonomous system 109 and is configured to send the communities attribute to its neighbor at IP address 172.16.70.23:

```
router bgp 109
address-family ipv4 multicast
 neighbor 172.16.70.23 send-community
```

Related Commands

Command	Description
address-family ipv4	Places the router in address family configuration mode for configuring routing sessions such as BGP, RIP, or static routing sessions that use standard IP Version 4 address 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.
match community	Matches a BGP community.
neighbor remote-as	Creates a BGP peer group.
set community	Sets the BGP communities attribute.

neighbor shutdown

To disable a neighbor or peer group, use the **neighbor shutdown** command in router configuration mode. To reenable the neighbor or peer group, use the **no** form of this command.

neighbor {*ip-address* | *peer-group-name*} **shutdown**

no neighbor {*ip-address* | *peer-group-name*} **shutdown**

Syntax Description

ip-address	IP address of the neighbor.
peer-group-name	Name of a BGP peer group.

Defaults

No change is made to the status of any BGP neighbor or peer group.

Command Modes

Router configuration

Command History

Release	Modification
12.0	This command was introduced.

Usage Guidelines

The **neighbor shutdown** command terminates any active session for the specified neighbor or peer group and removes all associated routing information. In the case of a peer group, a large number of peering sessions could be terminated suddenly.

To display a summary of BGP neighbors and peer group connections, use the **show ip bgp summary** command. Those neighbors with an Idle status and the Admin entry have been disabled by the **neighbor shutdown** command.

"State/PfxRcd" shows the current state of the BGP session or the number of prefixes the router has received from a neighbor or peer group. When the maximum number (as set by the **neighbor maximum-prefix** command) is reached, the string "PfxRcd" appears in the entry, the neighbor is shut down, and the connection is idle.

Examples

The following example disables any active session for the neighbor 172.16.70.23:

```
neighbor 172.16.70.23 shutdown
```

The following example disables all peering sessions for the peer group named internal:

```
neighbor internal shutdown
```

Related Commands

Command	Description
neighbor maximum-prefix	Controls how many prefixes can be received from a neighbor.
show ip bgp summary	Displays the status of all BGP connections.

neighbor soft-reconfiguration

To configure the Cisco IOS software to start storing updates, use the **neighbor soft-reconfiguration** command in router configuration mode. To not store received updates, use the **no** form of this command.

neighbor {*ip-address* | *peer-group-name*} **soft-reconfiguration** [**inbound**]

no neighbor {*ip-address* | *peer-group-name*} **soft-reconfiguration** [**inbound**]

Syntax Description

ip-address	IP address of the BGP-speaking neighbor.
peer-group-name	Name of a BGP peer group.
inbound	(Optional) Indicates that the update to be stored is an incoming update.

Defaults

Soft reconfiguration is not enabled.

Command Modes

Router configuration

Command History

Release	Modification
11.2	This command was introduced.

Usage Guidelines

Entering this command starts the storage of updates, which is required to do inbound soft reconfiguration. Outbound BGP soft reconfiguration does not require inbound soft reconfiguration to be enabled.

To use soft reconfiguration, or soft reset, without preconfiguration, both BGP peers must support the soft route refresh capability, which is advertised in the open message sent when the peers establish a TCP session. Routers running Cisco IOS software releases prior to Release 12.1 do not support the route refresh capability and must clear the BGP session using the **neighbor soft-reconfiguration** command. Clearing the BGP session using the **neighbor soft-reconfiguration** command has a negative effect on network operations and should be used only as a last resort. Routers running Cisco IOS software Release 12.1 or later releases support the route refresh capability and dynamic soft resets, and can use the **clear ip bgp** {***** | *ip-address* | *peer-group name*} **in** command to clear the BGP session.

To determine whether a BGP router supports this capability, use the **show ip bgp neighbors** command. If a router supports the route refresh capability, the following message is displayed:

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

If you specify a BGP peer group by using the *peer-group-name* argument, all the members of the peer group will inherit the characteristic configured with this command.

Examples

The following example enables inbound soft reconfiguration for the neighbor 10.108.1.1. All the updates received from this neighbor will be stored unmodified, regardless of the inbound policy. When inbound soft reconfiguration is done later, the stored information will be used to generate a new set of inbound updates.

```
router bgp 100
 neighbor 10.108.1.1 remote-as 200
 neighbor 10.108.1.1 soft-reconfiguration inbound
```

Related Commands

Command	Description
clear ip bgp	Resets a BGP connection using BGP soft reconfiguration.
neighbor remote-as	Creates a BGP peer group.
show ip bgp neighbors	Display information about the TCP and BGP connections to neighbors.

neighbor timers

To set the timers for a specific BGP peer or peer group, use the **neighbor timers** command in router configuration mode. To clear the timers for a specific BGP peer or peer group, use the **no** form of this command.

neighbor [*ip-address* | *peer-group-name*] **timers** *keepalive holdtime*

no neighbor [*ip-address* | *peer-group-name*] **timers** *keepalive holdtime*

Syntax Description

ip-address	(Optional) A BGP peer or peer group IP address.
peer-group-name	(Optional) Name of the BGP peer group.
keepalive	Frequency (in seconds) with which the Cisco IOS software sends *keepalive* messages to its peer. The default is 60 seconds.
holdtime	Interval (in seconds) after not receiving a *keepalive* message that the software declares a peer dead. The default is 180 seconds.

Defaults

keepalive: 60 seconds

holdtime: 180 seconds

Command Modes

Router configuration

Command History

Release	Modification
12.0	This command was introduced.

Usage Guidelines

The timers configured for a specific neighbor or peer group override the timers configured for all BGP neighbors using the **timers bgp** command.

Examples

The following example changes the keepalive timer to 70 seconds and the hold-time timer to 210 seconds for the BGP peer 192.98.47.0:

```
router bgp 109
 neighbor 192.98.47.0 timers 70 210
```

neighbor unsuppress-map

To selectively advertise routes previously suppressed by the **aggregate-address** command, use the **neighbor unsuppress-map** command in address family or router configuration mode. To restore the system to the default condition, use the **no** form of this command.

neighbor {*ip-address* | *peer-group-name*} **unsuppress-map** *route-map-name*

no neighbor {*ip-address* | *peer-group-name*} **unsuppress-map** *route-map-name*

Syntax Description

ip-address	IP address of the BGP-speaking neighbor.
peer-group-name	Name of a BGP peer group.
route-map-name	Name of a route map.

Command Default

No routes are unsuppressed.

Command Modes

Address family configuration
Router configuration

Command History

Release	Modification
12.0(5)T	This command was introduced.
12.0(5)T	Address family configuration mode was added.

Usage Guidelines

Use of the **neighbor unsuppress-map** command allows specified suppressed routes to be advertised.

Examples

The following BGP router configuration shows that routes specified by a route map named internal-map are suppressed:

```
access-list 3 deny 172.16.16.6
access-list 3 permit any
route-map map1 permit 10
match ip address 3
!
router bgp 65000
network 172.16.0.0
neighbor 192.168.1.2 remote-as 40000
aggregate-address 172.0.0.0 255.0.0.0 suppress-map map1
neighbor 192.168.1.2 unsuppress-map map1
neighbor 192.168.1.2 activate
```

The following example shows the routes specified by internal-map being unsuppressed for neighbor 172.16.16.6:

```
router bgp 100
address-family ipv4 multicast
 network 172.16.0.0
```

```
neighbor 172.16.16.6 unsuppress-map internal-map
```

Related Commands

Command	Description
address-family ipv4 (BGP)	Places the router in address family configuration mode for configuring routing sessions such as BGP, RIP, or static routing sessions that use standard IPv4 address prefixes.
address-family vpnv4	Places the routing in address family configuration mode for configuring routing sessions such as BGP, RIP, or static routing sessions that use standard VPNv4 address prefixes.
aggregate-address	Creates an aggregate entry in a BGP routing table.
neighbor route-map	Applies a route map to inbound or outbound routes.

neighbor update-source

To have the Cisco IOS software allow Border Gateway Protocol (BGP) sessions to use a specific operational interface for TCP connections, use the **neighbor update-source** command in router configuration mode. To restore the interface assignment to the closest interface, which is called the *best local address*, use the **no** form of this command.

neighbor {*ip-address* | *peer-group-name*} **update-source** *interface-type*

no neighbor {*ip-address* | *peer-group-name*} **update-source** *interface-type*

Syntax Description

ip-address	IP address of the BGP-speaking neighbor.
peer-group-name	Name of a BGP peer group.
interface-type	Interface to be used as the source.

Defaults

Best local address

Command Modes

Router configuration

Command History

Release	Modification
10.0	This command was introduced.

Usage Guidelines

This command works in conjunction with any specified interface on the router. The loopback interface is the interface that is most commonly used with this feature. For more information, refer to the loopback interface feature described in the "Interface Configuration Overview" chapter of the *Cisco IOS Interface Configuration Guide*.

If you specify a BGP peer group by using the *peer-group-name* argument, all the members of the peer group will inherit the characteristic configured with this command.

Examples

The following example sources BGP TCP connections for the specified neighbor with the IP address of the loopback interface rather than the best local address:

```
router bgp 110
 network 172.16.0.0
 neighbor 172.16.2.3 remote-as 110
 neighbor 172.16.2.3 update-source Loopback0
```

Related Commands

Command	Description
neighbor remote-as	Creates a BGP peer group.

neighbor version

To configure the Cisco IOS software to accept only a particular BGP version, use the **neighbor version** command in router configuration mode. To use the default version level of a neighbor, use the **no** form of this command.

neighbor {*ip-address* | *peer-group-name*} **version** *number*

no neighbor {*ip-address* | *peer-group-name*} **version** *number*

Syntax Description

ip-address	IP address of the BGP-speaking neighbor.
peer-group-name	Name of a BGP peer group.
number	BGP version number. The version can be set to 2 to force the software to use only Version 2 with the specified neighbor. The default is to use Version 4 and dynamically negotiate down to Version 2 if requested.

Defaults

BGP Version 4

Command Modes

Router configuration

Command History

Release	Modification
10.0	This command was introduced.

Usage Guidelines

Entering this command disables dynamic version negotiation.

Note The Cisco implementation of BGP in Cisco IOS Release 12.0(5)T or earlier releases supports BGP Versions 2, 3, and 4, with dynamic negotiation down to Version 2 if a neighbor does not accept BGP Version 4 (the default version).

The Cisco implementation of BGP in Cisco IOS Release 12.0(6)T or later releases supports BGP Version 4 only and does not support dynamic negotiation down to Version 2.

If you specify a BGP peer group by using the *peer-group-name* argument, all the members of the peer group will inherit the characteristic configured with this command.

Examples

The following example locks down to Version 4 of the BGP protocol:

```
router bgp 109
 neighbor 131.104.27.2 version 4
```

Related Commands

Command	Description
neighbor remote-as	Creates a BGP peer group.

neighbor weight

To assign a weight to a neighbor connection, use the **neighbor weight** command in address family or router configuration mode. To remove a weight assignment, use the **no** form of this command.

neighbor {*ip-address* | *peer-group-name*} **weight** *number*

no neighbor {*ip-address* | *peer-group-name*} **weight** *number*

Syntax Description

ip-address	IP address of the neighbor.
peer-group-name	Name of a BGP peer group.
number	Weight to assign. Acceptable values are from 0 to 65535.

Defaults

Routes learned through another BGP peer have a default weight of 0 and routes sourced by the local router have a default weight of 32768.

Command Modes

Address family configuration

Router configuration

Command History

Release	Modification
10.0	This command was introduced.
12.0(7)T	Address family configuration mode was added.

Usage Guidelines

All routes learned from this neighbor will have the assigned weight initially. The route with the highest weight will be chosen as the preferred route when multiple routes are available to a particular network.

The weights assigned with the **set weight** route-map command override the weights assigned using the **neighbor weight** command.

Note For weight changes to take effect, use of the **clear ip bgp peer-group *** command may be necessary.

If you specify a BGP peer group by using the *peer-group-name* argument, all the members of the peer group will inherit the characteristic configured with this command.

Examples

The following router configuration mode example sets the weight of all routes learned via 172.16.12.1 to 50:

```
router bgp 109
 neighbor 172.16.12.1 weight 50
```

The following address family configuration mode example sets the weight of all routes learned via 172.16.12.1 to 50:

```
router bgp 109
address-family ipv4 multicast
 neighbor 172.16.12.1 weight 50
```

Related Commands

Command	Description
address-family ipv4	Places the router in address family configuration mode for configuring routing sessions such as BGP, RIP, or static routing sessions that use standard IP Version 4 address 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 Virtual Private Network (VPN) Version 4 address prefixes.
neighbor distribute-list	Distributes BGP neighbor information as specified in an access list.
neighbor filter-list	Sets up a BGP filter.
neighbor remote-as	Creates a BGP peer group.

network (BGP and multiprotocol BGP)

To specify the networks to be advertised by the Border Gateway Protocol (BGP) and multiprotocol BGP routing processes, use the **network** command in address family or router configuration mode. To remove an entry, use the **no** form of this command.

network *network-number* [**mask** *network-mask*] [**route-map** *map-name*]

no network *network-number* [**mask** *network-mask*] [**route-map** *map-name*]

Syntax Description

network-number	Network that BGP or multiprotocol BGP will advertise.
mask	(Optional) Network or subnetwork mask. If the **mask** keyword is configured, then an exact match must exist in the routing table.
network-mask	(Optional) Network mask address.
route-map *map-name*	(Optional) Name of a route map.

Defaults

No networks are specified.

Command Modes

Address family configuration
Router configuration

Command History

Release	Modification
10.0	This command was introduced.
12.0	The limit of 200 network commands per BGP router was removed.
11.1(20)CC	The **nlri unicast**, **nlri multicast**, and **nlri unicast multicast** keywords were added.
12.0(7)T	The **nlri unicast**, **nlri multicast**, and **nlri unicast multicast** keywords were removed. Address family configuration mode was added.

Usage Guidelines

This command first appeared in Cisco IOS Release 10.0. The limit of 200 network commands per BGP router was removed in Cisco IOS Release 12.0. The maximum number of network commands you can use is now determined by the resources of the router, such as the amount of configured NVRAM or RAM.

For the information to be advertised by BGP or multiprotocol BGP, a route to the network specified must be present in the routing table. The routing information may be learned from connected routes, dynamic routing, and from static route sources.

Use the **route-map** keyword to apply a route map to a network to be advertised by the BGP and multiprotocol BGP routing processes. The specified route map can be used in filtering the network, or in setting attributes on the routes advertised by the **network** command.

Examples

The following example sets up network 10.108.0.0 to be included in the BGP updates:

```
router bgp 65000
 network 10.108.0.0
```

The following example sets up network 10.108.0.0 to be included in the multiprotocol BGP updates:

```
router bgp 65000
address family ipv4 multicast
 network 10.108.0.0
```

The following example shows the use of the **mask** keyword:

```
router bgp 65001
 network 10.0.0.0
 mask 255.0.0.0
 !
ip route 10.0.0.0 255.0.0.0 null0
```

Note This configuration will advertise a supernet 10.0.0.0/8. It is necessary to use a static route to provide the information because this summary route may not be learned through dynamic routing or from a connected interface. Specifying the null 0 interface with the **ip route** command guarantees that the routing information will always be present in the routing table.

Related Commands

Command	Description
address-family ipv4	Places the router in address family configuration mode for configuring routing sessions such as BGP, RIP, or static routing sessions that use standard IP Version 4 address 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 Virtual Private Network (VPN) Version 4 address prefixes.
default-information originate (BGP)	Allows the redistribution of network 0.0.0.0 into BGP.
network backdoor	Specifies a backdoor route to a BGP-learned prefix that provides better information about the network.
router bgp	Configures the BGP routing process.

network backdoor

To specify a backdoor route to a BGP-learned prefix that provides better information about the network, use the **network backdoor** command in address family or router configuration mode. To remove an address from the list, use the **no** form of this command.

network *ip-address* **backdoor**

no network *ip-address* **backdoor**

Syntax Description

ip-address	IP address of the network to which you want a backdoor route.

Defaults

No network is marked as having a back door.

Command Modes

Address family configuration

Router configuration

Command History

Release	Modification
10.0	This command was introduced.
12.0(7)T	Address family configuration mode was added.

Usage Guidelines

A backdoor network is assigned an administrative distance of 200. The objective is to make Interior Gateway Protocol (IGP) learned routes preferred. A back door network is treated as a local network, except that it is not advertised. A network that is marked as a backdoor is not sourced by the local router, but should be learned from external neighbors. The BGP best path selection algorithm does not change when a network is configured as a back door.

Examples

The following address family configuration example configures network 10.108.0.0 as a local network and network 192.168.7.0 as a backdoor network:

```
router bgp 109
address-family ipv4 multicast
 network 10.108.0.0
 network 192.168.7.0 backdoor
```

The following router configuration example configures network 10.108.0.0 as a local network and network 192.168.7.0 as a backdoor network:

```
router bgp 109
 network 10.108.0.0
 network 192.168.7.0 backdoor
```

Related Commands

Command	Description
address-family ipv4	Places the router in address family configuration mode for configuring routing sessions such as BGP, RIP, or static routing sessions that use standard IP Version 4 address 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.
distance bgp	Allows the use of external, internal, and local administrative distances that could be a better route to a node.
network (BGP and multiprotocol BGP)	Specifies networks to be advertised by the BGP and multiprotocol BGP routing processes.
router bgp	Assigns an absolute weight to a BGP network.

router bgp

To configure the BGP routing process, use the **router bgp** command in global configuration mode. To remove a routing process, use the **no** form of this command.

router bgp *as-number*

no router bgp *as-number*

Syntax Description

as-number	Number of an autonomous system that identifies the router to other BGP routers and tags the routing information passed along.

Defaults

No BGP routing process is enabled by default.

Command Modes

Global configuration

Command History

Release	Modification
10.0	This command was introduced.

Usage Guidelines

This command allows you to set up a distributed routing core that automatically guarantees the loop-free exchange of routing information between autonomous systems.

Examples

The following example configures a BGP process for autonomous system 120:

```
router bgp 120
```

Related Commands

Command	Description
network (BGP and multiprotocol BGP)	Specifies the list of networks for the BGP routing process.
timers bgp	Adjusts BGP network timers.

set as-path

To modify an autonomous system path for BGP routes, use the **set as-path** command in route-map configuration mode. To not modify the autonomous system path, use the **no** form of this command.

set as-path {**tag** | **prepend** *as-path-string*}

no set as-path {**tag** | **prepend** *as-path-string*}

Syntax Description

tag	Converts the tag of a route into an autonomous system path. Applies only when redistributing routes into BGP.
prepend *as-path-string*	Appends the string following the keyword **prepend** to the autonomous system path of the route that is matched by the route map. Applies to inbound and outbound BGP route maps.

Defaults

Autonomous system path is not modified.

Command Modes

Route-map configuration

Command History

Release	Modification
11.0	This command was introduced.

Usage Guidelines

The only global BGP metric available to influence the best path selection is the autonomous system path length. By varying the length of the autonomous system path, a BGP speaker can influence the best path selection by a peer further away.

By allowing you to convert the tag into an autonomous system path, the **set as-path tag** variation of this command modifies the autonomous system length. The **set as-path prepend** variation allows you to "prepend" an arbitrary autonomous system path string to BGP routes. Usually the local autonomous system number is prepended multiple times, increasing the autonomous system path length.

Examples

The following example converts the tag of a redistributed route into an autonomous system path:

```
route-map set-as-path-from-tag
 set as-path tag
!
router bgp 100
 redistribute ospf 109 route-map set-as-path-from-tag
```

The following example prepends 100 100 100 to all the routes advertised to 10.108.1.1:

```
route-map set-as-path
 match as-path 1
 set as-path prepend 100 100 100
!
router bgp 100
 neighbor 10.108.1.1 route-map set-as-path out
```

Related Commands

Command	Description
match as-path	Matches a BGP autonomous system path access list.
match community	Matches a BGP community.
match interface (IP)	Distributes routes that have their next hop out one of the interfaces specified.
match ip address	Distributes any routes that have a destination network number address that is permitted by a standard or extended access list, and performs policy routing on packets.
match ip next-hop	Redistributes any routes that have a next hop router address passed by one of the access lists specified.
match ip route-source	Redistributes routes that have been advertised by routers and access servers at the address specified by the access lists.
match metric (IP)	Redistributes routes with the metric specified.
match route-type (IP)	Redistributes routes of the specified type.
match tag	Redistributes routes in the routing table that match the specified tags.
route-map (IP)	Defines the conditions for redistributing routes from one routing protocol into another, or enables policy routing.
set automatic-tag	Automatically computes the tag value.
set community	Sets the BGP communities attribute.
set level (IP)	Indicates where to import routes.
set local-preference	Specifies a preference value for the autonomous system path.
set metric (BGP, OSPF, RIP)	Sets the metric value for a routing protocol.
set metric-type	Sets the metric type for the destination routing protocol.
set next-hop	Specifies the address of the next hop.
set origin (BGP)	Sets the BGP origin code.
set tag (IP)	Sets a tag value of the destination routing protocol.
set weight	Specifies the BGP weight for the routing table.

set comm-list delete

To remove communities from the community attribute of an inbound or outbound update, use the **set comm-list delete** command in route-map configuration mode. To negate a previous **set comm-list delete** command, use the **no** form of this command.

set comm-list *community-list-number* **delete**

no set comm-list *community-list-number* **delete**

Syntax Description

community-list-number	A standard or extended community list number.

Defaults

No communities are removed.

Command Modes

Route-map configuration

Command History

Release	Modification
12.0	This command was introduced.

Usage Guidelines

This **route-map** set command removes communities from the community attribute of an inbound or outbound update using a route map to filter and determine the communities to be deleted. Depending upon whether the route map is applied to the inbound or outbound update for a neighbor, each community that passes the route map **permit** clause and matches the given community list will be removed from the community attribute being received from or sent to the BGP neighbor.

Each entry of a standard community list should list only one community when used with the **set comm-list delete** command. For example, in order to be able to delete communities 10:10 and 10:20, you must use the following format to create the entries:

```
ip community-list 5 permit 10:10
ip community-list 5 permit 10:20
```

The following format for a community list entry, while acceptable otherwise, does not work with the **set comm-list delete** command:

```
config ip community-list 5 permit 10:10 10:20
```

When both the **set community** *community-list-number* and **set comm-list delete** commands are configured in the same sequence of a route map attribute, the deletion operation (**set comm-list delete**) is performed before the set operation (**set community** *community-list-number*).

Examples

In the following example, the communities 100:10 and 100:20 (if present) will be deleted from updates received from 171.69.233.33. Also, except for 100:50, all communities beginning with 100: will be deleted from updates sent to 171.69.233.33.

```
router bgp 100
 neighbor 171.69.233.33 remote-as 120
 neighbor 171.69.233.33 route-map ROUTEMAPIN in
 neighbor 171.69.233.33 route-map ROUTEMAPOUT out
!
ip community-list 1 permit 100:10
ip community-list 1 permit 100:20
!
ip community-list 120 deny   100:50
ip community-list 120 permit 100:.*
!
route-map ROUTEMAPIN permit 10
 set comm-list 1 delete
!
route-map ROUTEMAPOUT permit 10
 set comm-list 120 delete
```

Related Commands

Command	Description
set community	Sets the BGP communities attribute.

set community

To set the BGP communities attribute, use the **set community** route map configuration command. To delete the entry, use the **no** form of this command.

set community {*community-number* [**additive**]} | **none**

no set community {*community-number* [**additive**]} | **none**

Syntax Description

community-number	Specifies that community number. Valid values are from 1 to 4294967200, **no-export**, or **no-advertise**.
additive	(Optional) Adds the community to the already existing communities.
none	(Optional) Removes the community attribute from the prefixes that pass the route map.

Defaults

No BGP communities attributes exist.

Command Modes

Route-map configuration

Command History

Release	Modification
10.3	This command was introduced.

Usage Guidelines

You must have a match clause (even if it points to a "permit everything" list) if you want to set tags.

Use the **route-map** global configuration command, and the **match** and **set** route map configuration commands, to define the conditions for redistributing routes from one routing protocol into another. Each **route-map** command has a list of **match** and **set** commands associated with it. The **match** commands specify the *match criteria*—the conditions under which redistribution is allowed for the current **route-map** command. The **set** commands specify the *set actions*—the particular redistribution actions to perform if the criteria enforced by the **match** commands are met. The **no route-map** command deletes the route map.

The **set** route map configuration commands specify the redistribution *set actions* to be performed when all of the match criteria of a route map are met. When all match criteria are met, all set actions are performed.

Examples

In the following example, routes that pass the autonomous system path access list 1 have the community set to 109. Routes that pass the autonomous system path access list 2 have the community set to no-export (these routes will not be advertised to any external BGP [eBGP] peers).

```
route-map set_community 10 permit
 match as-path 1
 set community 109

route-map set_community 20 permit
 match as-path 2
 set community no-export
```

In the following similar example, routes that pass the autonomous system path access list 1 have the community set to 109. Routes that pass the autonomous system path access list 2 have the community set to local-as (the router will not advertise this route to peers outside the local autonomous system.

```
route-map set_community 10 permit
 match as-path 1
 set community 109

route-map set_community 20 permit
 match as-path 2
 set community local-as
```

Related Commands

Command	Description
ip community-list	Creates a community list for BGP and control access to it.
match community	Matches a BGP community.
route-map (IP)	Defines the conditions for redistributing routes from one routing protocol into another, or enables policy routing.
set comm-list delete	Removes communities from the community attribute of an inbound or outbound update.
show ip bgp community	Displays routes that belong to specified BGP communities.

set dampening

To set the BGP route dampening factors, use the **set dampening** route map configuration command. To disable this function, use the **no** form of this command.

set dampening *half-life reuse suppress max-suppress-time*

no set dampening

Syntax Description

half-life	Time (in minutes) after which a penalty is decreased. Once the route has been assigned a penalty, the penalty is decreased by half after the half life period (which is 15 minutes by default). The process of reducing the penalty happens every 5 seconds. The range of the half life period is from 1 to 45 minutes. The default is 15 minutes.
reuse	Unsuppresses the route if the penalty for a flapping route decreases enough to fall below this value. The process of unsuppressing routes occurs at 10-second increments. The range of the reuse value is from 1 to 20000; the default is 750.
suppress	Suppresses a route when its penalty exceeds this limit. The range is from 1 to 20000; the default is 2000.
max-suppress-time	Maximum time (in minutes) a route can be suppressed. The range is from 1 to 20000; the default is four times the *half-life* value. If the *half-life* value is allowed to default, the maximum suppress time defaults to 60 minutes.

Defaults

This command is disabled by default.

Command Modes

Route-map configuration

Command History

Release	Modification
11.0	This command was introduced.

Usage Guidelines

Use the **route-map** global configuration command, and the **match** and **set** route-map configuration commands, to define the conditions for redistributing routes from one routing protocol into another. Each **route-map** command has a list of **match** and **set** commands associated with it. The **match** commands specify the *match criteria*—the conditions under which redistribution is allowed for the current **route-map** command. The **set** commands specify the *set actions*—the particular redistribution actions to perform if the criteria enforced by the **match** commands are met. The **no route-map** command deletes the route map.

When a BGP peer is reset, the route is withdrawn and the flap statistics cleared. In this instance, the withdrawal does not incur a penalty even though route flap dampening is enabled.

Examples

The following example sets the half life to 30 minutes, the reuse value to 1500, the suppress value to 10000; and the maximum suppress time to 120 minutes:

```
route-map tag
 match as path 10
 set dampening 30 1500 10000 120
!
router bgp 100
 neighbor 171.69.233.52 route-map tag in
```

Related Commands

Command	Description
match as-path	Matches a BGP autonomous system path access list.
match community	Matches a BGP community.
match interface (IP)	Distributes routes that have their next hop out one of the interfaces specified.
match ip address	Distributes any routes that have a destination network number address that is permitted by a standard or extended access list, and performs policy routing on packets.
match ip next-hop	Redistributes any routes that have a next hop router address passed by one of the access lists specified.
match ip route-source	Redistributes routes that have been advertised by routers and access servers at the address specified by the access lists.
match metric (IP)	Redistributes routes with the metric specified.
match route-type (IP)	Redistributes routes of the specified type.
match tag	Redistributes routes in the routing table that match the specified tags.
route-map (IP)	Defines the conditions for redistributing routes from one routing protocol into another, or enables policy routing.
set automatic-tag	Automatically computes the tag value.
set community	Sets the BGP communities attribute.
set level (IP)	Indicates where to import routes.
set local-preference	Specifies a preference value for the autonomous system path.
set metric (BGP, OSPF, RIP)	Sets the metric value for a routing protocol.
set metric-type	Sets the metric type for the destination routing protocol.
set next-hop	Specifies the address of the next hop.
set origin (BGP)	Sets the BGP origin code.
set tag (IP)	Sets the value of the destination routing protocol.
set weight	Specifies the BGP weight for the routing table.
show route-map	Displays all route maps configured or only the one specified.

set extcommunity

To set Border Gateway Protocol (BGP) extended community attributes, use the **set extcommunity** command in route-map configuration mode. To delete the entry, use the **no** form of this command.

set extcommunity {**rt** *extended-community-value* [**additive**] | **soo** *extended-community-value*}

no set extcommunity {**rt** *extended-community-value* [**additive**] | **soo** *extended-community-value*}

Syntax Description

rt	Specifies the route target (RT) extended community attribute.
soo	Specifies the site of origin (SOO) extended community attribute.
extended-community-value	Specifies the value to be set. The value can be one of the following combinations: • *autonomous-system-number*:*network-number* • *ip-address*:*network-number* The colon is used to separate the autonomous system number and network number or IP address and network number.
additive	(Optional) Adds a route target to the existing route target list without replacing any existing route targets.

Defaults

Specifying new route targets with the **rt** keyword replaces existing route targets by default, unless the **additive** keyword is used. The use of the **additive** keyword adds the new route target to the existing route target list but does not replace any existing route targets.

Command Modes

Route-map configuration

Command History

Release	Modification
12.1	This command was introduced.

Usage Guidelines

Extended community attributes are used to configure, filter, and identify routes for virtual routing and forwarding instances (VRFs) and Multiprotocol Label Switching (MPLS) Virtual Private Networks (VPNs).

The **set extcommunity** command is used to configure set clauses that use extended community attributes in route maps. All of the standard rules of match and set clauses apply to the configuration of extended community attributes.

The route target (RT) extended community attribute is configured with the **rt** keyword. This attribute is used to identify a set of sites and VRFs that may receive routes that are tagged with the configured route target. Configuring the route target extended attribute with a route allows that route to be placed in the per-site forwarding tables that are used for routing traffic that is received from corresponding sites.

The site of origin (SOO) extended community attribute is configured with the **soo** keyword. This attribute uniquely identifies the site from which the Provider Edge (PE) router learned the route. All routes learned from a particular site must be assigned the same SOO extended community attribute, whether a site is connected to a single PE router or multiple PE routers. Configuring this attribute prevents routing loops from occurring when a site is multihomed. The SOO extended community attribute is configured on the interface and is propagated into BGP through redistribution. The SOO can be applied to routes that are learned from VRFs. The SOO should not be configured for stub sites or sites that are not multihomed.

Examples

The following example sets the route target to extended community attribute 100:2 for routes that are permitted by the route map:

```
Router(config)# access-list 2 permit 192.168.78.0 255.255.255.0
Router(config)# route-map MAP_NAME permit 10
Router(config-route-map)# match ip-address 2
Router(config-route-map)# set extcommunity rt 100:2
```

The following example sets the route target to extended community attribute 100:3 for routes that are permitted by the route map. The use of the **additive** keyword adds route target 100:3 to the existing route target list but does not replace any existing route targets.

```
Router(config)# access-list 3 permit 192.168.79.0 255.255.255.0
Router(config)# route-map MAP_NAME permit 10
Router(config-route-map)# match ip-address 3
Router(config-route-map)# set extcommunity rt 100:3 additive
```

Note Configuring route targets with the **set extcommunity** command will replace existing route targets, unless the **additive** keyword is used.

The following example sets the site of origin to extended community attribute 100:4 for routes that are permitted by the route map:

```
Router(config)# access-list 4 permit 192.168.80.0 255.255.255.0
Router(config)# route-map MAP_NAME permit 10
Router(config-route-map)# match ip-address 4
Router(config-route-map)# set extcommunity soo 100:4
```

Related Commands

Command	Description
ip extcommunity-list	Creates an extended community list and controls access to it.
match extcommunity	Matches a BGP VPN extended community list.
route-map (IP)	Defines the conditions for redistributing routes from one routing protocol into another, or enables policy routing.
route-target	Creates a route target extended community for a VRF.
show ip extcommunity-list	Displays routes that are permitted by the extended community list.
show route-map	Displays all route maps configured or only the one specified.

set ip next-hop (BGP)

To indicate where to output packets that pass a match clause of a route map for policy routing, use the **set ip next-hop** command in route-map configuration mode. To delete an entry, use the **no** form of this command.

set ip next-hop *ip-address* [*... ip-address*] [**peer-address**]

no set ip next-hop *ip-address* [*... ip-address*] [**peer-address**]

Syntax Description

ip-address	IP address of the next hop to which packets are output. The next hop must be an adjacent router.
peer-address	(Optional) Sets the next hop to be the BGP peering address.

Defaults

This command is disabled by default.

Command Modes

Route-map configuration

Command History

Release	Modification
11.0	This command was introduced.
12.0	The **peer-address** keyword was added.

Usage Guidelines

An ellipsis (...) in the command syntax indicates that your command input can include multiple values for the *ip-address* argument.

Use the **ip policy route-map** interface configuration command, the **route-map** global configuration command, and the **match** and **set** route-map configuration commands to define the conditions for policy routing packets. The **ip policy route-map** command identifies a route map by name. Each **route-map** command has a list of **match** and **set** commands associated with it. The **match** commands specify the *match criteria*—the conditions under which policy routing occurs. The **set** commands specify the *set actions*—the particular routing actions to perform if the criteria enforced by the **match** commands are met.

If the interface associated with the first next hop specified with the **set ip next-hop** command is down, the optionally specified IP addresses are tried in turn.

When the **set ip next-hop** command is used with the **peer-address** keyword in an inbound route map of a BGP peer, the next hop of the received matching routes will be set to be the neighbor peering address, overriding any third-party next hops. So the same route map can be applied to multiple BGP peers to override third-party next hops.

When the **set ip next-hop** command is used with the **peer-address** keyword in an outbound route map of a BGP peer, the next hop of the advertised matching routes will be set to be the peering address of the local router, thus disabling the next hop calculation. The **set ip next-hop** command has finer

granularity than the per-neighbor **neighbor next-hop-self** command, because you can set the next hop for some routes, but not others. The **neighbor next-hop-self** command sets the next hop for all routes sent to that neighbor.

The set clauses can be used in conjunction with one another. They are evaluated in the following order:

1. **set ip next-hop**
2. **set interface**
3. **set ip default next-hop**
4. **set default interface**

Examples

In the following example, three routers are on the same FDDI LAN (with IP addresses 10.1.1.1, 10.1.1.2, and 10.1.1.3). Each is in a different autonomous system. The **set ip next-hop peer-address** command specifies that traffic from the router (10.1.1.3) in remote autonomous system 300 for the router (10.1.1.1) in remote autonomous system 100 that matches the route map is passed through the router bgp 200, rather than sent directly to the router (10.1.1.1) in autonomous system 100 over their mutual connection to the LAN.

```
router bgp 200
neighbor 10.1.1.3 remote-as 300
neighbor 10.1.1.3 route-map set-peer-address out
neighbor 10.1.1.1 remote-as 100
route-map set-peer-address permit 10
set ip next-hop peer-address
```

Related Commands

Command	Description
ip policy route-map	Identifies a route map to use for policy routing on an interface.
match ip address	Distributes any routes that have a destination network number address that is permitted by a standard or extended access list, and performs policy routing on packets.
match length	Bases policy routing on the Level 3 length of a packet.
neighbor next-hop-self	Disables next hop processing of BGP updates on the router.
route-map (IP)	Defines the conditions for redistributing routes from one routing protocol to another, or enables policy routing.
set default interface	Indicates where to output packets that pass a match clause of a route map for policy routing and that have no explicit route to the destination.
set interface	Indicates where to output packets that pass a match clause of a route map for policy routing.
set ip default next-hop verify-availability	Indicates where to output packets that pass a match clause of a route map for policy routing and for which the Cisco IOS software has no explicit route to a destination.

set metric-type internal

To set the Multi Exit Discriminator (MED) value on prefixes advertised to external BGP (eBGP) neighbors to match the Interior Gateway Protocol (IGP) metric of the next hop, use the **set metric-type internal** command in route-map configuration mode. To return to the default, use the **no** form of this command.

set metric-type internal

no set metric-type internal

Syntax Description

This command has no arguments or keywords.

Defaults

This command is disabled by default.

Command Modes

Route-map configuration

Command History

Release	Modification
10.3	This command was introduced.

Usage Guidelines

This command will cause BGP to advertise a MED value that corresponds to the IGP metric associated with the next hop of the route. This command applies to generated, internal BGP (iBGP)-, and eBGP-derived routes.

If this command is used, multiple BGP speakers in a common autonomous system can advertise different MED values for a particular prefix. Also, note that if the IGP metric changes, BGP will readvertise the route every 10 minutes.

Use the **route-map** global configuration command and the **match** and **set** route-map configuration commands to define the conditions for redistributing routes from one routing protocol into another. Each **route-map** command has a list of **match** and **set** commands associated with it. The **match** commands specify the *match criteria*—the conditions under which redistribution is allowed for the current **route-map** command. The **set** commands specify the *set actions*—the particular redistribution actions to perform if the criteria enforced by the **match** commands are met. The **no route-map** command deletes the route map.

The **set** route-map configuration commands specify the redistribution *set actions* to be performed when all of the match criteria of the route map are met. When all match criteria are met, all set actions are performed.

Note This command is not supported for redistributing routes into Border Gateway Protocol (BGP).

Examples

In the following example, the MED value for all the advertised routes to neighbor 172.16.2.3 is set to the corresponding IGP metric of the next hop:

```
router bgp 109
 network 172.16.0.0
 neighbor 172.16.2.3 remote-as 200
 neighbor 172.16.2.3 route-map setMED out
!
route-map setMED permit 10
 match as-path 1
 set metric-type internal
!
 ip as-path access-list 1 permit .*
```

Related Commands

Command	Description
route-map (IP)	Defines the conditions for redistributing routes from one routing protocol into another, or enables policy routing.

set origin (BGP)

To set the BGP origin code, use the **set origin** command in route-map configuration mode. To delete an entry, use the **no** form of this command.

set origin {**igp** | **egp** *as-number* | **incomplete**}

no set origin {**igp** | **egp** *as-number* | **incomplete**}

Syntax Description

igp	Remote Interior Gateway Protocol (IGP) system.
egp	Local Exterior Gateway Protocol (EGP) system.
as-number	Remote autonomous system number. This is an integer from 0 to 65535.
incomplete	Unknown heritage.

Defaults

Default origin, based on route in main IP routing table

Command Modes

Route-map configuration

Command History

Release	Modification
10.0	This command was introduced.

Usage Guidelines

You must have a match clause (even if it points to a "permit everything" list) if you want to set tags.

Use the **route-map** global configuration command, and the **match** and **set** route-map configuration commands, to define the conditions for redistributing routes from one routing protocol into another. Each **route-map** command has a list of **match** and **set** commands associated with it. The **match** commands specify the *match criteria*—the conditions under which redistribution is allowed for the current **route-map** command. The **set** commands specify the *set actions*—the particular redistribution actions to perform if the criteria enforced by the **match** commands are met. The **no route-map** command deletes the route map.

The **set** route-map configuration commands specify the redistribution *set actions* to be performed when all of the match criteria of a route map are met. When all match criteria are met, all set actions are performed.

Examples

The following example sets the origin of routes that pass the route map to IGP:

```
route-map set_origin
 match as-path 10
 set origin igp
```

Related Commands

Command	Description
match as-path	Matches a BGP autonomous system path access list.
match community-list	Matches a BGP community.
match interface (IP)	Distributes routes that have their next hop out one of the interfaces specified.
match ip address	Distributes any routes that have a destination network number address that is permitted by a standard or extended access list, and performs policy routing on packets.
match ip next-hop	Redistributes any routes that have a next hop router address passed by one of the access lists specified.
match ip route-source	Redistributes routes that have been advertised by routers and access servers at the address specified by the access lists.
match metric (IP)	Redistributes routes with the metric specified.
match route-type (IP)	Redistributes routes of the specified type.
match tag	Redistributes routes in the routing table that match the specified tags.
route-map (IP)	Defines the conditions for redistributing routes from one routing protocol into another, or enables policy routing.
set as-path	Modifies an autonomous system path for BGP routes.
set automatic-tag	Automatically computes the tag value in a route map configuration.
set community	Sets the BGP communities attribute.
set level (IP)	Indicates where to import routes.
set local-preference	Specifies a preference value for the autonomous system path.
set metric (BGP, OSPF, RIP)	Sets the metric value for a routing protocol.
set metric-type	Sets the metric type for the destination routing protocol.
set next-hop	Specifies the address of the next hop.
set tag (IP)	Sets the value of the destination routing protocol.
set weight	Specifies the BGP weight for the routing table.

set weight

To specify the BGP weight for the routing table, use the **set weight** command in route-map configuration mode. To delete an entry, use the **no** form of this command.

set weight *number*

no set weight *number*

Syntax Description

number	Weight value. It can be an integer from 0 to 65535.

Defaults

The weight is not changed by the specified route map.

Command Modes

Route-map configuration

Command History

Release	Modification
10.0	This command was introduced.

Usage Guidelines

The implemented weight is based on the first matched autonomous system path. Weights indicated when an autonomous system path is matched override the weights assigned by global **neighbor** commands. In other words, the weights assigned with the **set weight** route-map configuration command override the weights assigned using the **neighbor weight** command.

Examples

The following example sets the BGP weight for the routes matching the autonomous system path access list to 200:

```
route-map set-weight
 match as-path 10
 set weight 200
```

Related Commands

Command	Description
match as-path	Matches a BGP autonomous system path access list.
match community	Matches a BGP community.
match interface (IP)	Distributes routes that have their next hop out one of the interfaces specified.
match ip address	Distributes any routes that have a destination network number address that is permitted by a standard or extended access list, and performs policy routing on packets.
match ip next-hop	Redistributes any routes that have a next hop router address passed by one of the access lists specified.

match ip route-source	Redistributes routes that have been advertised by routers and access servers at the address specified by the access lists.
match metric (IP)	Redistributes routes with the metric specified.
match route-type (IP)	Redistributes routes of the specified type.
match tag	Redistributes routes in the routing table that match the specified tags.
route-map (IP)	Defines the conditions for redistributing routes from one routing protocol into another, or enables policy routing.
set as-path	Modifies an autonomous system path for BGP routes.
set automatic-tag	Automatically computes the tag value in a route map configuration.
set community	Sets the BGP communities attribute.
set level (IP)	Indicates where to import routes.
set local-preference	Specifies a preference value for the autonomous system path.
set metric (BGP, OSPF, RIP)	Sets the metric value for a routing protocol.
set metric-type	Sets the metric type for the destination routing protocol.
set next-hop	Specifies the address of the next hop.
set origin (BGP)	Sets the BGP origin code.
set tag (IP)	Sets the value of the destination routing protocol.

show ip bgp

To display entries in the Border Gateway Protocol (BGP) routing table, use the **show ip bgp command** in command in EXEC mode.

show ip bgp [*ip-address* [*mask* [**longer-prefixes** [**injected**] | **shorter-prefixes** [*length*]]] | **oer-paths** | **prefix-list** *name* | **route-map** *name*]

Syntax Description

ip-address	(Optional) IP address entered to filter the output to display only a particular host or network in the BGP routing table.
mask	(Optional) Mask to filter or match hosts that are part of the specified network.
longer-prefixes	(Optional) Displays the specified route and all more specific routes.
injected	(Optional) Displays more specific prefixes injected into the BGP routing table.
shorter-prefix	(Optional) Displays the specified route and all less specific routes.
length	(Optional) Specifies the prefix length. The value for this argument is a number from 0 to 32.
oer-paths	(Optional) Displays OER controlled prefixes in the BGP routing table.
prefix-list *name*	(Optional) Filters the output based on the specified prefix list.
route-map *name*	(Optional) Filters the output based on the specified route map.

Command Modes

EXEC

Command History

Release	Modification
10.0	This command was introduced.
12.0	The display of prefix advertisement statistics was added.
12.0(6)T	The display of a message indicating support for route refresh capability was added.
12.0(14)ST	The **prefix-list** and **route-map** keywords were added.
12.0(14)ST	The **shorter-prefixes** keyword was added. This keyword is available
12.2(2)T	The output of the **show ip bgp** *network* command was enhanced to display multipaths and a best path to the specified network.
12.0(22)S	A new status code indicating stale routes was added to support BGP graceful restart.
12.2(15)T	A new status code indicating stale routes was added to support BGP graceful restart.
12.3(8)T	The **oer-paths** keyword was added.

Usage Guidelines

The **show ip bgp** command is used to display the contents of the BGP routing table. The output can be filtered to display entries for a specific prefix, prefix length, and prefixes injected through a prefix list, route map, or conditional advertisement.

oer-paths keyword

BGP prefixes that are monitored and controlled by Optimized Edge Routing (OER) are displayed by entering the **show ip bgp** command with the **oer-paths** keyword.

Examples

show ip bgp example

The following example output shows the BGP routing table:

```
Router# show ip bgp

BGP table version is 5, local router ID is 10.0.33.34
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
*> 10.1.0.0          0.0.0.0                  0         32768 ?
*  10.2.0.0          10.0.33.35              10             0 35 ?
*>                   0.0.0.0                  0         32768 ?
*  10.0.0.0          10.0.33.35              10             0 35 ?
*>                   0.0.0.0                  0         32768 ?
*> 192.168.0.0/16   10.0.33.35              10             0 35 ?
```

Table 32 describes the significant fields shown in the display.

Table 32 show ip bgp 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: s—The table entry is suppressed. d—The table entry is dampened. h—The table entry history. *—The table entry is valid. >—The table entry is the best entry to use for that network. i—The table entry was learned via an internal BGP (iBGP) session.
Origin codes	Origin of the entry. The origin code is placed at the end of each line in the table. It can be one of the following values: i—Entry originated from an Interior Gateway Protocol (IGP) and was advertised with a **network** router configuration command. e—Entry originated from an Exterior Gateway Protocol (EGP). ?—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.

Table 32 show ip bgp Field Descriptions (continued)

Field	Description
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.
(stale)	Indicates that the following path for the specified autonomous system is marked as "stale" during a graceful restart process.

show ip bgp ip-address example

The following example displays information about the 192.168.1.0 entry in the BGP routing table:

```
Router B# show ip bgp 192.168.1.0

BGP routing table entry for 192.168.1.0/24, version 48
Paths: (2 available, best #2, table Default-IP-Routing-Table)
Multipath: eBGP
  Advertised to update-groups:
     1          2
  200
    172.16.1.1 from 172.16.1.1 (10.1.1.1)
      Origin incomplete, metric 0, localpref 100, valid, external, multipath, best
      Extended Community: 0x0:0:0
      DMZ-Link Bw 278 kbytes
  200
    172.16.2.2 from 172.16.2.2 (10.2.2.2)
      Origin incomplete, metric 0, localpref 100, valid, external, multipath, best
      Extended Community: 0x0:0:0
      DMZ-Link Bw 625 kbytes
```

Table 33 describes the significant fields shown in the display.

Table 33 show ip bgp Field Descriptions

Field	Description
BGP routing table entry for...	IP address or network number of the routing table entry.
version...	Internal version number of the table. This number is incremented whenever the table changes.
Paths:	The number of available paths, and the number of installed best paths. This line dispays "Default-IP-Routing-Table" when the best path is installed in the IP routing table.
Multipath:	This field is displayed when multipath loadsharing is enabled. This field will indicate if the multipaths are iBGP or eBGP.
Advertised to update-groups:	The number of each update group for which advertisements are processed.

Table 33 show ip bgp Field Descriptions (continued)

Field	Description
Origin	Origin of the entry. The origin can be IGP, EGP, or incomplete. This line displays the configured metric (0 if no metric is configured), the local preference value (100 is default), and the status and type of route (internal, external, multipath, best).
Extended Community	This field is displayed if the route carries an extended community attribute. The attribute code is displayed on this line. Information about the extended community is displayed on a subsequent line.

show ip bgp longer-prefixes example

The following is example output from the **show ip bgp** command entered with the **longer-prefixes** keyword:

```
Router# show ip bgp 10.92.0.0 255.255.0.0 longer-prefixes

BGP table version is 1738, local router ID is 192.168.72.24
Status codes: s suppressed, * valid, > best, i - internal
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop          Metric LocPrf Weight Path
*> 10.92.0.0         10.92.72.30         8896         32768 ?
*                    10.92.72.30                          0 109 108 ?
*> 10.92.1.0         10.92.72.30         8796         32768 ?
*                    10.92.72.30                          0 109 108 ?
*> 10.92.11.0        10.92.72.30        42482         32768 ?
*                    10.92.72.30                          0 109 108 ?
*> 10.92.14.0        10.92.72.30         8796         32768 ?
*                    10.92.72.30                          0 109 108 ?
*> 10.92.15.0        10.92.72.30         8696         32768 ?
*                    10.92.72.30                          0 109 108 ?
*> 10.92.16.0        10.92.72.30         1400         32768 ?
*                    10.92.72.30                          0 109 108 ?
*> 10.92.17.0        10.92.72.30         1400         32768 ?
*                    10.92.72.30                          0 109 108 ?
*> 10.92.18.0        10.92.72.30         8876         32768 ?
*                    10.92.72.30                          0 109 108 ?
*> 10.92.19.0        10.92.72.30         8876         32768 ?
*                    10.92.72.30                          0 109 108 ?
```

show ip bgp shorter-prefixes example

The following is example output from the **show ip bgp** command entered with the **shorter-prefixes** keyword. An 8 bit prefix length is specified.

```
Router# show ip bgp 172.16.0.0/16 shorter-prefixes 8
*> 172.16.0.0         10.0.0.2                               0 ?
*                     10.0.0.2                 0             0 200 ?
```

show ip bgp prefix-list example

The following is example output from the **show ip bgp** command entered with the **prefix-list** keyword:

```
Router# show ip bgp prefix-list ROUTE
BGP table version is 39, local router ID is 10.0.0.1
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
*> 192.168.1.0      10.0.0.2                             0 ?
*                   10.0.0.2                  0          0 200 ?
```

show ip bgp route-map example

The following is example output from the **show ip bgp** command entered with the **route-map** keyword:

```
Router# show ip bgp route-map LEARNED_PATH
BGP table version is 40, local router ID is 10.0.0.1
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
*> 192.168.1.0      10.0.0.2                             0 ?
*                   10.0.0.2                  0          0 200 ?
```

show ip bgp cidr-only

To display routes with nonnatural network masks (that is, classless interdomain routing, or CIDR), use the **show ip bgp cidr-only** command in EXEC mode.

show ip bgp cidr-only

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
10.0	This command was introduced.

Examples

The following is sample output from the **show ip bgp cidr-only** command in privileged EXEC mode:

```
Router# show ip bgp cidr-only

BGP table version is 220, local router ID is 172.16.73.131
Status codes: s suppressed, * valid, > best, i - internal
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop          Metric LocPrf Weight Path
*> 192.168.0.0/8    172.16.72.24                         0 1878 ?
*> 172.16.0.0/16    172.16.72.30                         0 108 ?
```

Table 34 describes the significant fields shown in the display.

Table 34 show ip bgp cidr-only Field Descriptions

Field	Description
BGP table version is 220	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: s—The table entry is suppressed. *—The table entry is valid. >—The table entry is the best entry to use for that network. i—The table entry was learned via an internal BGP (iBGP) session.

Table 34 show ip bgp cidr-only Field Descriptions (continued)

Field	Description
Origin codes	Origin of the entry. The origin code is placed at the end of each line in the table. It can be one of the following values: i—Entry originated from an Interior Gateway Protocol (IGP) and was advertised with a **network** router configuration command. e—Entry originated from an Exterior Gateway Protocol (EGP). ?—Origin of the path is not clear. Usually, this is a router that is redistributed into BGP from an IGP.
Network	Internet address of the network the entry describes.
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 access server has some non-BGP route 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. At the end of the path is the origin code for the path: i—The entry was originated with the IGP and advertised with a **network** router configuration command. e—The route originated with EGP. ?—The origin of the path is not clear. Usually this is a path that is redistributed into BGP from an IGP.

show ip bgp community

To display routes that belong to specified BGP communities, use the **show ip bgp community** command in EXEC mode.

show ip bgp community *community-number* [**exact**]

Syntax Description

community-number	Valid value is a community number in the range from 1 to 4294967200, or AA:NN (autonomous system-community number/2-byte number), **internet**, **no-export**, **local-as**, or **no-advertise**.
exact	(Optional) Displays only routes that have the same specified communities.

Command Modes

EXEC

Command History

Release	Modification
10.3	This command was introduced.
12.0	The **local-as** community was added.

Examples

The following is sample output from the **show ip bgp community** command in privileged EXEC mode:

```
router# show ip bgp community 111:12345 local-as

 BGP table version is 10, local router ID is 224.0.0.10
 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
 *> 172.16.2.2/32    172.43.222.2           0             0 222 ?
 *> 10.0.0.0         172.43.222.2           0             0 222 ?
 *> 172.43.0.0       172.43.222.2           0             0 222 ?
 *> 172.43.44.44/32  172.43.222.2           0             0 222 ?
 *  172.43.222.0/24  172.43.222.2           0             0 222 i
 *> 172.17.240.0/21  172.43.222.2           0             0 222 ?
 *> 192.168.212.0    172.43.222.2           0             0 222 i
 *> 172.39.1.0       172.43.222.2           0             0 222 ?
```

Table 35 describes the significant fields shown in the display.

Table 35 show ip bgp community 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.

Table 35 show ip bgp community Field Descriptions (continued)

Field	Description
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: s—The table entry is suppressed. *—The table entry is valid. >—The table entry is the best entry to use for that network. i—The table entry was learned via an internal BGP (iBGP) session.
Origin codes	Origin of the entry. The origin code is placed at the end of each line in the table. It can be one of the following values: i—Entry originated from an Interior Gateway Protocol (IGP) and was advertised with a **network** router configuration command. e—Entry originated from an Exterior Gateway Protocol (EGP). ?—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, this is the value of the interautonomous system metric. This field is frequently not used.
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.

show ip bgp community-list

To display routes that are permitted by the BGP community list, use the **show ip bgp community-list** command in EXEC mode.

show ip bgp community-list *community-list-number* [**exact**]

Syntax Description

community-list-number	Community list number in the range from 1 to 99.
exact	(Optional) Displays only routes that have an exact match.

Command Modes

EXEC

Command History

Release	Modification
10.3	This command was introduced.

Examples

The following is sample output of the **show ip bgp community-list** command in privileged EXEC mode:

```
Router# show ip bgp community-list 20

BGP table version is 716977, local router ID is 193.0.32.1
Status codes: s suppressed, * valid, > best, i - internal
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop          Metric LocPrf Weight Path
* i3.0.0.0         193.0.22.1             0    100      0 1800 1239 ?
*>i               193.0.16.1             0    100      0 1800 1239 ?
* i6.0.0.0         193.0.22.1             0    100      0 1800 690 568 ?
*>i               193.0.16.1             0    100      0 1800 690 568 ?
* i7.0.0.0         193.0.22.1             0    100      0 1800 701 35 ?
*>i               193.0.16.1             0    100      0 1800 701 35 ?
*                 172.16.72.24                        0 1878 704 701 35 ?
* i8.0.0.0         193.0.22.1             0    100      0 1800 690 560 ?
*>i               193.0.16.1             0    100      0 1800 690 560 ?
*                 172.16.72.24                        0 1878 704 701 560 ?
* i13.0.0.0        193.0.22.1             0    100      0 1800 690 200 ?
*>i               193.0.16.1             0    100      0 1800 690 200 ?
*                 172.16.72.24                        0 1878 704 701 200 ?
* i15.0.0.0        193.0.22.1             0    100      0 1800 174 ?
*>i               193.0.16.1             0    100      0 1800 174 ?
* i16.0.0.0        193.0.22.1             0    100      0 1800 701 i
*>i               193.0.16.1             0    100      0 1800 701 i
*                 172.16.72.24                        0 1878 704 701 i
```

Table 36 describes the significant fields shown in the display.

Table 36 show ip bgp community list 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: s—The table entry is suppressed. *—The table entry is valid. >—The table entry is the best entry to use for that network. i—The table entry was learned via an internal BGP (iBGP) session.
Origin codes	Origin of the entry. The origin code is placed at the end of each line in the table. It can be one of the following values: i—Entry originated from an Interior Gateway Protocol (IGP) and was advertised with a **network** router configuration command. e—Entry originated from an Exterior Gateway Protocol (EGP). ?—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, this is the value of the interautonomous system metric. This field is frequently not used.
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.

show ip bgp dampened-paths

To display BGP dampened routes, use the **show ip bgp dampened-paths** command in EXEC mode.

show ip bgp dampened-paths

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.0	This command was introduced.

Examples

The following is sample output from the **show ip bgp dampened-paths** command in privileged EXEC mode:

```
Router# show ip bgp dampened-paths

BGP table version is 10, local router ID is 171.69.232.182
Status codes: s suppressed, d damped, h history, * valid, > best, i -
internal
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          From             Reuse   Path
*d 10.0.0.0         171.69.232.177   00:18:4 100 ?
*d 12.0.0.0         171.69.232.177   00:28:5 100 ?
```

Table 37 describes the significant fields shown in the display.

Table 37 show ip bgp dampened-paths Field Descriptions

Field	Description
BGP table version	Internal version number of the table. This number is incremented whenever the table changes.
local router	IP address of the router where route dampening is enabled.
*d	Route to the network indicated is dampened.
From	IP address of the peer that advertised this path.
Reuse	Time (in hours:minutes:seconds) after which the path will be made available.
Path	Autonomous system path of the route that is being dampened.

Related Commands

Command	Description
bgp dampening	Enables BGP route dampening or changes various BGP route dampening factors.
clear ip bgp dampening	Clears BGP route dampening information and unsuppresses the suppressed routes.

show ip bgp filter-list

To display routes that conform to a specified filter list, use the **show ip bgp filter-list** command in EXEC mode.

show ip bgp filter-list *access-list-number*

Syntax Description

access-list-number	Number of an autonomous system path access list. It can be a number from 1 to 199.

Command Modes

EXEC

Command History

Release	Modification
10.0	This command was introduced.

Examples

The following is sample output from the **show ip bgp filter-list** command in privileged EXEC mode:

```
Router# show ip bgp filter-list 2

BGP table version is 1738, local router ID is 172.16.72.24
Status codes: s suppressed, * valid, > best, i - internal
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop          Metric LocPrf Weight Path
*  172.16.0.0       172.16.72.30                         0 109 108 ?
*  172.16.1.0       172.16.72.30                         0 109 108 ?
*  172.16.11.0      172.16.72.30                         0 109 108 ?
*  172.16.14.0      172.16.72.30                         0 109 108 ?
*  172.16.15.0      172.16.72.30                         0 109 108 ?
*  172.16.16.0      172.16.72.30                         0 109 108 ?
*  172.16.17.0      172.16.72.30                         0 109 108 ?
*  172.16.18.0      172.16.72.30                         0 109 108 ?
*  172.16.19.0      172.16.72.30                         0 109 108 ?
*  172.16.24.0      172.16.72.30                         0 109 108 ?
*  172.16.29.0      172.16.72.30                         0 109 108 ?
*  172.16.30.0      172.16.72.30                         0 109 108 ?
*  172.16.33.0      172.16.72.30                         0 109 108 ?
*  172.16.35.0      172.16.72.30                         0 109 108 ?
*  172.16.36.0      172.16.72.30                         0 109 108 ?
*  172.16.37.0      172.16.72.30                         0 109 108 ?
*  172.16.38.0      172.16.72.30                         0 109 108 ?
*  172.16.39.0      172.16.72.30                         0 109 108 ?
```

Table 38 describes the significant fields shown in the display.

Table 38 show ip bgp filter-list 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: s—The table entry is suppressed. *—The table entry is valid. >—The table entry is the best entry to use for that network. i—The table entry was learned via an internal BGP (iBGP) session.
Origin codes	Origin of the entry. The origin code is placed at the end of each line in the table. It can be one of the following values: i—Entry originated from an Interior Gateway Protocol (IGP) and was advertised with a **network** router configuration command. e—Entry originated from an Exterior Gateway Protocol (EGP). ?—Origin of the path is not clear. Usually, this is a router that is redistributed into BGP from an IGP.
Network	Internet address of the network the entry describes.
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 route to this network.
Metric	If shown, this is the value of the interautonomous system metric. This field is frequently not used.
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. At the end of the path is the origin code for the path: i—The entry was originated with the IGP and advertised with a **network** router configuration command. e—The route originated with EGP. ?—The origin of the path is not clear. Usually this is a path that is redistributed into BGP from an IGP.

show ip bgp flap-statistics

To display BGP flap statistics, use the **show ip bgp flap-statistics** command in EXEC mode.

show ip bgp flap-statistics [{**regexp** *regexp*} | {**filter-list** *access-list*} | {*ip-address mask* [**longer-prefix**]}]

Syntax Description

regexp *regexp*	(Optional) Clears flap statistics for all the paths that match the regular expression.
filter-list *access-list*	(Optional) Clears flap statistics for all the paths that pass the access list.
ip-address	(Optional) Clears flap statistics for a single entry at this IP address.
mask	(Optional) Network mask applied to the value.
longer-prefix	(Optional) Displays flap statistics for more specific entries.

Command Modes

EXEC

Command History

Release	Modification
11.0	This command was introduced.

Usage Guidelines

If no arguments or keywords are specified, the router displays flap statistics for all routes.

Examples

The following is sample output from the **show ip bgp flap-statistics** command in privileged EXEC mode:

```
Router# show ip bgp flap-statistics

BGP table version is 10, local router ID is 171.69.232.182
Status codes: s suppressed, d damped, h history, * valid, > best, i -
internal
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          From            Flaps Duration Reuse    Path
*d 10.0.0.0         171.69.232.177  4     00:13:31 00:18:10 100
*d 12.0.0.0         171.69.232.177  4     00:02:45 00:28:20 100
```

Table 39 describes the significant fields shown in the display.

Table 39 show ip bgp flap-statistics 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 where route dampening is enabled.
Network	Route to the network indicated is dampened.

Table 39 show ip bgp flap-statistics Field Descriptions (continued)

Field	Description
From	IP address of the peer that advertised this path.
Flaps	Number of times the route has flapped.
Duration	Time (in hours:minutes:seconds) since the router noticed the first flap.
Reuse	Time (in hours:minutes:seconds) after which the path will be made available.
Path	Autonomous system path of the route that is being dampened.

Related Commands

Command	Description
bgp dampening	Enables BGP route dampening or changes various BGP route dampening factors.
clear ip bgp flap-statistics	Clears BGP flap statistics.

show ip bgp inconsistent-as

To display routes with inconsistent originating autonomous systems, use the **show ip bgp inconsistent-as** command in EXEC mode.

show ip bgp inconsistent-as

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.0	This command was introduced.

Examples

The following is sample output from the **show ip bgp inconsistent-as** command in privileged EXEC mode:

```
Router# show ip bgp inconsistent-as

BGP table version is 87, local router ID is 172.19.82.53
Status codes: s suppressed, * valid, > best, i - internal
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop          Metric LocPrf Weight Path
*  11.0.0.0         171.69.232.55          0             0 300 88 90 99 ?
*>                  171.69.232.52       2222             0 400 ?
*  171.69.0.0       171.69.232.55          0             0 300 90 99 88 200 ?
*>                  171.69.232.52       2222             0 400 ?
*  200.200.199.0    171.69.232.55          0             0 300 88 90 99 ?
*>                  171.69.232.52       2222             0 400 ?
```

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 EXEC mode.

show ip bgp ipv4 {multicast | unicast}

Syntax Description

multicast	Displays entries for multicast routes.
unicast	Displays entries for unicast routes.

Command Modes

EXEC

Command History

Release	Modification
12.0(5)T	This command was introduced.

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 40 describes the significant fields shown in the display.

Table 40 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.

Table 40 show ip bgp ipv4 unicast Field Descriptions (continued)

Field	Description
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: s—The table entry is suppressed. d—The table entry is damped. h—The table entry history. *—The table entry is valid. >—The table entry is the best entry to use for that network. 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: i—Entry originated from an Interior Gateway Protocol (IGP) and was advertised with a **network** router configuration command. e—Entry originated from an Exterior Gateway Protocol (EGP). ?—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
show ip bgp	Displays entries in the BGP routing table.

show ip bgp neighbors

To display information about the TCP and BGP connections to neighbors, use the **show ip bgp neighbors** command in EXEC mode.

show ip bgp neighbors [**all**] [*ip-address* [**advertised-routes** | **dampened-routes** | **paths** [*regexp*] | **received prefix-filter** | **received-routes** | **routes**]]

Syntax Description

all	(Optional) Displays neighbor information for all address families. Only IPv4 neighbor information is displayed if this keyword is not entered.
ip-address	(Optional) IP address of a neighbor. If this argument is omitted, all neighbors are displayed.
advertised-routes	(Optional) Displays all routes that have been advertised to neighbors.
received-routes	(Optional) Displays all received routes (both accepted and rejected) from the specified neighbor.
routes	(Optional) Displays all routes that are received and accepted. The output displayed when this keyword is entered is a subset of the output displayed by the **received-routes** keyword.
paths *regexp*	(Optional) Displays received paths. A regular expression can be used to filter the output.
dampened-routes	(Optional) Displays the dampened routes to the specified neighbor.
received prefix-filter	(Optional) Displays the prefix-list (outbound route filter [ORF]) sent from the specified neighbor.

Command Default

The output of this command displays information for only IPv4 address family sessions if the **all** keyword is not entered.

Command Modes

EXEC

Command History

Release	Modification
10.0	This command was introduced.
11.2	The **received-routes** keyword was added.
12.2(4)T	The **received prefix-filter** keyword was added.
12.0(21)ST	The output was enhanced to display MPLS label information.
12.0(22)S	• This command was integrated into Cisco IOS Release 12.0(22)S. Support for the Cisco 12000 series routers (Engine 0 and Engine 2) was added. • The **received prefix-filter** keyword was added.

Usage Guidelines

The **show ip bgp neighbors** command is used to display BGP and TCP connection information for neighbor sessions. For BGP, this includes detailed neighbor attribute, capability, path, and prefix information. For TCP, this includes statistics related to BGP neighbor session establishment and maintenance. This command displays information only about IPv4 address-family sessions unless the **all** keyword is entered.

Prefix activity is displayed based on the number of prefixes that are advertised and withdrawn. Policy denials display the number of routes that were advertised but then ignored based the function or attribute that is displayed in the output.

Examples

show ip bgp neighbors example

The following example shows the 10.108.50.2 neighbor. This neighbor is an internal BGP (iBGP) peer. This neighbor supports the route refresh and graceful restart capabilities.

```
Router# show ip bgp neighbors 10.108.50.2

BGP neighbor is 10.108.50.2,  remote AS 1, internal link
  BGP version 4, remote router ID 192.168.252.252
  BGP state = Established, up for 00:24:25
  Last read 00:00:24, last write 00:00:24, hold time is 180, keepalive interval is 60
seconds
  Neighbor capabilities:
    Route refresh: advertised and received(old & new)
    Graceful Restart Capabilty:advertised and received
    Address family IPv4 Unicast: advertised and received
  Message statistics:
    InQ depth is 0
    OutQ depth is 0
                         Sent       Rcvd
    Opens:                  3          3
    Notifications:          0          0
    Updates:                0          0
    Keepalives:           113        112
    Route Refresh:          0          0
    Total:                116        115
  Default minimum time between advertisement runs is 5 seconds

 For address family: IPv4 Unicast
  BGP table version 1, neighbor version 1/0
 Output queue size : 0
  Index 1, Offset 0, Mask 0x2
  1 update-group member
                                 Sent       Rcvd
  Prefix activity:               ----       ----
    Prefixes Current:               0          0
    Prefixes Total:                 0          0
    Implicit Withdraw:              0          0
    Explicit Withdraw:              0          0
    Used as bestpath:             n/a          0
    Used as multipath:            n/a          0

                                   Outbound    Inbound
  Local Policy Denied Prefixes:    --------    -------
    Total:                                0          0
  Number of NLRIs in the update sent: max 0, min 0

  Connections established 3; dropped 2
  Last reset 00:24:26, due to Peer closed the session
Connection state is ESTAB, I/O status: 1, unread input bytes: 0
Connection is ECN Disabled
```

```
Local host: 10.108.50.1, Local port: 179
Foreign host: 10.108.50.2, Foreign port: 42698

Enqueued packets for retransmit: 0, input: 0  mis-ordered: 0 (0 bytes)

Event Timers (current time is 0x68B944):
Timer          Starts    Wakeups            Next
Retrans            27          0             0x0
TimeWait            0          0             0x0
AckHold            27         18             0x0
SendWnd             0          0             0x0
KeepAlive           0          0             0x0
GiveUp              0          0             0x0
PmtuAger            0          0             0x0
DeadWait            0          0             0x0

iss: 3915509457  snduna: 3915510016  sndnxt: 3915510016     sndwnd:  15826
irs:  233567076  rcvnxt:  233567616  rcvwnd:      15845  delrcvwnd:    539

SRTT: 292 ms, RTTO: 359 ms, RTV: 67 ms, KRTT: 0 ms
minRTT: 12 ms, maxRTT: 300 ms, ACK hold: 200 ms
Flags: passive open, nagle, gen tcbs
IP Precedence value : 6

Datagrams (max data segment is 1460 bytes):
Rcvd: 38 (out of order: 0), with data: 27, total data bytes: 539
Sent: 45 (retransmit: 0, fastretransmit: 0, partialack: 0, Second Congestion: 08
```

Table 41 describes the significant fields shown in the display. Fields that are preceded by the asterisk character are displayed only when the counter has a non-zero value.

Table 41 show ip bgp neighbors Field Descriptions

Field	Description
BGP neighbor	IP address of the BGP neighbor and its autonomous system number.
remote AS	Autonomous-system number of the neighbor.
internal link	“internal link” is displayed for iBGP neighbors. “external link” is displayed for external BGP (eBGP) neighbors.
BGP version	BGP version being used to communicate with the remote router.
remote router ID	IP address of the neighbor.
BGP state	Finite state machine (FSM) stage of session negotiation.
up for	Time, in seconds, that the underlying TCP connection has been in existence.
Last read	Time since BGP last received a message from this neighbor.
last write	Time since BGP last sent a message to this neighbor.
hold time	Time, in seconds, that BGP will maintain the session with this neighbor without receiving a messages.
keepalive interval	Time, interval in seconds, that keepalive messages are transmitted to this neighbor.
Neighbor capabilities	BGP capabilities advertised and received from this neighbor. “Advertised and received” is displayed when a capability is successfully exchanged between two routers.

Table 41 show ip bgp neighbors Field Descriptions (continued)

Field	Description
Route Refresh	Status of the route refresh capability.
Graceful Restart Capability	Status of the graceful restart capability.
Address family IPv4 Unicast	IP Version 4 unicast-specific properties of this neighbor.
Message statistics	Statistics organized by message type.
InQ depth is	Number of messages in the input queue.
OutQ depth is	Number of messages in the output queue.
Sent	Total number of transmitted messages.
Received	Total number of received messages.
Opens	Number of open messages sent and received.
notifications	Number of notification (error) messages sent and received.
Updates	Number of update messages sent and received.
Keepalives	Number of keepalive messages sent and received.
Route Refresh	Number of route refresh request messages sent and received.
Total	Total number of messages sent and received.
Default minimum time between...	Time, in seconds, between advertisement transmissions.
For address family:	Address family for which the following fields refer.
BGP table version	Internal version number of the table. This is the primary routing table with which the neighbor has been updated. The number increments when the table changes.
neighbor version	Number used by Cisco IOS to track prefixes that have been sent and those that need to be sent.
...update-group	Number of update-group member for this address family.
Prefix activity	Prefix statistics for this address family.
Prefixes current	Number of prefixes accepted for this address family.
Prefixes total	Total number of received prefixes.
Implicit Withdraw	Number of times that a prefix has been withdrawn and readvertised.
Explicit Withdraw	Number of times that prefix is withdrawn because it is no longer feasible.
Used as bestpath	Number of received prefixes installed as a best paths.
Used as multipath	Number of received prefixes installed as multipaths.
* Saved (soft-reconfig)	Number of soft resets performed with a neighbor that supports soft reconfiguration. This field is displayed only if the counter has a non-zero value.
* History paths	This field is displayed only if the counter has a non-zero value.
* Invalid paths	Number of invalid paths. This field is displayed only if the counter has a non-zero value.

Table 41 show ip bgp neighbors Field Descriptions (continued)

Field	Description
Local Policy Denied Prefixes	Prefixes denied due to local policy configuration. Counters are updated for inbound and outbound policy denials. The fields under this heading are displayed only if the counter has a non-zero value.
* route-map	Displays inbound and outbound route-map policy denials.
* filter-list	Displays inbound and outbound filter-list policy denials.
* prefix-list	Displays inbound and outbound prefix-list policy denials.
* Ext Community	Displays only outbound extended community policy denials.
* AS_PATH too long	Displays outbound AS-path length policy denials.
* AS_PATH loop	Displays outbound AS-path loop policy denials.
* AS_PATH confed info	Displays outbound confederation policy denials.
* AS_PATH contains AS 0	Displays outbound denials of AS 0.
* NEXT_HOP Martian	Displays outbound martian denials.
* NEXT_HOP non-local	Displays outbound non-local next-hop denials.
* NEXT_HOP is us	Displays outbound next-hop-self denials.
* CLUSTER_LIST loop	Displays outbound cluster-list loop denials.
* ORIGINATOR loop	Displays outbound denials of local originated routes.
* unsuppress-map	Displays inbound denials due to an unsuppress-map.
* advertise-map	Displays inbound denials due to an advertise-map.
* VPN Imported prefix	Displays inbound denials of VPN prefixes.
* Well-known Community	Displays inbound denials of well-known communities.
* SOO loop	Displays inbound denials due to site-of-origin.
* Bestpath from this peer	Displays inbound denials because the bestpath came from the local router.
* Suppressed due to dampening	Displays inbound denials because the neighbor or link is in a dampening state.
* Bestpath from iBGP peer	Deploys inbound denials because the bestpath came from an iBGP neighbor.
* Incorrect RIB for CE	Deploys inbound denials due to RIB errors for a CE router.
* BGP distribute-list	Displays inbound denials due to a distribute list.
Number of NLRIs...	Number of network layer reachability attributes in updates.
Connections established	Number of times a TCP and BGP connection have been successfully established.
dropped	Number of times that a valid session has failed or been taken down.
Last reset	Time since this peering session was last reset. The reason for the reset is displayed on this line.
Connection state	Connection status of the BGP peer.
Connection is ECN Disabled	Explicit congestion notification status (enabled or disabled).

Table 41 show ip bgp neighbors Field Descriptions (continued)

Field	Description
Local host: 10.108.50.1, Local port: 179	IP address of the local BGP speaker. BGP port number 179.
Foreign host: 10.108.50.2, Foreign port: 42698	Neighbor address and BGP destination port number.
Enqueued packets for retransmit:	Packets queued for retransmission by TCP.
Event Timers	TCP event timers. Counters are provided for starts and wakeups (expired timers).
Retrans	Number of times a packet has been retransmitted.
TimeWait	Time waiting for the retransmission timers to expire.
AckHold	Acknowledgement hold timer.
SendWnd	Transmission (send) window.
KeepAlive	Number of keep alive packets.
GiveUp	Number times a packet is dropped due to no acknowledgement.
PmtuAger	Path MTU discovery timer.
DeadWait	Expiration timer for dead segments.
iss:	Initial packet transmission sequence number.
snduna:	Last transmission sequence number that has not been acknowledged.
sndnxt:	Next packet sequence number to be transmitted.
sndwnd:	TCP window size of the remote neighbor.
irs:	Initial packet receive sequence number.
rcvnxt:	Last receive sequence number that has been locally acknowledged.
rcvwnd:	TCP window size of the local host.
delrcvwnd:	Delayed receive window—data the local host has read from the connection, but has not yet subtracted from the receive window the host has advertised to the remote host. The value in this field gradually increases until it is larger than a full-sized packet, at which point it is applied to the rcvwnd field.
SRTT:	A calculated smoothed round-trip timeout.
RTTO:	Round-trip timeout.
RTV:	Variance of the round-trip time.
KRTT:	New round-trip timeout (using the Karn algorithm). This field separately tracks the round-trip time of packets that have been re-sent.
minRTT:	Smallest recorded round-trip timeout (hard-wire value used for calculation).
maxRTT:	Largest recorded round-trip timeout.
ACK hold:	Time the local host will delay an acknowledgment to carry (piggyback) additional data.

Table 41 show ip bgp neighbors Field Descriptions (continued)

Field	Description
IP Precedence value:	IP precedence of the BGP packets.
Datagrams	Number of update packets received from a neighbor.
Rcvd:	Number of received packets.
with data	Number of update packets sent with data.
total data bytes	Total received in bytes.
Sent	Number of update packets sent.
Second Congestion	Number of update packets with data sent.
Datagrams: Rcvd	Number of update packets received from a neighbor.
out of order:	Number of packets received out of sequence.
with data	Number of update packets received with data.
Last reset	Elapsed time since this peering session was last reset.
unread input bytes	Number of bytes of packets still to be processed.
retransmit	Number of packets retransmitted.
fastretransmit	A duplicate acknowledgement is retransmitted for an out of order segment before the retransmission timer expires.
partialack	Number of retransmissions for partial acknowledgements (transmissions before or without subsequent acknowledgements).
Second Congestion	Second retransmission due to congestion.

show ip bgp neighbors advertised-routes example

The following example displays routes advertised for only the 172.16.232.178 neighbor:

```
Router# show ip bgp neighbors 172.16.232.178 advertised-routes

BGP table version is 27, local router ID is 172.16.232.181
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
*>i110.0.0.0        172.16.232.179         0    100      0 ?
*> 200.2.2.0        0.0.0.0                0         32768 i
```

Table 42 describes the significant fields shown in the display.

Table 42 show ip bgp neighbors advertised-routes Field Descriptions

Field	Description
BGP table version	Internal version number of the table. This is the primary routing table with which the neighbor has been updated. The number increments when the table changes.
local router ID	IP address of the local BGP speaker.

Table 42 show ip bgp neighbors advertised-routes Field Descriptions (continued)

Field	Description
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: s—The table entry is suppressed. d—The table entry is dampened and will not be advertised to BGP neighbors. h—The table entry does not contain the best path based on historical information. *—The table entry is valid. >—The table entry is the best entry to use for that network. i—The table entry was learned via an internal BGP (iBGP) session.
Origin codes	Origin of the entry. The origin code is placed at the end of each line in the table. It can be one of the following values: i—Entry originated from Interior Gateway Protocol (IGP) and was advertised with a **network** router configuration command. e—Entry originated from Exterior Gateway Protocol (EGP). ?—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 used to forward a packet to the destination network. An entry of 0.0.0.0 indicates that there are non-BGP routes in the path to the destination network.
Metric	If shown, this is the value of the inter-autonomous system metric. This field is not used frequently.
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.

show ip bgp neighbors paths

The following is example output from the **show ip bgp neighbors** command entered with the **paths** keyword:

```
Router# show ip bgp neighbors 172.29.232.178 paths ^10

Address    Refcount Metric Path
0x60E577B0        2     40 10 ?
```

Table 43 describes the significant fields shown in the display.

Table 43 show ip bgp neighbors paths Field Descriptions

Field	Description
Address	Internal address where the path is stored.
Refcount	Number of routes using that path.
Metric	Multi Exit Discriminator (MED) metric for the path. (The name of this metric for BGP versions 2 and 3 is INTER_AS.)
Path	Autonomous system path for that route, followed by the origin code for that route.

show ip bgp neighbors received prefix-filter

The following example shows that a prefix-list the filters all routes in the 10.0.0.0 network has be received from the 192.168.20.72 neighbor:

```
Router# show ip bgp neighbor 192.168.20.72 received prefix-filter

Address family:IPv4 Unicast
ip prefix-list 192.168.20.72:1 entries
   seq 5 deny 10.0.0.0/8 le 32
```

Table 44 describes the significant fields shown in the display.

Table 44 show ip bgp neighbors received prefix-filter Field Descriptions

Field	Description
Address family:	Address family mode in which the prefix filter is received.
ip prefix-list	Prefix list sent from the specified neighbor.

show ip bgp paths

To display all the BGP paths in the database, use the **show ip bgp paths** command in EXEC mode.

show ip bgp paths

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
10.0	This command was introduced.

Examples

The following is sample output from the **show ip bgp paths** command in privileged EXEC mode:

```
Router# show ip bgp paths

Address    Hash Refcount Metric Path
0x60E5742C    0        1      0 i
0x60E3D7AC    2        1      0 ?
0x60E5C6C0   11        3      0 10 ?
0x60E577B0   35        2     40 10 ?
```

Table 45 describes the significant fields shown in the display.

Table 45 show ip bgp paths Field Descriptions

Field	Description
Address	Internal address where the path is stored.
Hash	Hash bucket where path is stored.
Refcount	Number of routes using that path.
Metric	The Multi Exit Discriminator (MED) metric for the path. (The name of this metric for BGP versions 2 and 3 is INTER_AS.)
Path	The autonomous system path for that route, followed by the origin code for that route.

show ip bgp peer-group

To display information about BGP peer groups, use the **show ip bgp peer-group** command in EXEC mode.

show ip bgp peer-group [*peer-group-name*] [**summary**]

Syntax Description

peer-group-name	(Optional) Displays information about that specific peer group.
summary	(Optional) Displays a summary of the status of all the members of a peer group.

Command Modes

EXEC

Command History

Release	Modification
11.0	This command was introduced.

Examples

The following is sample output from **show ip bgp peer-group** command for a peer group named internal in privileged EXEC mode:

```
Router# show ip bgp peer-group internal

BGP peer-group is internal, remote AS 100
  BGP version 4
  Minimum time between advertisement runs is 5 seconds

 For address family:IPv4 Unicast
  BGP neighbor is internal, peer-group internal, members:
           10.1.1.1         10.1.1.2
  Index 3, Offset 0, Mask 0x8
  Incoming update AS path filter list is 53
  Outgoing update AS path filter list is 54
  Route map for incoming advertisements is MAP193
  Route map for outgoing advertisements is MAP194
  Update messages formatted 0, replicated 0
```

show ip bgp quote-regexp

To display routes matching the autonomous system path "regular expression," use the **show ip bgp quote-regexp** command in EXEC mode.

show ip bgp quote-regexp *regexp*

Syntax Description

regexp	"Regular expression" to match the Border Gateway Protocol (BGP) autonomous system paths. **Note** The regular expression has to be an exact match.

Command Modes

EXEC

Command History

Release	Modification
11.1	This command was introduced.

Examples

The following is sample output from the **show ip bgp quote-regexp** command in EXEC mode:

```
Router# show ip bgp quote-regexp "^10_" | begin 24.40

*> 24.40.0.0/20     10.10.10.10                          0 10 2548 1239 10643 i
*> 24.40.16.0/20    10.10.10.10                          0 10 2548 6172 i
*> 24.40.32.0/19    10.10.10.10                          0 10 2548 6172 i
*> 24.41.0.0/19     10.10.10.10                          0 10 2548 3356 3703 ?
*> 24.42.0.0/17     10.10.10.10                          0 10 2548 6172 i
```

Note Although the columns in the above display are not labeled, see Table 46 for detailed information.

Table 46 describes the significant fields shown in the display from left to right.

Table 46 show ip bgp Field Descriptions

Field	Description
Status codes	Status of the table entry; for example, * in the above display. The status is displayed at the beginning of each line in the table. It can be one of the following values: s—The table entry is suppressed. d—The table entry is dampened. h—The table entry history. *—The table entry is valid. >—The table entry is the best entry to use for that network. i—The table entry was learned via an internal BGP (iBGP) session. r—The table entry failed to install in the routing table. S—The table entry is a stale route.
Network	IP address of a network entity; for example, 24.40.0.0/20 in the above display.
Next Hop	IP address of the next system that is used when forwarding a packet to the destination network; for example, 10.10.10.10. in the above displayAn 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.; for example, 0 in the above display.
LocPrf	Local preference value as set with the **set local-preference** route-map configuration command; for example, 10 in the above display. The default value is 100.
Weight	Weight of the route as set via autonomous system filters; for example, 2548 in the above display.
Path	Autonomous system paths to the destination network; for example, 1239 in the above display. There can be one entry in this field for each autonomous system in the path.
Origin codes	Origin of the entry; for example, ? in the above display. The origin code is placed at the end of each line in the table. It can be one of the following values: i—Entry originated from an Interior Gateway Protocol (IGP) and was advertised with a **network** router configuration command. e—Entry originated from an Exterior Gateway Protocol (EGP). ?—Origin of the path is not clear. Usually, this is a router that is redistributed into BGP from an IGP.

Related Commands

Command	Description
show ip bgp regexp	Displays routes matching the autonomous system path regular expression.

show ip bgp regexp

To display routes matching the autonomous system path regular expression, use the **show ip bgp regexp** command in EXEC mode.

show ip bgp regexp *regexp*

Syntax Description

regexp	Regular expression to match the BGP autonomous system paths.

Command Modes

EXEC

Command History

Release	Modification
10.0	This command was introduced.

Examples

The following is sample output from the **show ip bgp regexp** command in privileged EXEC mode:

```
Router# show ip bgp regexp 108$

BGP table version is 1738, local router ID is 172.16.72.24
Status codes: s suppressed, * valid, > best, i - internal
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop          Metric LocPrf Weight Path
*  172.16.0.0       172.16.72.30                         0 109 108 ?
*  172.16.1.0       172.16.72.30                         0 109 108 ?
*  172.16.11.0      172.16.72.30                         0 109 108 ?
*  172.16.14.0      172.16.72.30                         0 109 108 ?
*  172.16.15.0      172.16.72.30                         0 109 108 ?
*  172.16.16.0      172.16.72.30                         0 109 108 ?
*  172.16.17.0      172.16.72.30                         0 109 108 ?
*  172.16.18.0      172.16.72.30                         0 109 108 ?
*  172.16.19.0      172.16.72.30                         0 109 108 ?
*  172.16.24.0      172.16.72.30                         0 109 108 ?
*  172.16.29.0      172.16.72.30                         0 109 108 ?
*  172.16.30.0      172.16.72.30                         0 109 108 ?
*  172.16.33.0      172.16.72.30                         0 109 108 ?
*  172.16.35.0      172.16.72.30                         0 109 108 ?
*  172.16.36.0      172.16.72.30                         0 109 108 ?
*  172.16.37.0      172.16.72.30                         0 109 108 ?
*  172.16.38.0      172.16.72.30                         0 109 108 ?
*  172.16.39.0      172.16.72.30                         0 109 108 ?
```

show ip bgp summary

To display the status of all Border Gateway Protocol (BGP) connections, use the **show ip bgp summary** command in EXEC mode.

show ip bgp summary

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
10.0	This command was introduced.
12.0	Support for the **neighbor maximum-prefix** command was added to the output.
12.2	• The number of networks and paths displayed in the output was split out to two separate lines. • A field was added to display multipath entries in the routing table.

Usage Guidelines

The **show ip bgp summary** command is used to display BGP path, prefix, and attribute information for all connections to BGP neighbors.

A prefix is an IP address and network mask. It can represent an entire network, a subset of a network, or a single host route. A path is a route to a given destination. By default, BGP will install only a single path for each destination. If multipath routes are configured, BGP will install a path entry for each multipath route, and only one multipath route will be marked as the bestpath.

BGP attribute and cache entries are displayed in individually and in combinations that affect the bestpath selection process. The fields for this output are displayed when the related BGP feature is configured or attribute is received. Memory usage is displayed in bytes.

Examples

The following is sample output from the **show ip bgp summary** command in privileged EXEC mode:

```
Router# show ip bgp summary

BGP router identifier 172.16.1.1, local AS number 100
BGP table version is 199, main routing table version 199
37 network entries using 2850 bytes of memory
59 path entries using 5713 bytes of memory
18 BGP path attribute entries using 936 bytes of memory
2 multipath network entries and 4 multipath paths
10 BGP AS-PATH entries using 240 bytes of memory
7 BGP community entries using 168 bytes of memory
0 BGP route-map cache entries using 0 bytes of memory
0 BGP filter-list cache entries using 0 bytes of memory
36 received paths for inbound soft reconfiguration
BGP using 34249 total bytes of memory
Dampening enabled. 4 history paths, 0 dampened paths
BGP activity 37/2849 prefixes, 60/1 paths, scan interval 15 secs
```

```
Neighbor        V    AS MsgRcvd MsgSent   TblVer  InQ OutQ Up/Down State/PfxRcd
10.100.1.1      4   200      26      22      199    0    0 00:14:23 23
10.200.1.1      4   300      21      51      199    0    0 00:13:40 0
```

Table 47 describes the significant fields shown in the display. Fields that are preceded by the asterisk character are not shown in the above output.

Table 47 show ip bgp summary Field Descriptions

Field	Description
BGP router identifier	In order of precedence and availability, the router identifier specified by the **bgp router-id** command, a loopback address, or the highest IP address.
BGP table version	Internal version number of BGP database.
main routing table version	Last version of BGP database that was injected into the main routing table.
...network entries	Number of unique prefix entries in the BGP database.
...using ... bytes of memory	Amount of memory, in bytes, that is consumed for the path, prefix, or attribute entry displayed on the same line.
...path entries using	Number of path entries in the BGP database. Only a single path entry will be installed for a given destination. If multipath routes are configured, a path entry will be installed for each multipath route.
...multipath network entries using	Number of multipath entries installed for a given destination.
* ...BGP path/bestpath attribute entries using	Number of unique BGP attribute combinations for which a path is selected as the bestpath.
* ...BGP rrinfo entries using	Number of unique ORIGINATOR and CLUSTER_LIST attribute combinations.
...BGP AS-PATH entries using	Number of unique AS_PATH entries.
...BGP community entries using	Number of unique BGP community attribute combinations.
*...BGP extended community entries using	Number of unique extended community attribute combinations.
BGP route-map cache entries using	Number of BGP route-map match and set clause combinations. A value of 0 indicates that the route cache is empty.
...BGP filter-list cache entries using	Number of filter-list entries that match an AS-path access list permit or deny statements. A value of 0 indicates that the filter-list cache is empty.
...received paths for inbound soft reconfiguration	Number paths received and stored for inbound soft reconfiguration.
BGP using...	Total amount of memory, in bytes, used by the BGP process.
Dampening enabled...	Indicates that BGP dampening is enabled. The number of paths that carry an accumulated penalty and the number of dampened paths are displayed on this line.
BGP activity...	Displays the number of times that memory has been allocated or released for a path or prefix.

Table 47 show ip bgp summary Field Descriptions (continued)

Field	Description
Neighbor	IP address of the neighbor.
V	BGP version number spoken to the neighbor.
AS	Autonomous system number.
MsgRcvd	Number of messages received from the neighbor.
MsgSent	Number of messages sent to the neighbor.
TblVer	Last version of the BGP database that was sent to the neighbor.
InQ	Number of messages queued to be processed from the neighbor.
OutQ	Number of messages queued to be sent to the neighbor.
Up/Down	The length of time that the BGP session has been in the Established state, or the current status if not in the Established state.
State/PfxRcd	Current state of the BGP session, and the number of prefixes that have been received from a neighbor or peer group. When the maximum number (as set by the **neighbor maximum-prefix** command) is reached, the string "PfxRcd" appears in the entry, the neighbor is shut down, and the connection is set to Idle. An (Admin) entry with Idle status indicates that the connection has been shut down using the **neighbor shutdown** command.

show ip extcommunity-list

To display routes that are permitted by an extended community list, use the **show ip extcommunity-list** command in EXEC mode.

show ip extcommunity-list [*community-list-number*]

Syntax Description

community-list-number	(Optional) Community list number in the range from 1 to 199. A standard extended list is from 1 to 99. An expanded extended list is from 100 to 199.

Defaults

If a specific extended community list number is not specified when the **show ip extcommunity-list** command is entered, all locally configured extended community lists will be displayed by default.

Command Modes

EXEC

Command History

Release	Modification
12.1	This command was introduced.

Examples

The following is sample output from the **show ip extcommunity-list** command in EXEC mode:

```
Router# show ip extcommunity-list

Extended community standard list 1
     permit RT:901:10
     permit SoO:802:20
     deny RT:703:30 SoO:604:40
Extended community standard list 99
     permit RT:604:40 SoO:505:50
     deny RT:406:60 SoO:307:70
```

Related Commands

Command	Description
show route-map	Displays configured route maps.

show ip prefix-list

To display information about a prefix list or prefix list entries, use the **show ip prefix-list** command user and privileged EXEC mode.

show ip prefix-list [**detail | summary**] *prefix-list-name* [*network/length*] [**seq** *sequence-number*] [**longer**] [**first-match**]

Syntax Description

detail | summary	(Optional) Displays detailed or summarized information about all prefix lists.
prefix-list-name	(Optional) The name of a specific prefix list.
network/length	(Optional) The network number and length (in bits) of the network mask.
seq	(Optional) Applies the sequence number to the prefix list entry.
sequence-number	(Optional) The sequence number of the prefix list entry.
longer	(Optional) Displays all entries of a prefix list that are more specific than the given *network/length.*
first-match	(Optional) Displays the entry of a prefix list that matches the given *network/length*.

Command Modes

EXEC

Command History

Release	Modification
12.0	This command was introduced.

Examples

The following example shows the output of the **show ip prefix-list** command with details about the prefix list named test in privileged EXEC mode:

```
Router# show ip prefix-list detail test

ip prefix-list test:
Description: test-list
 count: 1, range entries: 0, sequences: 10 - 10, refcount: 3
 seq 10 permit 35.0.0.0/8 (hit count: 0, refcount: 1)
```

Related Commands

Command	Description
clear ip prefix-list	Resets the hit count of the prefix list entries.
distribute-list in	Filters networks received in updates.
distribute-list out	Suppresses networks from being advertised in updates.
ip prefix-list	Creates an entry in a prefix list.
ip prefix-list description	Adds a text description of a prefix list.

match ip address	Distributes any routes that have a destination network number address that is permitted by a standard or extended access list, and performs policy routing on packets.
neighbor prefix-list	Distributes BGP neighbor information as specified in a prefix list.

synchronization

To enable the synchronization between BGP and your Interior Gateway Protocol (IGP) system, use the **synchronization** command in address family or router configuration mode. To enable the Cisco IOS software to advertise a network route without waiting for the IGP, use the **no** form of this command.

synchronization

no synchronization

Syntax Description

This command has no arguments or keywords.

Defaults

The behavior of this command is enabled by default.

Command Modes

Address family configuration

Router configuration

Command History

Release	Modification
10.0	This command was introduced.
12.0(7)T	Address family configuration mode was added.

Usage Guidelines

Usually, a BGP speaker does not advertise a route to an external neighbor unless that route is local or exists in the IGP. The **no synchronization** command allows the Cisco IOS software to advertise a network route without waiting for the IGP. This feature allows routers and access servers within an autonomous system to have the route before BGP makes it available to other autonomous systems.

Use the **synchronization** command if routers in the autonomous system do not speak BGP.

Examples

The following router configuration mode example enables a router to advertise a network route without waiting for IGP:

```
router bgp 120
 no synchronization
```

The following address family configuration mode example enables a router to advertise a network route without waiting for IGP:

```
router bgp 120
address-family ipv4 unicast
 no synchronization
```

Related Commands

Command	Description
address-family ipv4	Places the router in address family configuration mode for configuring routing sessions such as BGP, RIP, or static routing sessions that use standard IP Version 4 address 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.

table-map

To modify metric and tag values when the IP routing table is updated with BGP learned routes, use the **table-map** command in address family or router configuration mode. To disable this function, use the **no** form of the command.

table-map *map-name*

no table-map *map-name*

Syntax Description

map-name	Route map name, from the **route-map** command.

Defaults

This command is disabled by default.

Command Modes

Address family configuration

Router configuration

Command History

Release	Modification
10.0	This command was introduced.
12.0(7)T	Address family configuration mode was added.

Usage Guidelines

This command adds the route map name defined by the **route-map** command to the IP routing table. This command is used to set the tag name and the route metric to implement redistribution.

You can use **match** clauses of route maps in the **table-map** command. IP access list, autonomous system paths, and next hop match clauses are supported.

Examples

In the following router configuration mode example, the Cisco IOS software is configured to automatically compute the tag value for the BGP learned routes and to update the IP routing table:

```
route-map tag
 match as path 10
 set automatic-tag
!
router bgp 100
 table-map tag
```

In the following address family configuration mode example, the Cisco IOS software is configured to automatically compute the tag value for the BGP learned routes and to update the IP routing table:

```
route-map tag
 match as path 10
 set automatic-tag
!
router bgp 100
address-family ipv4 unicast
 table-map tag
```

Related Commands

Command	Description
address-family ipv4	Places the router in address family configuration mode for configuring routing sessions such as BGP, RIP, or static routing sessions that use standard IP Version 4 address 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.
match as-path	Matches a BGP autonomous system path access list.
match ip address	Distributes any routes that have a destination network number address that is permitted by a standard or extended access list, and performs policy routing on packets.
match ip next-hop	Redistributes any routes that have a next hop router address passed by one of the access lists specified.
route-map (IP)	Defines the conditions for redistributing routes from one routing protocol into another, or enables policy routing.

timers bgp

To adjust BGP network timers, use the **timers bgp** command in router configuration mode. To reset the BGP timing defaults, use the **no** form of this command.

timers bgp *keepalive holdtime*

no timers bgp

Syntax Description

keepalive	Frequency (in seconds) with which the Cisco IOS software sends *keepalive* messages to its peer. The default is 60 seconds.
holdtime	Interval (in seconds) after not receiving a *keepalive* message that the software declares a peer dead. The default is 180 seconds.

Defaults

keepalive: 60 seconds

holdtime: 180 seconds

Command Modes

Router configuration

Command History

Release	Modification
10.0	This command was introduced.

Examples

The following example changes the keepalive timer to 70 seconds and the hold-time timer to 210 seconds:

```
timers bgp 70 210
```

Related Commands

Command	Description
clear ip bgp peer-group	Removes all the members of a BGP peer group.
router bgp	Configures the BGP routing process.
show ip bgp	Displays entries in the BGP routing table.