



## BGP Commands

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Use the commands in this chapter to configure and monitor Border Gateway Protocol (BGP). For BGP configuration information and examples, refer to the “Configuring BGP” chapter of the *Network Protocols Configuration Guide, Part 1*.

# aggregate-address

To create an aggregate entry in a Border Gateway Protocol (BGP) routing table, use the **aggregate-address** command in router configuration mode. To disable this function, use the **no** form of this command.

```
aggregate-address address mask [as-set] [summary-only] [suppress-map map-name]
[advertise-map map-name] [attribute-map map-name]
```

```
no aggregate-address address mask [as-set] [summary-only] [suppress-map map-name]
[advertise-map map-name] [attribute-map map-name]
```

Syntax Description		
<i>address</i>		Aggregate address.
<i>mask</i>		Aggregate mask.
<b>as-set</b>		(Optional) Generates autonomous system set path information.
<b>summary-only</b>		(Optional) Filters all more specific routes from updates.
<b>suppress-map</b> <i>map-name</i>		(Optional) Name of route map used to select the routes to be suppressed.
<b>advertise-map</b> <i>map-name</i>		(Optional) Name of route map used to select the routes to create AS-SET origin communities.
<b>attribute-map</b> <i>map-name</i>		(Optional) Name of the route map used to set the attribute of the aggregate route.

**Defaults** This command is disabled by default.

**Command Modes** Router configuration

Command History	Release	Modification
	10.0	This command was introduced.

**Usage Guidelines** You can implement aggregate routing in BGP either by redistributing an aggregate route into BGP or by using this conditional aggregate routing feature.

Using the **aggregate-address** command with no keywords will create an aggregate entry in the BGP routing table if there are any more-specific BGP routes available that fall in the specified range. The aggregate route will be advertised as coming from your autonomous system and has the atomic aggregate attribute set to show that information might be missing. (By default, the atomic aggregate attribute is set unless you specify the **as-set** keyword.)

Using the **as-set** keyword creates an aggregate entry using the same rules that the command follows without this keyword, but the path advertised for this route will be an AS\_SET consisting of all elements contained in all paths that are being summarized. Do not use this form of **aggregate-address** when aggregating many paths, because this route must be continually withdrawn and re-updated as autonomous system path reachability information for the summarized routes changes.

Using the **summary-only** keyword not only creates the aggregate route (for example, 193.\*.\*.\*) but will also suppress advertisements of more-specific routes to all neighbors. If you want to suppress only advertisements to certain neighbors, you may use the **neighbor distribute-list** command, with caution. If a more specific route leaks out, all BGP speakers will prefer that route over the less-specific aggregate you are generating (using longest-match routing).

Using the **suppress-map** keyword creates the aggregate route but suppresses advertisement of specified routes. You can use the **match** clauses of route maps to selectively suppress some more specific routes of the aggregate and leave others unsuppressed. IP access lists and autonomous system path access lists match clauses are supported.

Using the **advertise-map** keyword selects specific routes that will be used to build different components of the aggregate route, such as AS\_SET or community. This form of the **aggregate-address** command is useful when the components of an aggregate are in separate autonomous systems and you want to create an aggregate with AS\_SET, and advertise it back to some of the same autonomous systems. You must remember to omit the specific autonomous system numbers from the AS\_SET to prevent the aggregate from being dropped by the BGP loop detection mechanism at the receiving router. IP access lists and autonomous system path access lists **match** clauses are supported.

Using the **attribute-map** keyword allows attributes of the aggregate route to be changed. This form of the **aggregate-address** command is useful when one of the routes forming the AS\_SET is configured with an attribute such as the community no-export attribute, which would prevent the aggregate route from being exported. An attribute map route map can be created to change the aggregate attributes.

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## Examples

The following example creates an aggregate address. The path advertised for this route will be an AS\_SET consisting of all elements contained in all paths that are being summarized.

```
router bgp 65000
 aggregate-address 10.0.0.0 255.0.0.0 as-set
```

In the following example, a route map called map-one is created matching on an as-path access list. The path advertised for this route will be an AS\_SET consisting of elements contained in paths that are matched in the route map.

```
ip as-path access-list 1 deny ^1234_
ip as-path access-list 1 permit .*
!
route-map map-one
match ip as-path 1
!
router bgp 65000
aggregate-address 10.0.0.0 255.0.0.0 as-set advertise-map map-one
```

---

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>match as-path</b>	Matches a BGP autonomous system path access list.
<b>match ip address</b>	Distributes any routers that have a destination network number address that is permitted by a standard or extended access list.
<b>route-map (IP)</b>	Defines the conditions for redistributing routes from one routing protocol to another, or enables policy routing.

# auto-summary (BGP)

To restore the default behavior of automatic summarization of subnet routes into network-level routes, use the **auto-summary** command in router configuration mode. To disable this feature and transmit subprefix routing information across classful network boundaries, use the **no** form of this command.

**auto-summary**

**no auto-summary**

---

**Syntax Description** This command has no arguments or keywords.

---

**Defaults** The behavior of this command is enabled by default (the software summarizes subprefixes to the classful network boundary when crossing classful network boundaries).

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**Command Modes** Router configuration

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Release	Modification
10.0	This command was introduced.

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**Usage Guidelines** Route summarization reduces the amount of routing information in the routing tables. By default, BGP does not accept subnets redistributed from an IGP. To advertise and carry subnet routes in BGP, use an explicit **network** command or the **no auto-summary** command. If you disable auto-summarization and have not entered a **network** command, you will not advertise network routes for networks with subnet routes unless they contain a summary route.

In the following example, network numbers are not summarized automatically:

```
router bgp 6
no auto-summary
```

# bgp always-compare-med

To allow the comparison of the Multi Exit Discriminator (MED) for paths from neighbors in different autonomous systems, use the **bgp always-compare-med** command in router configuration mode. To disallow the comparison, use the **no** form of this command.

**bgp always-compare-med**

**no bgp always-compare-med**

---

**Syntax Description** This command has no arguments or keywords.

---

**Defaults** The Cisco IOS software does not compare MEDs for paths from neighbors in different autonomous systems.

---

**Command Modes** Router configuration

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Command History	Release	Modification
	11.0	This command was introduced.

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**Usage Guidelines** The MED is one of the parameters that is considered when selecting the best path among many alternative paths. The path with a lower MED is preferred over a path with a higher MED.

By default, during the best-path selection process, MED comparison is done only among paths from the same autonomous system. This command changes the default behavior by allowing comparison of MEDs among paths regardless of the autonomous system from which the paths are received.

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**Examples** The following example configures the BGP speaker in autonomous system 100 to compare MEDs among alternative paths, regardless of the autonomous system from which the paths are received:

```
router bgp 109
  bgp always-compare-med
```

# bgp bestpath as-path ignore

To prevent the router from considering as-path as a factor in the algorithm for choosing a route, use the **bgp bestpath as-path ignore** command in router configuration mode. To allow the router to consider as-path in choosing a route, use the **no** form of this command.

**bgp bestpath as-path ignore**

**no bgp bestpath as-path ignore**

---

**Syntax Description** This command has no arguments or keywords.

---

**Defaults** The router considers as-path in choosing a route.

---

**Command Modes** Router configuration

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Command History	Release	Modification
	12.0	This command was introduced.

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**Examples** The following example prevents the BGP router from considering as-path as a factor in choosing a route.

```
router bgp 210
  bgp bestpath as-path ignore
```

---

Related Commands	Command	Description
	<b>show ip bgp neighbors</b>	Displays information about the TCP and BGP connections to neighbors.

---

# bgp bestpath compare-routerid

To compare similar routes received from external Border Gateway Protocol (eBGP) peers during the best path selection process and switch the bestpath to the route with the lowest router ID, use the **bgp bestpath compare-routerid** command in router configuration mode. To return the router to the default, use the **no** form of this command.

**bgp bestpath compare-routerid**

**no bgp bestpath compare-routerid**

**Syntax Description** This command has no arguments or keywords.

**Defaults** BGP does not compare similar paths received from eBGP peers during the best path selection process and switch the bestpath to the route with the lowest router ID.

**Command Modes** Router configuration

Command History	Release	Modification
	12.0	This command was introduced.
	12.0S	This command was introduced.
	12.0ST	This command was introduced.

**Usage Guidelines** By default, during the best path selection process, when BGP receives similar routes from eBGP peers (all the attributes are the same except for the router ID), the best path is not switched to the route with the lowest router ID if that route was not the first route received. If the **bgp bestpath compare-routerid** command is enabled, then similar routes are compared and the best path is switched to the route with the lowest router ID.

**Examples** The following example shows the BGP speaker in autonomous system 500 configured to compare the router IDs of similar paths, regardless of the autonomous system from which the paths are received:

```
router bgp 500
  bgp bestpath compare-routerid
```

Related Commands	Command	Description
	<b>show ip bgp</b>	Displays entries in the BGP routing table.

# bgp bestpath med-confed

To enable MED comparison among paths learned from confederation peers, use the **bgp bestpath med-confed** command in router configuration mode. To prevent the software from considering the MED attribute in comparing paths, use the **no** form of this command.

**bgp bestpath med-confed**

**no bgp bestpath med-confed**

**Syntax Description** This command has no arguments or keywords.

**Defaults** The software does not consider the MED attribute when choosing among paths learned from confederation peers.

**Command Modes** Router configuration

Command History	Release	Modification
	12.0	This command was introduced.

**Usage Guidelines** The comparison between MEDs is only made if there are no external ASs in the path (an external AS is an AS that is not within the confederation). If there is an external AS in the path, then the external MED is passed transparently through the confederation, and the comparison is not made.

For example, assume that AS 65000, 65001, 65002, and 65004 are part of the confederation; AS1 is not; and we are comparing route A with four paths. If **bgp bestpath med-confed** is enabled, path 1 would be chosen. The fourth path has a lower MED, but it is not involved in the MED comparison because there is an external AS in this path.

path= 65000 65004, med=2

path= 65001 65004, med=3

path= 65002 65004, med=4

path= 65003 1, med=1

**Examples** The following command enables the BGP router to compare MED values for paths learned from confederation peers.

```
router bgp 210
  bgp bestpath med-confed
```

Related Commands	Command	Description
	<b>show ip bgp</b>	Display entries in the BGP routing table.
	<b>show ip bgp neighbors</b>	Displays information about the TCP and BGP connections to neighbors.

# bgp bestpath missing-as-worst

To have Cisco IOS software consider a missing MED attribute in a path as having a value of infinity, making the path without a MED value the least desirable path, use the **bgp bestpath missing-as-worst** command in router configuration mode. To return the router to the default (assign a value of 0 to the missing MED), use the **no** form of this command.

**bgp bestpath missing-as-worst**

**no bgp bestpath missing-as-worst**

---

**Syntax Description** This command has no arguments or keywords.

---

**Defaults** The software assigns a value of 0 to the missing MED, causing the path with the missing MED attribute to be considered the best path.

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**Command Modes** Router configuration

---

Command History	Release	Modification
	12.0	This command was introduced.

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**Examples** The following command specifies that the BGP router to consider a missing MED attribute in a path as having a value of infinity, making this path the least desirable path.

```
router bgp 210
  bgp bestpath missing-as-worst
```

---

Related Commands	Command	Description
	<b>show ip bgp</b>	Display entries in the BGP routing table.
	<b>show ip bgp neighbors</b>	Displays information about the TCP and BGP connections to neighbors.

---

# bgp client-to-client reflection

To restore route reflection from a BGP route reflector to clients, use the **bgp client-to-client reflection** command in router configuration mode. To disable client-to-client reflection, use the **no** form of this command.

**bgp client-to-client reflection**

**no bgp client-to-client reflection**

**Syntax Description** This command has no arguments or keywords.

**Defaults** When a route reflector is configured, the route reflector reflects routes from a client to other clients.

**Command Modes** Router configuration

## Command History

Release	Modification
11.1	This command was introduced.

## Usage Guidelines

By default, the clients of a route reflector are not required to be fully meshed and the routes from a client are reflected to other clients. However, if the clients are fully meshed, route reflection is not required. Use the **no bgp client-to-client reflection** command to disable client-to-client reflection.

## Examples

In the following example, the local router is a route reflector. The three neighbors are fully meshed, so client-to-client reflection is disabled.

```
router bgp 5
 neighbor 10.24.95.22 route-reflector-client
 neighbor 10.24.95.23 route-reflector-client
 neighbor 10.24.95.24 route-reflector-client
 no bgp client-to-client reflection
```

## Related Commands

Command	Description
<b>bgp cluster-id</b>	Configures the cluster ID if the BGP cluster has more than one route reflector.
<b>neighbor route-reflector-client</b>	Configures the router as a BGP route reflector and configure the specified neighbor as its client.
<b>show ip bgp</b>	Display entries in the BGP routing table.

# bgp cluster-id

To configure the cluster ID if the BGP cluster has more than one route reflector, use the **bgp cluster-id** command in router configuration mode. To remove the cluster ID, use the **no** form of this command.

**bgp cluster-id** *cluster-id*

**no bgp cluster-id** *cluster-id*

<b>Syntax Description</b>	<i>cluster-id</i>	Cluster ID of this router acting as a route reflector; maximum of 4 bytes.
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<b>Defaults</b>	The router ID of the single route reflector in a cluster
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<b>Command Modes</b>	Router configuration
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	11.0	This command was introduced.

<b>Usage Guidelines</b>	<p>Together, a route reflector and its clients form a <i>cluster</i>.</p> <p>Usually a cluster of clients will have a single route reflector. In that case, the cluster is identified by the router ID of the route reflector. In order to increase redundancy and avoid a single point of failure, a cluster might have more than one route reflector. In this case, all route reflectors in the cluster must be configured with the 4-byte cluster ID so that a route reflector can recognize updates from route reflectors in the same cluster.</p>
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If the cluster has more than one route reflector, use this command to configure the cluster ID.

<b>Examples</b>	<p>In the following example, the local router is one of the route reflectors serving the cluster. It is configured with the cluster ID to identify the cluster.</p>
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```
router bgp 5
 neighbor 172.16.70.24 route-reflector-client
 bgp cluster-id 50000
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>bgp client-to-client reflection</b>	Restores route reflection from a BGP route reflector to clients.
	<b>neighbor route-reflector-client</b>	Configures the router as a BGP route reflector and configure the specified neighbor as its client.
	<b>show ip bgp</b>	Display entries in the BGP routing table.

# bgp confederation identifier

To specify a BGP confederation identifier, use the **bgp confederation identifier** command in router configuration mode. To remove the confederation identifier, use the **no** form of this command.

**bgp confederation identifier** *autonomous-system*

**no bgp confederation identifier** *autonomous-system*

<b>Syntax Description</b>	<i>autonomous-system</i>	Autonomous system number that internally includes multiple autonomous systems.
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<b>Defaults</b>	No confederation identifier is configured.
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<b>Command Modes</b>	Router configuration
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	10.3	This command was introduced.

<b>Usage Guidelines</b>	One way to reduce the IBGP mesh is to divide an autonomous system into multiple autonomous systems and group them into a single confederation. Each autonomous system is fully meshed within itself, and has a few connections to another autonomous system in the same confederation. Even though the peers in different autonomous systems have EBGP sessions, they exchange routing information as if they are IBGP peers. Specifically, the next-hop and local preference information is preserved. This enables you to retain a single Interior Gateway Protocol (IGP) for all the autonomous systems. To the outside world, the confederation looks like a single autonomous system.
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<b>Examples</b>	In the following example, the autonomous system is divided into autonomous systems 4001, 4002, 4003, 4004, 4005, 4006, and 4007 and identified by the confederation identifier 5. Neighbor 10.2.3.4 is someone inside your routing domain confederation. Neighbor 10.4.5.6 is someone outside your routing domain confederation. To the outside world, there appears to be a single autonomous system with the number 5.
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```
router bgp 4001
  bgp confederation identifier 5
  bgp confederation peers 4002 4003 4004 4005 4006 4007
  neighbor 10.2.3.4 remote-as 4002
  neighbor 10.4.5.6 remote-as 510
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>bgp confederation peers</b>	Configures the autonomous systems that belong to the confederation.

# bgp confederation peers

To configure the autonomous systems that belong to the confederation, use the **bgp confederation peers** command in router configuration mode. To remove an autonomous system from the confederation, use the **no** form of this command.

**bgp confederation peers** *autonomous-system* [*autonomous-system*]

**no bgp confederation peers** *autonomous-system* [*autonomous-system*]

## Syntax Description

<i>autonomous-system</i>	Autonomous system number.
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## Defaults

No confederation peers are configured.

## Command Modes

Router configuration

## Command History

Release	Modification
10.3	This command was introduced.

## Usage Guidelines

The autonomous systems specified in this command are visible internally to a confederation. Each autonomous system is fully meshed within itself. The **bgp confederation identifier** command specifies the confederation to which the autonomous systems belong.

## Examples

The following example specifies that autonomous systems 1090, 1091, 1092, and 1093 belong to a single confederation:

```
router bgp 1090
  bgp confederation peers 1091 1092 1093
```

## Related Commands

Command	Description
<b>bgp confederation identifier</b>	Specifies a BGP confederation identifier.

# bgp dampening

To enable BGP route dampening or change various BGP route dampening factors, use the **bgp dampening** command in global configuration mode. To disable the function or restore the default values, use the **no** form of this command.

**bgp dampening** [*half-life reuse suppress max-suppress-time*] [**route-map** *map*]

**no bgp dampening** [*half-life reuse suppress max-suppress-time*] [**route-map** *map*]

## Syntax Description

<i>half-life</i>	(Optional) 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 1 to 45 minutes. The default is 15 minutes.
<i>reuse</i>	(Optional) Reuse values based on accumulated penalties. If the penalty for a flapping route decreases enough to fall below this value, the route is unsuppressed. The process of unsuppressing routes occurs at 10-second increments. The range of the reuse value is 1 to 20000; the default is 750.
<i>suppress</i>	(Optional) A route is suppressed when its penalty exceeds this limit. The range is 1 to 20000; the default is 2000.
<i>max-suppress-time</i>	(Optional) Maximum time (in minutes) a route can be suppressed. The range is from 1 to 20000; the default is 4 times the <i>half-life</i> . If the <i>half-life</i> value is allowed to default, the maximum suppress time defaults to 60 minutes. When the <i>max-suppress-time</i> is configured, the maximum penalty will never be exceeded, regardless of the number of times that the prefix dampens. The maximum penalty is computed with the following formula:  Max penalty = reuse-limit * 2 <sup>(maximum suppress time/half time)</sup>
<b>route-map</b> <i>map</i>	(Optional) Name of route map that controls where BGP route dampening is enabled.

## Defaults

This command is disabled by default.

*half-life* is 15 minutes

*reuse* is 750

*suppress* is 2000

*max-suppress-time* is 4 times *half-life*

## Command Modes

Global configuration

## Command History

Release	Modification
11.0	This command was introduced.

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**Usage Guidelines**

If this command is used with no arguments, it enables BGP route dampening. The arguments *half-life*, *reuse*, *suppress*, and *max-suppress-time* are position-dependent. Therefore, if any of them are used, they must all be specified.

When BGP dampening is configured and a prefix is withdrawn, BGP considers the withdrawn prefix as a flap and increases the penalty by a 1000. If BGP receives an attribute change, BGP increases the penalty by 500. If then the prefix has been withdrawn, BGP keeps the prefix in the BGP table as a history entry. If the prefix has not been withdrawn by the neighbor and BGP is not using this prefix, the prefix is marked as dampened. Dampened prefixes are not used in the BGP decision process and not installed to the routing table.

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**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:

```
bgp dampening 30 1500 10000 120
```

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**Related Commands**

Command	Description
<b>clear ip bgp dampening</b>	Clears BGP route dampening information and unsuppress the suppressed routes.
<b>clear ip bgp flap-statistics</b>	Clears BGP flap statistics.
<b>show ip bgp dampened-paths</b>	Display BGP dampened routes.
<b>show ip bgp flap-statistics</b>	Specifies a BGP Display BGP flap statistics.

# bgp default local-preference

To change the default local preference value, use the **bgp default local-preference** command in router configuration mode. To return to the default setting, use the **no** form of this command.

**bgp default local-preference** *value*

**no bgp default local-preference** *value*

<b>Syntax Description</b>	<i>value</i>	Local preference value from 0 to 4294967295. Higher is more preferred.
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<b>Defaults</b>	Local preference value of 100
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<b>Command Modes</b>	Router configuration
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	10.0	This command was introduced.

<b>Usage Guidelines</b>	Generally, the default value of 100 allows you to easily define a particular path as less preferable than paths with no local preference attribute. The preference is sent to all routers and access servers in the local autonomous system.
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<b>Examples</b>	The following example raises the default local preference value from the default of 100 to 200: <pre>router bgp 200   bgp default local-preference 200</pre>
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<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>set local-preference</b>	Specifies a preference value for the autonomous system path.

# bgp deterministic-med

To have Cisco IOS software enforce the deterministic comparison of the Multi Exit Discriminator (MED) variable between all paths received from the same autonomous system, use the **bgp deterministic-med** command in router configuration mode. To disable the comparison, use the **no** form of this command.

**bgp deterministic med**

**no bgp deterministic med**

---

**Syntax Description** This command has no arguments or keywords.

---

**Defaults** The software does not enforce the deterministic comparison of the MED variable between all paths received from the same autonomous system.

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**Command Modes** Router configuration  
Address-family configuration

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Release	Modification
11.1	This command was introduced.

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**Usage Guidelines** After the **bgp always-compare-med** command is configured, all paths for the same prefix that are received from different neighbors, which are in the same autonomous system, will be grouped together and sorted by the ascending MED value (received-only paths are ignored and not grouped or sorted). The best path selection algorithm will then pick the best paths using the existing rules; the comparison is made on a per neighbor autonomous system basis and then global basis. The grouping and sorting of paths occurs immediately after this command is entered. For correct results, all routers in the local autonomous system must have this command enabled (or disabled).

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**Examples** The following example specifies that the BGP router compare MED variables when choosing among routes advertised by the same subautonomous system within a confederation:

```
Router(config)# router bgp 204  
Router(config-router)# bgp deterministic-med
```

The following example **show ip bgp** command output illustrates how route selection is affected by the configuration of the **bgp deterministic-med** command. The order in which routes are received affects how routes are selected for best path selection when the **bgp deterministic-med** command is not enabled.

The following sample output from the **show ip bgp** command shows three paths that are received for the same prefix (10.100.0.0), and the **bgp deterministic-med** command is not enabled:

```
router# show ip bgp 10.100.0.0
BGP routing table entry for 10.100.0.0/16, version 40
Paths: (3 available, best #3, advertised over IBGP, EBGP)
 109
   192.168.43.10 from 192.168.43.10 (192.168.43.1)
     Origin IGP, metric 0, localpref 100, valid, internal
 2051
   192.168.43.22 from 192.168.43.22 (192.168.43.2)
     Origin IGP, metric 20, localpref 100, valid, internal
 2051
   192.168.43.3 from 192.168.43.3 (10.4.1.1)
     Origin IGP, metric 30, valid, external, best
```

If the **bgp deterministic-med** command is not enabled on the router, the route selection can be affected by the order in which the routes are received. Consider the following scenario in which a router received three paths for the same prefix:

The **clear ip bgp \*** command is entered to clear all routes in the local routing table.

```
Router# clear ip bgp *
```

The **show ip bgp** command is issued again after the routing table has been repopulated. Note that the order of the paths changed after clearing the BGP session. The results of the selection algorithm also changed. This occurred because the order in which the paths were received was different for the second session.

```
Router# show ip bgp 10.100.0.0
BGP routing table entry for 10.100.0.0/16, version 2
Paths: (3 available, best #3, advertised over EBGP)
 109 192.168.43.10 from 192.168.43.10 (192.168.43.1)
     Origin IGP, metric 0, localpref 100, valid, internal
 2051
   192.168.43.3 from 192.168.43.3 (10.4.1.1)
     Origin IGP, metric 30, valid, external
 2051
   192.168.43.22 from 192.168.43.22 (192.168.43.2)
     Origin IGP, metric 20, localpref 100, valid, internal, best
```

If the **bgp deterministic-med** command is enabled, then the result of the selection algorithm will always be the same, regardless of the order in which the paths are received by the local router. The following output is always generated when the **bgp deterministic-med** command is entered on the local router in this scenario:

```
Router# show ip bgp 10.100.0.0
BGP routing table entry for 10.100.0.0/16, version 15
Paths: (3 available, best #1, advertised over EBGP)
 109
   192.168.43.10 from 192.168.43.10 (192.168.43.1)
     Origin IGP, metric 0, localpref 100, valid, internal, best 3
 192.168.43.22 from 192.168.43.22 (192.168.43.2)
     Origin IGP, metric 20, localpref 100, valid, internal 3
 192.168.43.3 from 192.168.43.3 (10.4.1.1)
     Origin IGP, metric 30, valid, external
```

## Related Commands

Command	Description
<b>clear ip bgp</b>	Resets a BGP connection or session.

---

<b>show ip bgp</b>	Displays entries in the BGP routing table.
<b>show ip bgp neighbors</b>	Displays information about the TCP and BGP connections to neighbors.

---

# bgp log-neighbor-changes

To enable logging of BGP neighbor resets, use the **bgp log-neighbor-changes** command in router configuration mode. To disable the logging of changes in BGP neighbor adjacencies, use the **no** form of this command.

**bgp log-neighbor-changes**

**no bgp log-neighbor-changes**

---

**Syntax Description** This command has no arguments or keywords.

---

**Defaults** No BGP neighbor changes are logged.

---

**Command Modes** Router configuration

---

Command History	Release	Modification
	11.1CC and 12.0	This command was introduced.

---



---

**Usage Guidelines** The **bgp log-neighbor-changes** command enables logging of BGP neighbor status changes (up or down) and resets for troubleshooting network connectivity problems and measuring network stability. Unexpected neighbor resets might indicate high error rates or high packet loss in the network and should be investigated.

Using the **bgp log-neighbor-changes** command to enable status change message logging does not cause a substantial performance impact, unlike, for example, enabling per BGP update debugging. If the UNIX syslog facility is enabled, messages are sent to the UNIX host running the syslog daemon so that the messages can be stored and archived. If the UNIX syslog facility is not enabled, the status change messages are retained in the router's internal buffer, and are not stored to disk. You can set the size of this buffer, which is dependent upon the available RAM, using the **logging buffered** command.

The neighbor status change messages are not tracked if **bgp log-neighbor changes** is not enabled, except for the reset reason, which is always available as output of the **show ip bgp neighbor** command.

The log messages display the following reasons for changes in a neighbor's status:

```
BGP protocol initialization
No memory for path entry
No memory for attribute entry
No memory for prefix entry
No memory for aggregate entry
No memory for dampening info
No memory for BGP updates
BGP Notification received
Erroneous BGP Update received
User reset request
```

```

Peer timeout
Password change
Error during connection collision
Peer closing down the session
Peer exceeding maximum prefix limit
Interface flap
Router ID changed
Neighbor deleted
Member added to peergroup
Administratively shutdown
Remote AS changed
RR client configuration modification
Soft reconfiguration modification

```

The **eigrp log-neighbor-changes** command enables logging of Enhanced IGRP neighbor adjacencies, but messages for BGP neighbors are logged only if they are specifically enabled with the **bgp log-neighbor-changes** command.

Use the **show logging** command to display the log for the BGP neighbor changes.

### Examples

The following configuration will log neighbor changes for BGP:

```

bgp router 100
  bgp log-neighbor-changes

```

### Related Commands

Command	Description
<b>logging buffered</b>	Enables logging of message to an internal buffer.
<b>show ip bgp neighbors</b>	Displays information about the TCP and BGP connections to neighbors.
<b>show logging</b>	Displays the state of logging (syslog).

# bgp fast-external-fallover

To immediately reset the BGP sessions of any directly adjacent external peers if the link used to reach them goes down, use the **bgp fast-external-fallover** command in router configuration mode. To disable this function, use the **no** form of this command.

**bgp fast-external-fallover**

**no bgp fast-external-fallover**

---

**Syntax Description** This command has no arguments or keywords.

---

**Defaults** The behavior of this command is enabled by default.

---

**Command Modes** Router configuration

---

Command History	Release	Modification
	10.0	This command was introduced.

---

---

**Examples** The following example disables the automatic resetting of BGP sessions:

```
router bgp 109
no bgp fast-external-fallover
```

# bgp router-id

To configure a fixed router ID for a BGP-speaking router, use the **bgp router-id** command in router configuration mode. To remove the **bgp router-id** command from the configuration file and restore the default value of the router ID, use the **no** form of this command.

**bgp router-id** *ip-address*

**no bgp router-id** *ip-address*

<b>Syntax Description</b>	<i>ip-address</i>	IP address of the router.
<b>Defaults</b>	The router ID is set to the IP address of a loopback interface if one is configured. If no virtual interfaces are configured, the highest IP address is configured for a physical interface on that router. Peering sessions will be reset if the router ID is changed.	
<b>Command Modes</b>	Router configuration	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	10.0	This command was introduced.
<b>Usage Guidelines</b>	Use this command to configure a fixed router ID as an identifier of the router running BGP. A loopback interface, if one is configured, is more effective than a fixed interface as an identifier because there is no physical link to go down.	
<b>Examples</b>	<p>The following example shows the local router configured with the router ID of 192.168.70.24:</p> <pre>router bgp 100   no synchronization   bgp router-id 192.168.70.24</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show ip bgp</b>	Displays entries in the BGP routing table.

# clear ip bgp

To reset a BGP connection using BGP soft reconfiguration, use the **clear ip bgp** command in privileged EXEC mode at the system prompt.

```
clear ip bgp { * | address | peer-group name } [soft [in | out]]
```

Syntax Description		
*		Specifies that all current BGP sessions will be reset.
<i>address</i>		Specifies that only the identified BGP neighbor will be reset.
<i>peer-group-name</i>		Specifies that the specified BGP peer group will be reset.
<b>soft</b>		(Optional) Soft reset. Does not reset the session.
<b>in</b>   <b>out</b>		(Optional) Triggers inbound or outbound soft reconfiguration. If the <b>in</b> or <b>out</b> option is not specified, both inbound and outbound soft reset is triggered.

**Defaults** No reset is initiated.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	10.0	This command was introduced.

**Usage Guidelines** If you specify BGP soft reconfiguration, by including the **soft** keyword, the sessions are not reset and the router sends all routing updates again. To generate new inbound updates without resetting the BGP session, the local BGP speaker should store all received updates without modification regardless of whether it is accepted by the inbound policy, using the **neighbor soft-reconfiguration** command. This process is memory intensive and should be avoided if possible. Outbound BGP soft configuration does not have any memory overhead. You can trigger an outbound reconfiguration on the other side of the BGP session to make the new inbound policy take effect.

Use this command whenever any of the following conditions occur:

- Additions or changes to the BGP-related access lists
- Changes to BGP-related weights
- Changes to BGP-related distribution lists
- Changes in the BGP timer's specifications
- Changes to the BGP administrative distance
- Changes to BGP-related route maps

**Examples** The following example resets all current BGP sessions:

```
clear ip bgp *
```

---

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>clear ip bgp</b>	Resets a BGP connection using BGP soft reconfiguration.
<b>neighbor soft-reconfiguration</b>	Configures the Cisco IOS software to start storing updates.
<b>show ip bgp</b>	Display entries in the BGP routing table.
<b>timers bgp</b>	Adjusts BGP network timers.

# clear ip bgp dampening

To clear BGP route dampening information and unsuppress the suppressed routes, use the **clear ip bgp dampening** command in privileged EXEC mode.

**clear ip bgp dampening** [**address mask**]

Syntax Description	<i>address</i>	(Optional) IP address of the network about which to clear dampening information.
	<i>mask</i>	(Optional) Network mask applied to the <i>address</i> .

**Command Modes** Privileged EXEC

Command History	Release	Modification
	11.0	This command was introduced.

**Examples** The following example clears route dampening information about the route to network 192.168.0.0 and unsuppresses its suppressed routes:

```
clear ip bgp dampening 192.168.0.0 255.255.0.0
```

Related Commands	Command	Description
	<b>bgp dampening</b>	Enables BGP route dampening or change various BGP route dampening factors.
	<b>show ip bgp dampened-paths</b>	Display BGP dampened routes.

# clear ip bgp flap-statistics

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

```
clear ip bgp flap-statistics [{regexp regexp} | {filter-list list} | {address mask}]
```

```
clear ip bgp [address] flap-statistics
```

Syntax Description	
<i>address</i>	(Optional) Clears flap statistics for a single entry at this IP address. If this argument is placed before <b>flap-statistics</b> , the router clears flap statistics for all paths from the neighbor at this address.
<b>regexp</b> <i>regexp</i>	(Optional) Clears flap statistics for all the paths that match the regular expression.
<b>filter-list</b> <i>list</i>	(Optional) Clears flap statistics for all the paths that pass the access list.
<i>mask</i>	(Optional) Network mask applied to the <i>address</i> .

**Defaults** No statistics are cleared.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	11.0	This command was introduced.

**Usage Guidelines** If no arguments or keywords are specified, the router will clear BGP flap statistics for all routes. The flap statistics for a route are also cleared when a BGP peer is reset. Although the reset withdraws the route, there is no penalty applied in this instance even though route flap dampening is enabled.

**Examples** The following example clears all of the flap statistics for paths that pass access list 3:

```
clear ip bgp flap-statistics filter-list 3
```

Related Commands	Command	Description
	<b>bgp dampening</b>	Enables BGP route dampening or change various BGP route dampening factors.

# clear ip bgp peer-group

To remove all the members of a BGP peer group, use the **clear ip bgp peer-group** command in privileged EXEC mode.

**clear ip bgp peer-group** *tag*

<b>Syntax Description</b>	<i>tag</i>	Name of the BGP peer group to clear.
---------------------------	------------	--------------------------------------

<b>Defaults</b>	No BGP peer group members are cleared.
-----------------	--

<b>Command Modes</b>	Privileged EXEC
----------------------	-----------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	11.0	This command was introduced.

<b>Examples</b>	The following example removes all members from the BGP peer group <i>internal</i> :
-----------------	---

```
clear ip bgp peer-group internal
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>neighbor peer-group (assigning members)</b>	Configures a BGP neighbor to be a member of a peer group.

# default-information originate (BGP)

To control the redistribution of a protocol or network into the BGP, use the **default-information originate** command in router configuration mode. To disable this function, use the **no** form of this command.

**default-information originate**

**no default-information originate**

**Syntax Description** This command has no arguments or keywords.

**Defaults** This command is disabled by default.

**Command Modes** Router configuration

Release	Modification
10.0	This command was introduced.

**Usage Guidelines** The **default-information originate** command should be used if the network operator needs to control the redistribution of default routes. Using the **default-information originate** command in BGP is similar to using the **network** command. However, to achieve the same result as configuring the **network** command with the route 0.0.0.0, the **default-information originate** command requires an explicit redistribution of the route 0.0.0.0. The **network** command requires only that route 0.0.0.0 is specified in the Interior Gateway Protocol (IGP) routing table. For this reason, the **network** command is preferred for redistributing default routes and protocols into BGP.

**Examples** The following router configuration mode example configures BGP to redistribute OSPF into BGP:

```
router bgp 164
  default-information originate
  redistribute ospf 109
```

Command	Description
<b>neighbor ebgp-multihop</b>	Accepts and attempt BGP connections to external peers residing on networks that are not directly connected.
<b>network (BGP)</b>	Specifies the list of networks for the BGP routing process.
<b>redistribute (IP)</b>	Redistributes routes from one routing domain into another routing domain.

## default-metric (BGP)

To set default metric values for the BGP routing protocol, use this form of the **default-metric** command in router configuration mode. To return to the default state, use the **no** form of this command.

**default-metric** *number*

**no default-metric** *number*

Syntax Description	<i>number</i>	Default metric value appropriate for the specified routing protocol.
--------------------	---------------	--

Defaults	Built-in, automatic metric translations, as appropriate for each routing protocol
----------	---

Command Modes	Router configuration
---------------	----------------------

Command History	Release	Modification
	10.0	This command was introduced.

Usage Guidelines	<p>The <b>default-metric</b> command is used in conjunction with the <b>redistribute</b> router configuration command to cause the current routing protocol to use the same metric value for all redistributed routes. A default metric helps solve the problem of redistributing routes with incompatible metrics. Whenever metrics do not convert, using a default metric provides a reasonable substitute and enables the redistribution to proceed.</p>
------------------	---

In BGP, this command sets the Multi Exit Discriminator (MED) metric. (The name of this metric for BGP Versions 2 and 3 is INTER\_AS.)

Examples	<p>The following example shows a router in autonomous system 109 using both the RIP and the OSPF routing protocols. The example advertises OSPF-derived routes using the RIP protocol and assigns the IGRP-derived routes a RIP metric of 10.</p>
----------	---

```
router rip
 default-metric 10
 redistribute ospf 109
```

Related Commands	Command	Description
	<b>redistribute</b>	Redistributes routes from one routing domain into another routing domain.

# distance bgp

To allow the use of external, internal, and local administrative distances that could be a better route to a node, use the **distance bgp** command in router configuration mode. To return to the default values, use the **no** form of this command.

**distance bgp** *external-distance internal-distance local-distance*

**no distance bgp**

## Syntax Description

<i>external-distance</i>	Administrative distance for BGP external routes. External routes are routes for which the best path is learned from a neighbor external to the autonomous system. Acceptable values are from 1 to 255. The default is 20. Routes with a distance of 255 are not installed in the routing table.
<i>internal-distance</i>	Administrative distance for BGP internal routes. Internal routes are those routes that are learned from another BGP entity within the same autonomous system. Acceptable values are from 1 to 255. The default is 200. Routes with a distance of 255 are not installed in the routing table.
<i>local-distance</i>	Administrative distance for BGP local routes. Local routes are those networks listed with a <b>network</b> router configuration command, often as back doors, for that router or for networks that are being redistributed from another process. Acceptable values are from 1 to 255. The default is 200. Routes with a distance of 255 are not installed in the routing table.

## Defaults

*external-distance*: 20  
*internal-distance*: 200  
*local-distance*: 200

## Command Modes

Router configuration

## Command History

Release	Modification
10.0	This command was introduced.

## Usage Guidelines

An administrative distance is a rating of the trustworthiness of a routing information source, such as an individual router or a group of routers. Numerically, an administrative distance is an integer between 0 and 255. In general, the higher the value, the lower the trust rating. An administrative distance of 255 means the routing information source cannot be trusted at all and should be ignored.

Use this command if another protocol is known to be able to provide a better route to a node than was actually learned via external BGP, or if some internal routes should really be preferred by BGP.

**Note**

---

Changing the administrative distance of BGP internal routes is considered dangerous and is not recommended. One problem that can arise is the accumulation of routing table inconsistencies, which can break routing.

---

**Examples**

In the following example, internal routes are known to be preferable to those learned through the IGP, so the administrative distance values are set accordingly:

```
router bgp 109
 network 10.108.0.0
 neighbor 192.168.6.6 remote-as 123
 neighbor 172.16.1.1 remote-as 47
 distance bgp 20 20 200
```

# ip as-path access-list

To define a BGP-related access list, use the **ip as-path access-list** command in global configuration mode. To disable use of the access list, use the **no** form of this command.

**ip as-path access-list** *access-list-number* {**permit** | **deny**} *as-regular-expression*

**no ip as-path access-list** *access-list-number* {**permit** | **deny**} *as-regular-expression*

Syntax Description	
<i>access-list-number</i>	Integer from 1 to 199 that indicates the regular expression access list number.
<b>permit</b>	Permits access for matching conditions.
<b>deny</b>	Denies access to matching conditions.
<i>as-regular-expression</i>	Autonomous system in the access list using a regular expression. See the “Regular Expressions” appendix in the <i>Dial Solutions Command Reference</i> for information about forming regular expressions.

**Defaults** No access lists are defined.

**Command Modes** Global configuration

Command History	Release	Modification
	10.0	This command was introduced.

**Usage Guidelines** You can specify an access list filter on both inbound and outbound BGP routes. In addition, you can assign *weights* based on a set of filters. Each filter is an access list based on regular expressions. If the regular expression matches the representation of the autonomous system path of the route as an ASCII string, then the **permit** or **deny** condition applies. The autonomous system path does not contain the local autonomous system number. Use the **ip as-path access-list** global configuration command to define an BGP access list, and the **neighbor** router configuration command to apply a specific access list.

**Examples** The following example specifies that the BGP neighbor with IP address 172.16.1.1 is not sent advertisements about any path through or from the adjacent autonomous system 123:

```
ip as-path access-list 1 deny _123_
ip as-path access-list 1 deny ^123$

router bgp 109
 network 10.108.0.0
 neighbor 192.168.6.6 remote-as 123
 neighbor 172.16.1.1 remote-as 47
 neighbor 172.16.1.1 filter-list 1 out
```

---

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>neighbor distribute-list</b>	Distributes BGP neighbor information as specified in an access list.
<b>neighbor filter-list</b>	Sets up a BGP filter.

# ip bgp-community new-format

To display BGP communities in the format AA:NN (AS-community number/2-byte number), use the **ip bgp-community new-format** command in global configuration mode. To re-enable the previous display format for BGP communities (NN:AA), use the **no** form of this command.

**ip bgp-community new-format**

**no ip bgp-community new-format**

**Syntax Description** This command has no argument or keywords.

## Command History

Release	Modification
12.0	This command was introduced.

## Usage Guidelines

RFC 1997, *BGP Communities Attribute* specifies that a BGP community is made up of two parts that are 2 bytes long. The first part is the autonomous system number and the second part is a 2-byte number. In the most recent version of the RFC, a community is of the form AA:NN. The Cisco default community format is one 32-bit number. The **ip bgp-community new-format** command changes the community format to AA:NN to conform to RFC 1997.

## Examples

The following example upgrades a router that uses the 32-bit number community format to the AA:NN format:

```
Router(config)# ip bgp-community new-format
```

The following example shows how BGP community numbers are displayed when the **ip bgp-community new-format** command is enabled:

```
Router# show ip bgp 10.0.0.0
BGP routing table entry for 10.0.0.0/8, version 4
Paths: (2 available, best #2, table Default-IP-Routing-Table)
  Advertised to non-peer-group peers:
    10.0.33.35
    35
      10.0.33.35 from 10.0.33.35 (192.168.3.3)
        Origin incomplete, metric 10, localpref 100, valid, external
        Community: 1:1
    Local
      0.0.0.0 from 0.0.0.0 (10.0.33.34)
        Origin incomplete, metric 0, localpref 100, weight 32768, valid, sourced, best
```

## Related Commands

Command	Description
<b>show ip bgp</b>	Display entries in the BGP routing table.

# ip community-list

To create a community list for BGP and control access to it, use the **ip community-list** command in global configuration mode. To delete the community list, use the **no** form of this command.

**ip community-list** *community-list-number* {**permit** | **deny**} *community-number*

**no ip community-list** *community-list-number*

Syntax Description	
<i>community-list-number</i>	Integer from 1 to 99 that identifies one or more permit or deny groups of communities.
<b>permit</b>	Permits access for a matching condition.
<b>deny</b>	Denies access for a matching condition.
<i>community-number</i>	Community number configured by a <b>set community</b> command. Valid value is one of the following:  A number from 1 to 4294967200. You can specify a single number or multiple numbers separated by a space.  <b>internet</b> —The Internet community.  <b>no-export</b> —Routes with this community are sent to peers in other sub-autonomous systems within a confederation. Do not advertise this route to an EBGp peer. External systems are those outside the confederation. If there is no confederation, an external system is any EBGp peer.  <b>local-as</b> Do not advertise this route to peers outside the local autonomous system. This route will not be advertised to other autonomous systems or sub-autonomous systems when confederations are configured.  <b>no-advertise</b> —Do not advertise this route to any peer (internal or external).

**Defaults** Once you permit a value for the community number, the community list defaults to an implicit deny for everything else that has not been permitted.

**Command Modes** Global configuration

Command History	Release	Modification
	10.3	This command was introduced.
	12.0	The <b>local-as</b> attribute was added.

---

**Examples**

In the following example, Cisco IOS software permits all routes except the routes with the communities 5 and 10 or 10 and 15:

```
ip community-list 1 deny 5 10
ip community-list 1 deny 10 15
ip community-list 1 permit internet
```

The following example permits all routes within the local autonomous system:

```
ip community-list 1 permit local-as
```

---

**Related Commands**

Command	Description
<b>set community</b>	Sets the BGP COMMUNITIES attribute.
<b>show ip bgp community</b>	Displays routes that belong to specified BGP communities.

# match as-path

To match a BGP autonomous system path access list, use the **match as-path** command in route-map configuration mode. To remove a path list entry, use the **no** form of this command.

**match as-path** *path-list-number*

**no match as-path** *path-list-number*

<b>Syntax Description</b>	<i>path-list-number</i> Autonomous system path access list. An integer from 1 to 199.
---------------------------	---

<b>Defaults</b>	No path lists are defined.
-----------------	----------------------------

<b>Command Modes</b>	Route-map configuration
----------------------	-------------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	10.0	This command was introduced.

<b>Usage Guidelines</b>	The values set by the <b>match as-path</b> and <b>set weight</b> commands override global values. For example, the weights assigned with the <b>match as-path</b> and <b>set weight</b> route-map commands override the weights assigned using the <b>neighbor weight</b> and <b>neighbor filter-list</b> commands.
-------------------------	---

A route map can have several parts. Any route that does not match at least one **match** clause relating to a **route-map** command will be ignored; that is, the route will not be advertised for outbound route maps and will not be accepted for inbound route maps. If you want to modify only some data, you must configure a second route-map section with an explicit match specified.

The implemented weight is based on the first matched autonomous system path.

<b>Examples</b>	The following example sets the autonomous system path to match BGP autonomous system path access list 20:
-----------------	---

```
route-map igp2bgp
 match as-path 20
```

## Related Commands

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

# match community

To match a Border Gateway Protocol (BGP) community, use the **match community** command in route-map configuration mode. To remove the **match community** command from the configuration file and restore the system to its default condition where the software removes the BGP community list entry, use the **no** form of this command.

```
match community { standard-list-number | expanded-list-number | community-list-name
  [ exact-match ] }
```

```
no match community { standard-list-number | expanded-list-number | community-list-name
  [ exact-match ] }
```

Syntax Description		
	<i>standard-list-number</i>	Specifies a standard community list number from 1 to 99 that identifies one or more permit or deny groups of communities.
	<i>expanded-list-number</i>	Specifies an expanded community list number from 100 to 199 that identifies one or more permit or deny groups of communities.
	<i>community-list-name</i>	The community list name.
	<b>exact-match</b>	(Optional) Indicates that an exact match is required. All of the communities and only those communities specified must be present.

**Defaults** No community list is matched by the route map.

**Command Modes** Route-map configuration

Command History	Release	Modification
	10.3	This command was introduced.

**Usage Guidelines** A route map can have several parts. Any route that does not match at least one **match** command relating to a **route-map** command will be ignored; that is, the route will not be advertised for outbound route maps and will not be accepted for inbound route maps. If you want to modify only some data, you must configure a second route-map section with an explicit match specified.

Matching based on community list number or name is one of the types of **match** commands applicable to BGP.

---

**Examples**

The following example shows that the routes matching community list 1 will have the weight set to 100. Any route that has community 109 will have the weight set to 100.

```
Router(config)# ip community-list 1 permit 109
Router(config)# !
Router(config)# route-map set_weight
Router(config-route-map)# match community 1
Router(config-route-map)# set weight 100
```

The following example shows that the routes matching community list 1 will have the weight set to 200. Any route that has community 109 alone will have the weight set to 200.

```
Router(config)# ip community-list 1 permit 109
Router(config)# !
Router(config)# route-map set_weight
Router(config-route-map)# match community 1 exact
Router(config-route-map)# set weight 200
```

In the following example, the routes that match community list LIST\_NAME will have the weight set to 100. Any route that has community 101 alone will have the weight set to 100.

```
Router(config)# ip community-list 1 permit 101
Router(config)# !
Router(config)# route-map set_weight
Router(config-route-map)# match community LIST_NAME
Router(config-route-map)# set weight 100
```

---

**Related Commands**

Command	Description
<b>ip community-list</b>	Creates a community list for BGP and controls access to it.
<b>route-map (IP)</b>	Defines the conditions for redistributing routes from one routing protocol into another.
<b>set weight</b>	Specifies the BGP weight for the routing table.

# neighbor advertisement-interval

To set the minimum interval between the sending of BGP routing updates, use the **neighbor advertisement-interval** command in router configuration mode. To remove an entry, use the **no** form of this command.

**neighbor** {*ip-address* | *peer-group-name*} **advertisement-interval** *seconds*

**no neighbor** {*ip-address* | *peer-group-name*} **advertisement-interval** *seconds*

Syntax Description		
	<i>ip-address</i>	Neighbor's IP address.
	<i>peer-group-name</i>	Name of a BGP peer group.
	<i>seconds</i>	Time in seconds. Integer from 0 to 600.

**Defaults** 30 seconds for external peers and 5 seconds for internal peers.

**Command Modes** Router configuration

Command History	Release	Modification
	10.3	This command was introduced.

**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** The following example sets the minimum time between sending BGP routing updates to 10 seconds:

```
router bgp 5
 neighbor 4.4.4.4 advertisement-interval 10
```

Related Commands	Command	Description
	<b>neighbor peer-group (creating)</b>	Creates a BGP peer group.

# neighbor advertise-map non-exist-map

To install a Border Gateway Protocol (BGP) route as a locally originated route into a BGP routing table for conditional advertisement, use the **neighbor advertise-map non-exist-map** command in router configuration mode. To disable conditional advertisement, use the **no** form of this command.

```
neighbor{ip-address} advertise-map {map1-name} non-exist-map {map2-name}
```

```
no neighbor{ip-address} advertise-map {map1-name} non-exist-map {map2-name}
```

Syntax Description		
	<i>ip-address</i>	Specifies the IP address of the router that should receive conditional advertisements for a given set of routes.
	<i>map-name</i>	Specifies the name of the advertise-map and the non-exist-map.

**Defaults** The BGP Conditional Advertisement feature is not enabled by default.

**Command Modes** Router configuration

Command History	Release	Modification
	11.1CC	This command was introduced.
	11.2	This command was integrated into Cisco IOS Release 11.2.

**Usage Guidelines** Use the **neighbor advertise-map non-exist-map** router configuration command to conditionally advertise selected routes. The route map associated with the non-exist-map specifies the prefix that the BGP speaker will track. The route map associated with the advertise-map specifies the prefix that will be advertised when the prefix in the non-exist-map no longer exists. Any BGP route that is matched by the advertise-map route map will be advertised to the neighbor if the non-exist-map route map does not match any route in the BGP routing table. If the non-exist-map route map matches any route in the BGP routing table, any BGP routes that are matched by the advertise-map route map will not be advertised to the neighbor. All routes that may be dynamically advertised or not advertised need to exist in the BGP routing table for conditional advertisement to take place. The prefix tracked by the BGP speaker must be present in the IP routing table for the conditional advertisement not to take place.

**Examples** The following example configures a router to conditionally advertise routes to 10.1.1.1:

```
neighbor 10.1.1.1 advertise-map map1 non-exist-map map2
```

# neighbor default-originate

To allow a BGP speaker (the local router) to send the default route 0.0.0.0 to a neighbor for use as a default route, use the **neighbor default-originate** command in router configuration mode. To send no route as a default, use the **no** form of this command.

```
neighbor {ip-address | peer-group-name} default-originate [route-map map-name]
```

```
no neighbor {ip-address | peer-group-name} default-originate [route-map map-name]
```

## Syntax Description

<i>ip-address</i>	IP address of the neighbor.
<i>peer-group-name</i>	Name of a BGP peer group.
<b>route-map</b> <i>map-name</i>	(Optional) Name of the route map. The route map allows route 0.0.0.0 to be injected conditionally.

## Defaults

No default route is sent to the neighbor.

## Command Modes

Router configuration

## Command History

Release	Modification
11.0	This command was introduced.
12.0	Modifications were added to permit extended access lists.

## Usage Guidelines

This command does not require the presence of 0.0.0.0 in the local router. When used with a route map, the default route 0.0.0.0 is injected if the route map contains a **match ip address** clause and there is a route that matches the IP access list exactly. The route map can contain other match clauses also.

You can use standard or extended access lists with the **neighbor default-originate** command.

## Examples

In the following example, the local router injects route 0.0.0.0 to the neighbor 172.16.2.3 unconditionally:

```
router bgp 109
 network 172.16.0.0
 neighbor 172.16.2.3 remote-as 200
 neighbor 172.16.2.3 default-originate
```

In the following example, the local router injects route 0.0.0.0 to the neighbor 172.16.2.3 only if there is a route to 172.16.68.0 (that is, if a route with any mask exists, such as 255.255.255.0 or 255.255.0.0):

```
router bgp 109
 network 172.16.0.0
 neighbor 172.16.2.3 remote-as 200
 neighbor 172.16.2.3 default-originate route-map default-map
 !
 route-map default-map 10 permit
  match ip address 1
 !
 access-list 1 permit 172.16.68.0
```

In the following example, the last line of the configuration has been changed to show the use of an extended access list. The local router injects route 0.0.0.0 to the neighbor 172.16.2.3 only if there is a route to 172.16.68.0 with a mask of 255.255.0.0:

```
router bgp 109
 network 172.16.0.0
 neighbor 172.16.2.3 remote-as 200
 neighbor 172.16.2.3 default-originate route-map default-map
 !
 route-map default-map 10 permit
  match ip address 1
 !
 access-list 100 permit ip host 172.16.68.0 host 255.255.255.0
```

---

**Related Commands**

Command	Description
<b>neighbor ebgp-multihop</b>	Accepts and attempt BGP connections to external peers residing on networks that are not directly connected.

---

# neighbor description

To associate a description with a neighbor, use the **neighbor description** command in router configuration mode. To remove the description, use the **no** form of this command.

**neighbor** {*ip-address* | *peer-group-name*} **description** *text*

**no neighbor** {*ip-address* | *peer-group-name*} **description** [*text*]

Syntax Description		
	<i>ip-address</i>	Neighbor's IP address.
	<i>peer-group-name</i>	Name of a BGP peer group.
	<i>text</i>	Text (up to 80 characters) that describes the neighbor.

**Defaults** There is no description of the neighbor.

**Command Modes** Router configuration

Command History	Release	Modification
	11.3	This command was introduced.

**Examples** In the following example, the description of the neighbor is “peer with xyz.com”:

```
router bgp 109
 network 172.16.0.0
 neighbor 172.16.2.3 description peer with xyz.com
```

# neighbor distribute-list

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

```
neighbor {ip-address | peer-group-name} distribute-list {access-list-number |
expanded-list-number | access-list-name| prefix-list-name} {in | out}
```

```
no neighbor {ip-address | peer-group-name} distribute-list {access-list-number |
expanded-list-number | access-list-name| prefix-list-name} {in | out}
```

Syntax Description	
<i>ip-address</i>	IP address of the neighbor.
<i>peer-group-name</i>	Name of a BGP peer group.
<i>access-list-number</i>	Number of a standard or extended access list. The range of a standard access list number is from 1 to 99. The range of an extended access list number is from 100 to 199.
<i>expanded-list-number</i>	Number of an expanded access list number. The range of an expanded access list is from 1300 to 2699.
<i>access-list-name</i>	Name of a standard or extended access list.
<i>prefix-list-name</i>	Name of a BGP prefix list.
<b>in</b>	Access list is applied to incoming advertisements to that neighbor.
<b>out</b>	Access list is applied to outgoing advertisements to that neighbor.

**Defaults** No BGP neighbor is specified.

**Command Modes** Router configuration

Command History	Release	Modification
	10.0	This command was introduced.
	11.0	The <i>peer-group-name</i> argument was added.
	11.2	The <i>access-list-name</i> argument 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. Specifying the command for a neighbor overrides the inbound policy that is inherited from the peer group.

Using a distribute list is one of several ways to filter advertisements. Advertisements can also be filtered by using the following methods:

- Autonomous system path filters can be configured with the **ip as-path access-list** and **neighbor filter-list** commands.
- The **access-list (IP standard)** and **access-list (IP extended)** commands can be used to configure standard and extended access lists for the filtering of advertisement.

- The **route map** command can be used to filter advertisements. Route maps may be configured with autonomous system filters, prefix filters, access lists and distribute lists.

Standard access lists may be used to filter routing updates. However, in the case of route filtering when using classless interdomain routing (CIDR), standard access lists do not provide the level of granularity that is necessary to configure advanced filtering of network addresses and masks. Extended access lists, configured with the **access-list (IP extended)** command, should be used to configure route filtering when using CIDR because extended access lists allow the network operator to use wild card bits to filter the relevant prefixes and masks. Wild card bits are similar to the bit masks that are used with normal access lists; prefix and mask bits that correspond to wild card bits that are set to 0 are used in the comparison of addresses or prefixes and wild card bits that are set to 1 are ignored during any comparisons. This function of extended access list configuration can also be used to filter addresses or prefixes based on the prefix length.

## Examples

The following router configuration mode example applies list 39 to incoming advertisements from neighbor 192.168.4.1. List 39 permits the advertisement of network 10.109.0.0.

```
router bgp 109
 network 10.108.0.0
 neighbor 192.168.4.1 distribute-list 39 in
```

The following three examples show different scenarios for using an extended access list with a distribute list. The three examples are labeled “Example A”, “Example B”, and “Example C.” Each of the example extended access list configurations are used with the **neighbor distribute-list** command configuration example below.

```
router bgp 109
 network 10.108.0.0
 neighbor 192.168.4.1 distribute-list 101 in
```

### Example A

The following extended access list example will permit route 192.108.0.0 255.255.0.0 but deny any more specific routes of 192.108.0.0 (including 192.108.0.0 255.255.255.0):

```
access-list 101 permit ip 192.108.0.0 0.0.0.0 255.255.0.0 0.0.0.0
access-list 101 deny ip 192.108.0.0 0.0.255.255 255.255.0.0 0.0.255.255
```

### Example B

The following extended access list example will permit route 10.108.0/24 but deny 131.108/16 and all other subnets of 10.108.0.0:

```
access-list 101 permit ip 10.108.0.0 0.0.0.0 255.255.255.0 0.0.0.0
access-list 101 deny ip 10.108.0.0 0.0.255.255 255.255.0.0 0.0.255.255
```

### Example C

The following extended access list example will deny all prefixes that are longer than 24 bits and permit all of the shorter prefixes:

```
access-list 101 deny ip 0.0.0.0 255.255.255.255 255.255.255.0 0.0.0.255
access-list 101 permit ip 0.0.0.0 255.255.255.255 0.0.0.0 255.255.255.255
```

---

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>access-list (IP extended)</b>	Defines an extended IP access list.
<b>access-list (IP standard)</b>	Defines a standard IP access list.
<b>ip as-path access-list</b>	Defines a BGP-related access list.
<b>neighbor filter-list</b>	Sets up a BGP filter.
<b>neighbor peer-group (creating)</b>	Creates a BGP peer group.

# neighbor ebgp-multihop

To accept and attempt BGP connections to external peers residing on networks that are not directly connected, use the **neighbor ebgp-multihop** command in router configuration mode. To return to the default, use the **no** form of this command.

```
neighbor {ip-address | peer-group-name} ebgp-multihop [tll]
```

```
no neighbor {ip-address | peer-group-name} ebgp-multihop
```

Syntax Description		
	<i>ip-address</i>	IP address of the BGP-speaking neighbor.
	<i>peer-group-name</i>	Name of a BGP peer group.
	<i>tll</i>	(Optional) Time-to-live in the range 1 to 255 hops.

**Defaults** Only directly connected neighbors are allowed.

**Command Modes** Router configuration

Command History	Release	Modification
	10.0	This command was introduced.
	11.0	The <i>peer-group-name</i> argument was added.

**Usage Guidelines** This feature should be used only under the guidance of technical support staff.

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.

To prevent the creation of loops through oscillating routes,, the multihop will not be established if the only route to the multihop peer is the default route (0.0.0.0).

**Examples** The following example allows connections to or from neighbor 10.108.1.1, which resides on a network that is not directly connected:

```
router bgp 109
 neighbor 10.108.1.1 ebgp-multihop
```

Related Commands	Command	Description
	<b>neighbor default-originate</b>	Allows a BGP speaker (the local router) to send the default route 0.0.0.0 to a neighbor for use as a default route.
	<b>neighbor peer-group (creating)</b>	Creates a BGP peer group.
	<b>network (BGP)</b>	Specifies the list of networks for the BGP routing process.

# neighbor filter-list

To set up a BGP filter, use the **neighbor filter-list** command in router configuration mode. To disable this function, use the **no** form of this command.

```
neighbor {ip-address | peer-group-name} filter-list access-list-number {in | out | weight weight}
```

```
no neighbor {ip-address | peer-group-name} filter-list access-list-number {in | out | weight weight}
```

## Syntax Description

<i>ip-address</i>	IP address of the neighbor.
<i>peer-group-name</i>	Name of a BGP peer group.
<i>access-list-number</i>	Number of an autonomous system path access list. You define this access list with the <b>ip as-path access-list</b> command.
<b>in</b>	Access list to incoming routes.
<b>out</b>	Access list to outgoing routes.
<b>weight</b> <i>weight</i>	Assigns a relative importance to incoming routes matching autonomous system paths. Acceptable values are 0 to 65535.

## Defaults

This command is disabled by default.

## Command Modes

Router configuration

## Command History

Release	Modification
10.0	This command was introduced.

## Usage Guidelines

This command establishes filters on both inbound and outbound BGP routes. Any number of weight filters are allowed on a per-neighbor basis, but only one in or out filter is allowed. The weight of a route affects BGP's route-selection rules.

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 **match as-path** and **set weight** route-map commands override the weights assigned using the **neighbor weight** and **neighbor filter-list** commands.

See the “Regular Expressions” appendix in the *Dial Solutions Command Reference* for information on forming regular expressions.

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.

---

**Examples**

In the following example, the BGP neighbor with IP address 172.16.1.1 is not sent advertisements about any path through or from the adjacent autonomous system 123:

```
ip as-path access-list 1 deny _123_  
ip as-path access-list 1 deny ^123$  
  
router bgp 109  
network 10.108.0.0  
neighbor 192.168.6.6 remote-as 123  
neighbor 172.16.1.1 remote-as 47  
neighbor 172.16.1.1 filter-list 1 out
```

---

**Related Commands**

Command	Description
<b>ip as-path access-list</b>	Defines a BGP-related access list.
<b>neighbor distribute-list</b>	Distributes BGP neighbor information as specified in an access list.
<b>neighbor peer-group (creating)</b>	Creates a BGP peer group.
<b>neighbor weight</b>	Assigns a weight to a neighbor connection.

# neighbor maximum-prefix

To control how many prefixes can be received from a neighbor, use the **neighbor maximum-prefix** command in router configuration mode. To disable this function, use the **no** form of this command.

**neighbor** {*ip-address* | *peer-group-name*} **maximum-prefix** *maximum* [*threshold*][**warning-only**]

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

Syntax Description		
<i>ip-address</i>		IP address of the neighbor.
<i>peer-group-name</i>		Name of a BGP peer group.
<i>maximum</i>		Maximum number of prefixes allowed from this neighbor.
<i>threshold</i>		(Optional) Integer specifying at what percentage of <i>maximum</i> the router starts to generate a warning message. The range 1 to 100; the default is 75 (percent).
<b>warning-only</b>		(Optional) Allows the router to generate log message when the <i>maximum</i> is exceeded, instead of terminating the peering.

**Defaults** This command is disabled by default. There is no limit on the number of prefixes.

**Command Modes** Router configuration

Command History	Release	Modification
	11.3	This command was introduced.

**Usage Guidelines** This command allows you to configure a maximum number of prefixes a BGP router is allowed to receive from a peer. It adds another mechanism (in addition to distribute lists, filter lists, and route maps) to control prefixes received from a peer.

When the number of received prefixes exceeds the *maximum* number configured, the router terminates the peering (by default). However, if the keyword **warning-only** is configured, the router instead only sends a log message, but continues peering with the sender. If the peer is terminated, the peer stays down until the **clear ip bgp** command is issued.

**Examples** The following example sets the maximum number of prefixes allowed from the neighbor at 192.168.6.6 to 1000:

```
router bgp 109
 network 10.108.0.0
 neighbor 192.168.6.6 maximum-prefix 1000
```

■ neighbor maximum-prefix

Related Commands	Command	Description
	<b>clear ip bgp</b>	Resets a BGP connection using BGP soft reconfiguration.

# neighbor next-hop-self

To disable next-hop processing of BGP updates on the router, use the **neighbor next-hop-self** command in router configuration mode. To disable this feature, use the **no** form of this command.

**neighbor** { *ip-address* | *peer-group-name* } **next-hop-self**

**no neighbor** { *ip-address* | *peer-group-name* } **next-hop-self**

## Syntax Description

<i>ip-address</i>	IP address of the BGP-speaking neighbor.
<i>peer-group-name</i>	Name of a BGP peer group.

## Defaults

This command is disabled by default.

## Command Modes

Router configuration

## Command History

Release	Modification
10.0	This command was introduced.
11.0	The <i>peer-group-name</i> argument was added.

## Usage Guidelines

This command is useful in nonmeshed networks (such as Frame Relay or X.25) where BGP neighbors may not have direct access to all other neighbors on the same IP subnet.

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.

For a finer granularity of control, see the **set ip next-hop** command.

## Examples

The following example forces all updates destined for 10.108.1.1 to advertise this router as the next hop:

```
router bgp 109
 neighbor 10.108.1.1 next-hop-self
```

## Related Commands

Command	Description
<b>neighbor peer-group (creating)</b>	Creates a BGP peer group.
<b>set ip next-hop (BGP)</b>	Indicates where to output packets that pass a match clause of a route map for policy routing.

# neighbor password

To enable MD5 authentication on a TCP connection between two BGP peers, use the **neighbor password** command in router configuration mode. To disable this function, use the **no** form of this command.

**neighbor** {*ip-address* | *peer-group-name*} **password** *string*

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

## Syntax Description

<i>ip-address</i>	IP address of the BGP-speaking neighbor.
<i>peer-group-name</i>	Name of a BGP peer group.
<i>string</i>	Case-sensitive password of up to 80 characters. The first character cannot be a number. The string can contain any alphanumeric characters, including spaces. You cannot specify a password in the format <i>number-space-anything</i> . The space after the number causes problems.

## Defaults

This command is disabled by default.

## Command Modes

Router configuration

## Command History

Release	Modification
11.0	This command was introduced.

## Usage Guidelines

You can invoke authentication between two BGP peers, causing each segment sent on the TCP connection between them to be verified. This feature must be configured with the same password on both BGP peers; otherwise, the connection between them will not be made. The authentication feature uses the MD5 algorithm. Specifying this command causes the generation and checking of the MD5 digest on every segment sent on the TCP connection.

Configuring a password for a neighbor will cause an existing session to be torn down and a new one established.

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.

If a router has a password configured for a neighbor, but the neighbor router does not, a message such as the following will appear on the console while the routers attempt to establish a BGP session between them:

```
%TCP-6-BADAUTH: No MD5 digest from [peer's IP address]:11003 to [local router's IP address]:179
```

Similarly, if the two routers have different passwords configured, a message such as the following will appear on the screen:

```
%TCP-6-BADAUTH: Invalid MD5 digest from [peer's IP address]:11004 to [local router's IP address]:179
```

---

**Examples**

The following example enables the authentication feature between this router and the BGP neighbor at 10.108.1.1. The password that must also be configured for the neighbor is *bla4u00=2nkq*.

```
router bgp 109
 neighbor 10.108.1.1 password bla4u00=2nkq
```

---

**Related Commands**

Command	Description
<b>neighbor peer-group (creating)</b>	Creates a BGP peer group.

## neighbor peer-group (assigning members)

To configure a BGP neighbor to be a member of a peer group, use the **neighbor peer-group** command in router configuration mode. To remove the neighbor from the peer group, use the **no** form of this command.

**neighbor** *ip-address* **peer-group** *peer-group-name*

**no neighbor** *ip-address* **peer-group** *peer-group-name*

Syntax Description		
	<i>ip-address</i>	IP address of the BGP neighbor who belongs to the peer group specified by the <i>tag</i> .
	<i>peer-group-name</i>	Name of the BGP peer group to which this neighbor belongs.

**Defaults** There are no BGP neighbors in a peer group.

**Command Modes** Router configuration

Command History	Release	Modification
	11.0	This command was introduced.

**Usage Guidelines** The neighbor at the IP address indicated inherits all the configured options of the peer group.

**Examples** The following example assigns three neighbors to the peer group named *internal*:

```
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 172.16.232.53 peer-group internal
 neighbor 172.16.232.54 peer-group internal
 neighbor 172.16.232.55 peer-group internal
 neighbor 172.16.232.55 filter-list 3 in
```

Related Commands	Command	Description
	<b>neighbor peer-group (creating)</b>	Creates a BGP peer group.
	<b>neighbor shutdown</b>	Disables a neighbor or peer group.

# neighbor peer-group (creating)

To create a BGP peer group, use the **neighbor peer-group** command in 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**

<b>Syntax Description</b>	<i>peer-group-name</i>	Name of the BGP peer group.
<b>Defaults</b>	There is no BGP peer group.	
<b>Command Modes</b>	Router configuration	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	11.0	This command was introduced.

**Usage Guidelines**

Often in a BGP speaker, there are many neighbors 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.

Peer group members can span multiple logical IP subnets, and can transit, 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 can also 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, 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 EBGP neighbors.

### Example for an 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, AS 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 172.16.232.55, 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 172.16.232.53 peer-group internal
 neighbor 172.16.232.54 peer-group internal
 neighbor 172.16.232.55 peer-group internal
 neighbor 172.16.232.55 filter-list 3 in
```

### Example for an EBG Peer Group

The following example defines the peer group named *external-peers* without the **neighbor remote-as** command. This is what makes it an EBG peer group. Each individual member of the peer group is configured with its respective AS-number separately. Thus the peer group consists of members from autonomous systems 200, 300, and 400. All the peer group members have *set-metric* route map as an outbound route map and filter-list 99 as an outbound filter list. Except for neighbor 172.16.232.110, 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 172.16.232.90 remote-as 200
 neighbor 172.16.232.90 peer-group external-peers
 neighbor 172.16.232.100 remote-as 300
 neighbor 172.16.232.100 peer-group external-peers
 neighbor 172.16.232.110 remote-as 400
 neighbor 172.16.232.110 peer-group external-peers
 neighbor 172.16.232.110 filter-list 400 in
```

### Related Commands

Command	Description
<b>clear ip bgp peer-group</b>	Removes all the members of a BGP peer group.
<b>neighbor peer-group (creating)</b>	Creates a BGP peer group.
<b>show ip bgp peer-group</b>	Display information about BGP peer groups.

# neighbor prefix-list

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

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

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

Syntax Description		
<i>ip-address</i>		Neighbor's IP address.
<i>peer-group-name</i>		Name of a BGP peer group.
<b>prefix-list</b>		Applies a prefix list to the route to be matched.
<i>prefix-listname</i>		Name of a prefix list.
<b>in</b>		Access list is applied to incoming advertisements to that neighbor.
<b>out</b>		Access list is applied to outgoing advertisements to that neighbor.

**Defaults** No BGP neighbor is specified.

**Command Modes** Router configuration

Command History	Release	Modification
	12.0	This command was introduced.

**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 use both **neighbor access-list** and **neighbor prefix-list** commands for a single BGP peer. Do not apply both a **neighbor distribute-list** and a **neighbor prefix-list** command to the same neighbor.

**Examples** The following example applies prefix list *abc* to incoming advertisements to neighbor 192.168.4.1:

```
router bgp 109
 network 10.108.0.0
 neighbor 192.168.4.1 prefix-list abc in
```

The following example applies prefix list *CustomerA* to incoming advertisements to neighbor 192.168.4.1:

```
router bgp 109
 network 10.108.0.0
 neighbor 192.168.4.1 prefix-list CustomerA in
```

#### Related Commands

Command	Description
<b>clear ip prefix-list</b>	Resets the hit count of the prefix list entries.
<b>ip as-path access-list</b>	Defines a BGP-related access list.
<b>ip prefix-list</b>	Creates an entry in a prefix list and assigns a sequence number to the entry.
<b>ip prefix-list description</b>	Adds a text description of a prefix list.
<b>ip prefix-list sequence-number</b>	Enables the generation of sequence numbers for entries in a prefix list.
<b>neighbor filter-list</b>	Sets up a BGP filter.
<b>neighbor peer-group (creating)</b>	Creates a BGP peer group.
<b>show ip bgp peer-group</b>	Display information about BGP peer groups.
<b>show ip prefix-list</b>	Displays information about a prefix list or prefix list entries.

# neighbor remote-as

To add an entry to the 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** *number*

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

Syntax Description		
	<i>ip-address</i>	Neighbor's IP address.
	<i>peer-group-name</i>	Name of a BGP peer group.
	<i>number</i>	Autonomous system to which the neighbor belongs.

**Defaults** There are no BGP neighbor peers.

**Command Modes** Router configuration

Command History	Release	Modification
	10.0	This command was introduced.
	11.0	The <i>peer-group-name</i> argument was added.

**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.

**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 **neighborremote-as** command illustrates specification of an internal neighbor (with the same autonomous system number) at address 10.108.234.2; and the last **neighborremote-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
```

---

**Related Commands**

Command	Description
<b>neighbor peer-group (creating)</b>	Creates a BGP peer group.

---

# neighbor remove-private-as

To remove private autonomous system numbers from the AS-path, a list of autonomous system numbers that a route passes through to reach a BGP peer, 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	
<i>ip-address</i>	IP address of the BGP-speaking neighbor.
<i>peer-group-name</i>	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 <i>peer-group-name</i> argument was added.

**Usage Guidelines** This feature is available for external BGP (EBGP) neighbors only.

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

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

If this feature is used with confederation, it will work as long as the private autonomous system numbers follow the confederation portion of the AS-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 AS\_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
<b>neighbor remote-as</b>	Allows entries to the BGP neighbor table.
<b>show ip bgp</b>	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 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		
<i>ip-address</i>		Neighbor's IP address.
<i>peer-group-name</i>		Name of a BGP peer group.
<i>map-name</i>		Name of route map.
<b>in</b>		Apply to incoming routes.
<b>out</b>		Apply to outgoing routes.

**Defaults** No route maps are applied to a peer.

**Command Modes** Router configuration

Command History	Release	Modification
	10.0	This command was introduced.

**Usage Guidelines** 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 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.

**Examples** The following example applies a route map named *internal-map* to 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
```

Related Commands	Command	Description
	<b>neighbor peer-group (creating)</b>	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 router configuration mode. To indicate that the neighbor is not a client, use the **no** form of this command. When all the clients are disabled, the local router is no longer a route reflector.

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

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

<b>Syntax Description</b>	<i>ip-address</i>	IP address of the BGP neighbor being identified as a client.
---------------------------	-------------------	--

<b>Defaults</b>	There is no route reflector in the autonomous system.
-----------------	---

<b>Command Modes</b>	Router configuration
----------------------	----------------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	11.1	This command was introduced.

<b>Usage Guidelines</b>	<p>By default, all 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.</p> <p>If you use route reflectors, all IBGP speakers need not be fully meshed. In the route reflector model, an internal BGP peer is configured to be a <i>route reflector</i> responsible for passing IBGP learned routes to IBGP neighbors. This scheme eliminates the need for each router to talk to every other router.</p> <p>Use the <b>neighbor route-reflector-client</b> 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.</p>
-------------------------	--

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

<b>Examples</b>	In the following 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
```

## Related Commands

Command	Description
<b>bgp client-to-client reflection</b>	Restores route reflection from a BGP route reflector to clients.
<b>bgp cluster-id</b>	Configures the cluster ID if the BGP cluster has more than one route reflector.
<b>show ip bgp</b>	Display 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 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

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

No COMMUNITIES attribute is sent to any neighbor.

## Command Modes

Router configuration

## Command History

Release	Modification
10.3	This command was introduced.
11.0	The <i>peer-group-name</i> argument 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 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
```

## Related Commands

Command	Description
<b>match community-list</b>	Matches a BGP community.
<b>neighbor peer-group (creating)</b>	Creates a BGP peer group.
<b>set community</b>	Sets the BGP COMMUNITIES attribute.

# neighbor shutdown

To disable a neighbor or peer group, use the **neighbor shutdown** command in router configuration mode. To re-enable 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	
<i>ip-address</i>	Neighbor's IP address.
<i>peer-group-name</i>	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, this could mean a large number of peering sessions are suddenly terminated.

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/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.

Related Commands	Command	Description
	<b>neighbor maximum-prefix</b>	Controls how many prefixes can be received from a neighbor.
	<b>show ip bgp summary</b>	Display 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	<i>ip-address</i>	IP address of the BGP-speaking neighbor.
	<i>peer-group-name</i>	Name of a BGP peer group.
	<b>inbound</b>	Keyword indicating that the update to be stored is an incoming update. Inbound is currently required with this command, since a keyword is required and no other keywords are available.

**Defaults** Soft reconfiguration is not enabled

**Command Modes** Router configuration

Command History	Release	Modification
	11.2	This command was introduced.

**Usage Guidelines** This command requires at least one keyword. Currently the only keyword available is **inbound**, so the use of **inbound** is not optional.

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

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
<b>clear ip bgp</b>	Resets a BGP connection using BGP soft reconfiguration.
<b>neighbor peer-group (creating)</b>	Creates a BGP peer group.

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

Defaults	
	<i>keepalive</i> : 60 seconds
	<i>holdtime</i> : 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 command <b>timers bgp</b> .

Examples	
	The following example changes the keepalive timer to 70 seconds and the holdtime timer to 210 seconds for the BGP peer 192.98.47.0:

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

# 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*

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

Syntax Description		
	<i>ip-address</i>	IP address of the BGP-speaking neighbor.
	<i>peer-group-name</i>	Name of a BGP peer group.
	<i>interface-type</i>	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 loopback interface’s IP address 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
	<b>neighbor peer-group (creating)</b>	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** *value*

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

Syntax Description		
	<i>ip-address</i>	IP address of the BGP-speaking neighbor.
	<i>peer-group-name</i>	Name of a BGP peer group.
	<i>value</i>	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.

Our implementation of BGP supports BGP Versions 2, 3, and 4. If the neighbor does not accept default Version 4, dynamic version negotiation is implemented to negotiate 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
	<b>neighbor peer-group (creating)</b>	Creates a BGP peer group.

# neighbor weight

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

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

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

Syntax Description	
<i>ip-address</i>	Neighbor's IP address.
<i>peer-group-name</i>	Name of a BGP peer group.
<i>weight</i>	Weight to assign. Acceptable values are 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** Router configuration

Command History	Release	Modification
	10.0	This command was introduced.

**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 **match as-path** and **set weight** route-map commands override the weights assigned using the **neighbor weight** and **neighbor filter-list** commands.



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

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 sets the weight of all routes learned via 172.16.12.1 to 50:

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

Related Commands	Command	Description
	<b>neighbor distribute-list</b>	Distributes BGP neighbor information as specified in an access list.
	<b>neighbor filter-list</b>	Sets up a BGP filter.
	<b>neighbor peer-group (creating)</b>	Creates a BGP peer group.

## network (BGP)

To specify the list of networks for the Border Gateway Protocol (BGP) routing process, use this form of the **network** command in 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

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

### Defaults

No networks are specified.

### Command Modes

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.

### 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 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
<b>network backdoor</b>	Specifies a backdoor route to a BGP border router that will provide better information about the network.
<b>router bgps</b>	Configures the Border Gateway Protocol (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 router configuration mode. To remove an address from the list, use the **no** form of this command.

**network** *address* **backdoor**

**no network** *address* **backdoor**

<b>Syntax Description</b>	<i>address</i>	IP address of the network to which you want a backdoor route.
---------------------------	----------------	---

<b>Defaults</b>	No network is advertised.
-----------------	---------------------------

<b>Command Modes</b>	Router configuration
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	10.0	This command was introduced.

<b>Usage Guidelines</b>	A backdoor network is assigned an administrative distance of 200. The objective is to make Interior Gateway Protocol (IGP) learned routes preferred. A backdoor network is treated as a local network, except that it is not advertised. A network that is marked as a back door 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.
-------------------------	--

<b>Examples</b>	The following example configures network 10.108.0.0 as a local network and network 192.31.7.0 as a backdoor network:
-----------------	--

```
router bgp 109
 network 10.108.0.0
 network 192.31.7.0 backdoor
```

# router bgp

To configure the Border Gateway Protocol (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** *autonomous-system*

**no router bgp** *autonomous-system*

<b>Syntax Description</b>	<i>autonomous-system</i>	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

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	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
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>network (BGP)</b>	Specifies the list of networks for the BGP routing process.
	<b>timers bgp</b>	Adjusts BGP network timers.

# set as-path

To modify an autonomous system path for BGP routes, use the **set as-path** route map configuration command. 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	<b>tag</b>	Converts the tag of a route into an autonomous system path. Applies only when redistributing routes into BGP.
	<b>prepend</b> <i>as-path-string</i>	Appends the string following the keyword <b>prepend</b> to the as-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	<b>Release</b>	<b>Modification</b>
	11.0	This command was introduced.

**Usage Guidelines**

The only global BGP metric available to influence the best path selection is the AS-PATH length. By varying the length of the AS-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. This increases 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
  match as-path 2
  set as-path prepend 100 100 100
!
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
<b>match as-path</b>	Matches a BGP autonomous system path access list.
<b>match community-list</b>	Matches a BGP community.
<b>match interface</b>	Distributes routes that have their next hop out one of the interfaces specified.
<b>match ip address</b>	Distributes any routes that have a destination network number address permitted by a standard or extended access list, or performs policy routing on packets.
<b>match ip next-hop</b>	Redistributes any routes that have a next-hop router address passed by one of the access lists specified.
<b>match ip route-source</b>	Redistributes routes that have been advertised by routers and access servers at the address specified by the access lists.
<b>match metric</b>	Redistributes routes with the metric specified.
<b>match route-type</b>	Redistributes routes of the specified type.
<b>match tag</b>	Redistributes routes in the routing table that match the specified tags.
<b>route-map</b>	Defines the conditions for redistributing routes from one routing protocol to another, or enables policy routing.
<b>set automatic-tag</b>	Automatically computes the tag value in a route map configuration.
<b>set community</b>	Sets the BGP COMMUNITIES attribute.
<b>set level</b>	Indicates where to import routes.
<b>set local-preference</b>	Specifies a preference value for the autonomous system path.
<b>set metric</b>	Sets the metric value for a routing protocol.
<b>set metric-type</b>	Sets the metric type for the destination routing protocol.
<b>set next-hop</b>	Specifies the address of the next hop.
<b>set origin</b>	Sets the BGP origin code.
<b>set tag</b>	Sets the value of the destination routing protocol.
<b>set weight</b>	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** configuration command. To negate a previous **set comm-list delete** command, use the **no** form of this command.

**set comm-list *list-num* delete**

**no set comm-list *list-num* delete**

<b>Syntax Description</b>	<i>list-num</i>	A standard or extended community list number.
---------------------------	-----------------	---

<b>Defaults</b>	No communities are removed.
-----------------	-----------------------------

<b>Command Modes</b>	Router configuration
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	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 *comm*** 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 *comm***).

**Examples**

In the following example, the communities 100:10 and 100:20 (if present) will be deleted from updates received from 172.16.233.33. Also, except for 100:50, all communities beginning with 100: will be deleted from updates sent to 172.16.233.33.

```
router bgp 100
  neighbor 172.16.233.33 remote-as 120
  neighbor 172.16.233.33 route-map ROUTEMAPIN in
  neighbor 172.16.233.33 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
<b>set community</b>	Sets the BGP COMMUNITIES attribute.

# set community

To set the BGP COMMUNITIES attribute, use the **set community** command in route-map configuration mode. 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		
	<i>community-number</i>	Specifies that community number. Valid values are 1 to 4294967200, <b>no-export</b> , or <b>no-advertise</b> .
	<b>additive</b>	(Optional) Adds the community to the already existing communities.
	<b>none</b>	(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 a route map’s match criteria 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 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 an EBGP peer 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
<b>ip community-list</b>	Creates a community list for BGP and control access to it.
<b>match community-list</b>	Matches a BGP community.
<b>route-map</b>	Defines the conditions for redistributing routes from one routing protocol to another, or enables policy routing.
<b>set comm-list delete</b>	Removes communities from the community attribute of an inbound or outbound update.
<b>show ip bgp community</b>	Displays routes that belong to specified BGP communities.

# set dampening

To set the BGP route dampening factors, use the **set dampening** command in route-map configuration mode. 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		
<i>half-life</i>		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 1 to 45 minutes. The default is 15 minutes.
<i>reuse</i>		If the penalty for a flapping route decreases enough to fall below this value, the route is unsuppressed. The process of unsuppressing routes occurs at 10-second increments. The range of the reuse value is 1 to 20000; the default is 750.
<i>suppress</i>		A route is suppressed when its penalty exceeds this limit. The range is 1 to 20000; the default is 2000.
<i>max-suppress-time</i>		Maximum time (in minutes) a route can be suppressed. The range is 1 to 20000; the default is 4 times the <i>half-life</i> . If the <i>half-life</i> 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** 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 a route map’s match criteria are met. When all match criteria are met, all set actions are performed.

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 172.16.233.52 route-map tag in
```

### Related Commands

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

## 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** route map configuration command. 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]
```

<b>Syntax Description</b>	<i>ip-address</i>	IP address of the next hop to which packets are output. The next hop must be an adjacent router.
	<b>peer-address</b>	(Optional) Sets the next hop to be the BGP peering address.

**Defaults** This command is disabled by default.

**Command Modes** Route map configuration

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	11.0	This command was introduced.
	12.0	The keyword <b>peer-address</b> was added.

**Usage Guidelines** 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 **set ip next-hop** 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. This means that the same route map can be applied to multiple BGP peers to override third-party next hops.

When **set ip next-hop** 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. This command has finer granularity than the per-neighbor **neighbor next-hop-self** command, since you can set the next hop for some routes, but not others. The **neighbor next-hop-self** 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:

**set ip next-hop**  
**set interface**  
**set ip default next-hop**  
**set default interface**

### Examples

In the following example, packets with a Level 3 length of 3 to 50 bytes are output to the router at IP address 172.16.2.2:

```
interface serial 0
  ip policy route-map thataway
!
route-map thataway
  match length 3 50
  set ip next-hop 172.16.2.2
```

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 AS 300 for the router (10.1.1.1) in remote AS 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 AS 100 over their mutual connection to the LAN:

```
router bgp 200
neighbor 10.1.1.3 remote-as 100
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
<b>ip policy route-map</b>	Identifies a route map to use for local policy routing.
<b>match ip address</b>	Distributes any routes that have a destination network number address that is permitted by a standard or extended access list, or performs policy routing on packets.
<b>match length</b>	Bases policy routing on the Level 2 length of a packet.
<b>neighbor next-hop-self</b>	Disables next-hop processing of BGP updates on the router.
<b>route-map</b>	Defines the conditions for redistributing routes from one routing protocol to another, or enables policy routing.
<b>set default interface</b>	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.
<b>set interface</b>	Indicates where to output packets that pass a match clause of a route map for policy routing.
<b>set ip default next-hop</b>	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 MED value on prefixes advertised to EBGp neighbors to match the IGP metric of the next hop, use the **set metric 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**

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

**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 that corresponds to the IGP metric associated with the NEXT HOP of the route. This command applies to generated, iBGP-, and eBGP-derived routes.

If this command is used, multiple BGP speakers in a common AS can advertise different MEDs for a particular prefix. Also, note that if the IGP metric changes, BGP will not readvertise the route.

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 a route map’s match criteria are met. When all match criteria are met, all set actions are performed.

---

**Examples**

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

```
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
<b>route-map</b>	Defines the conditions for redistributing routes from one routing protocol to another, or enables policy routing.

# set origin

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 autonomous-system | incomplete}
```

```
no set origin {igp | egp autonomous-system | incomplete}
```

## Syntax Description

<b>igp</b>	Remote IGP.
<b>egp</b>	Local EGP.
<i>autonomous-system</i>	Remote autonomous system. This is an integer from 0 to 65535.
<b>incomplete</b>	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 a route map’s match criteria 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
<b>match as-path</b>	Matches a BGP autonomous system path access list.
<b>match community-list</b>	Matches a BGP community.
<b>match interface</b>	Distributes routes that have their next hop out one of the interfaces specified.
<b>match ip address</b>	Distributes any routes that have a destination network number address permitted by a standard or extended access list, or performs policy routing on packets.
<b>match ip next-hop</b>	Redistributes any routes that have a next-hop router address passed by one of the access lists specified.
<b>match ip route-source</b>	Redistributes routes that have been advertised by routers and access servers at the address specified by the access lists.
<b>match metric</b>	Redistributes routes with the metric specified.
<b>match route-type</b>	Redistributes routes of the specified type.
<b>match tag</b>	Redistributes routes in the routing table that match the specified tags.
<b>route-map</b>	Defines the conditions for redistributing routes from one routing protocol to another, or enables policy routing.
<b>set as-path</b>	Modifies an autonomous system path for BGP routes.
<b>set automatic-tag</b>	Automatically computes the tag value in a route map configuration.
<b>set community</b>	Sets the BGP COMMUNITIES attribute.
<b>set level</b>	Indicates where to import routes.
<b>set local-preference</b>	Specifies a preference value for the autonomous system path.
<b>set metric</b>	Sets the metric value for a routing protocol.
<b>set metric-type</b>	Sets the metric type for the destination routing protocol.
<b>set next-hop</b>	Specifies the address of the next hop.
<b>set tag</b>	Sets the value of the destination routing protocol.
<b>set weight</b>	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** *weight*

**no set weight** *weight*

<b>Syntax Description</b>	<i>weight</i>	Weight value. It can be an integer from 0 to 65535.
---------------------------	---------------	---

<b>Defaults</b>	The weight is not changed by the specified route map.
-----------------	---

<b>Command Modes</b>	Route-map configuration
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	10.0	This command was introduced.

<b>Usage Guidelines</b>	<p>You must have a match clause (even if it points to a “permit everything” list) if you want to set tags. 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 <b>neighbor</b> commands. In other words, the weights assigned with the <b>match as-path</b> and <b>set weight</b> route-map commands override the weights assigned using the <b>neighbor weight</b> and <b>neighbor filter-list</b> commands.</p>
-------------------------	--

<b>Examples</b>	<p>The following example sets the BGP weight for the routes matching the autonomous system path access list to 200:</p>
-----------------	---

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

## Related Commands

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

# show ip bgp

To display entries in the BGP routing table, use the **show ip bgp** command in EXEC mode.

**show ip bgp** [*network*] [*network-mask*] [*longer-prefixes*]

Syntax Description		
<i>network</i>	(Optional) Network number, entered to display a particular network in the BGP routing table.	
<i>network-mask</i>	(Optional) Displays all BGP routes matching the address/mask pair.	
<b>longer-prefixes</b>	(Optional) Displays route and more specific routes.	

**Command Modes** EXEC

Command History	Release	Modification
	10.0	This command was introduced.
	12.0	The display of prefix advertisement statistics was added.

## Examples

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

```
Router# show ip bgp
```

```
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 39 describes significant fields shown in the display.

Table 39 *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. *—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 session.
Origin codes	Indicates the 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 IGP and was advertised with a <b>network</b> router configuration command. e—Entry originated from 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 <b>set local-preference</b> 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.

The following is sample output from the **show ip bgp** command when you specify **longer-prefixes**:

```
Router# show ip bgp 172.16.0.0 255.255.0.0 longer-prefixes

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      8896             32768 ?
*                   172.16.72.30              0 109 108 ?
*> 172.16.1.0       172.16.72.30      8796             32768 ?
*                   172.16.72.30              0 109 108 ?
*> 172.16.11.0      172.16.72.30     42482            32768 ?
*                   172.16.72.30              0 109 108 ?
*> 172.16.14.0      172.16.72.30      8796             32768 ?
*                   172.16.72.30              0 109 108 ?
*> 172.16.15.0      172.16.72.30      8696             32768 ?
*                   172.16.72.30              0 109 108 ?
*> 172.16.16.0      172.16.72.30     1400             32768 ?
*                   172.16.72.30              0 109 108 ?
*> 172.16.17.0      172.16.72.30     1400             32768 ?
*                   172.16.72.30              0 109 108 ?
*> 172.16.18.0      172.16.72.30     8876             32768 ?
*                   172.16.72.30              0 109 108 ?
*> 172.16.19.0      172.16.72.30     8876             32768 ?
*                   172.16.72.30              0 109 108 ?
```

The following is sample output from the **show ip bgp** command, showing information for prefix 3.0.0.0:

```
show ip bgp 3.0.0.0
BGP routing table entry for 3.0.0.0/8, version 628
Paths: (1 available, best #1)
Advertised to peer-groups:
  ebgp
Advertised to non peer-group peers:
  172.16.232.162
109 65000 297 701 80
  172.16.233.56 from 172.16.233.56 (172.19.185.32)
  Origin incomplete, localpref 100, valid, external, best, ref 2
```



#### Note

If a prefix has not been advertised to any peer, the display shows “Not advertised to any peer.”

# 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** privileged command in EXEC mode.

## show ip bgp cidr-only

**Syntax Description** This command has no arguments or keywords.

**Command Modes** Privileged 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:

```
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 40 describes significant fields shown in the display.

**Table 40** *show ip bgp cidr-only Field Descriptions*

Field	Description
BGP table version is 220	Internal version number of the table. This number is incremented any time the table changes.
local router ID	An Internet address of the router.
Status codes	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 session.

Table 40 *show ip bgp cidr-only Field Descriptions (continued)*

Field	Description
Origin codes	<p>Indicates the 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:</p> <p>i—Entry originated from IGP and was advertised with a <b>network</b> router configuration command.</p> <p>e—Entry originated from EGP.</p> <p>?—Origin of the path is not clear. Usually, this is a router that is redistributed into BGP from an IGP.</p>
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, this is the value of the interautonomous system metric. This field is frequently not used.
LocPrf	Local preference value. Default is 100.
Weight	Weight of the route as set via autonomous system filters.
Path	<p>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.</p> <p>i—The entry was originated with the IGP and advertised with a <b>network</b> router configuration command.</p> <p>e—The route originated with EGP.</p> <p>?—The origin of the path is not clear. Usually this is a path that is redistributed into BGP from an IGP.</p>

# 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	<i>community-number</i>	Valid value is community number in the range 1 to 4294967200, <b>internet</b> , <b>no-export</b> , <b>local-as</b> , or <b>no-advertise</b> .
		You must enter the numerical communities before the well-known communities. For example, the following does not work:  <b>router#sh ip b community local-as 111:12345</b>  Use the following instead:  <b>router#sh ip b community 111:12345 local-as</b>
	<b>exact</b>	(Optional) Displays only routes that have exactly the same specified communities.

**Command Modes** EXEC

Command History	Release	Modification
	10.3	This command was introduced.
	12.0	The <b>local-as</b> community was added.

**Examples** The following is sample output from the **show ip bgp community** command:

```
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 41 describes significant fields shown in the display.

**Table 41** *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.
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 session.
Origin codes	Indicates the 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 IGP and was advertised with a <b>network</b> router configuration command. e—Entry originated from 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 <b>set local-preference</b> 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	<i>community-list-number</i>	Community list number in the range 1 to 99.
	<b>exact</b>	(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:

```
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 42 describes significant fields shown in the display.

**Table 42** *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 session.
Origin codes	Indicates the 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 IGP and was advertised with a <b>network</b> router configuration command. e—Entry originated from 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 <b>set local-preference</b> 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:

```
Router# show ip bgp dampened-paths
BGP table version is 10, local router ID is 172.16.232.182
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         172.16.232.177  00:18:4 100 ?
*d 12.0.0.0         172.16.232.177  00:28:5 100 ?
```

Table 43 describes the fields in the display.

**Table 43** *show ip bgp dampened-paths Field Descriptions*

Field	Description
BGP table version	Internal version number of the table. This number is incremented any time the table changes.
local router	IP address of the router where route dampening is enabled.
*d Network	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	AS-path of the route that is being dampened.

Related Commands	Command	Description
	<b>bgp dampening</b>	Enables BGP route dampening or change various BGP route dampening factors.
	<b>clear ip bgp dampening</b>	Clears BGP route dampening information and unsuppress 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*

<b>Syntax Description</b>	<i>access-list-number</i>	Number of an autonomous system path access list. It can be a number from 1 to 199.
---------------------------	---------------------------	--

<b>Command Modes</b>	EXEC
----------------------	------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	10.0	This command was introduced.

**Examples** The following is sample output from the **show ip bgp filter-list** command:

```
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 44 describes significant fields shown in the display.

**Table 44** *show ip bgp filter-List Field Descriptions*

Field	Description
BGP table version	Internal version number of the table. This number is incremented any time the table changes.
local router ID	An Internet address of the access server.
Status codes	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 session.
Origin codes	Indicates the 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 IGP and was advertised with a <b>network</b> router configuration command. e—Entry originated from 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, this is the value of the interautonomous system metric. This field is frequently not used.
LocPrf	Local preference value. Default 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 <b>network</b> 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 list} | {address mask [longer-prefix]}
```

Syntax Description		
<b>regexp</b> <i>regexp</i>	(Optional)	Clears flap statistics for all the paths that match the regular expression.
<b>filter-list</b> <i>list</i>	(Optional)	Clears flap statistics for all the paths that pass the access list.
<i>address</i>	(Optional)	Clears flap statistics for a single entry at this IP address.
<i>mask</i>	(Optional)	Network mask applied to the <i>address</i> .
<b>longer-prefix</b>	(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:

```
Router# show ip bgp flap-statistics
BGP table version is 10, local router ID is 172.16.232.182
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         172.16.232.177 4      00:13:31 00:18:10 100
*d 12.0.0.0         172.16.232.177 4      00:02:45 00:28:20 100
```

Table 45 describes the significant fields in the display.

*Table 45 show ip bgp flap-statistics Field Descriptions*

Field	Description
BGP table version	Internal version number of the table. This number is incremented any time the table changes.
local router ID	IP address of the router where route dampening is enabled.
Network	Route to the network indicated is dampened.
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	AS-path of the route that is being dampened.

#### Related Commands

Command	Description
<b>bgp dampening</b>	Enables BGP route dampening or change various BGP route dampening factors.
<b>clear ip bgp flap-statistics</b>	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:

```
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         172.16.232.55    0           0 300 88 90 99 ?
*>                 172.16.232.52    2222        0 400 ?
*  172.16.0.0       172.16.232.55    0           0 300 90 99 88 200 ?
*>                 172.16.232.52    2222        0 400 ?
*  200.200.199.0    172.16.232.55    0           0 300 88 90 99 ?
*>                 172.16.232.52    2222        0 400 ?
```

# 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 [address] [received-routes | routes | advertised-routes | {paths
regular-expression} | dampened-routes]
```

Syntax Description		
<i>address</i>	(Optional) Address of the neighbor whose routes you have learned from. If you omit this argument, all neighbors are displayed.	
<b>received-routes</b>	(Optional) Displays all received routes (both accepted and rejected) from the specified neighbor.	
<b>routes</b>	(Optional) Displays all routes that are received and accepted. This is a subset of the output from the <b>received-routes</b> keyword.	
<b>advertised-routes</b>	(Optional) Displays all the routes the router has advertised to the neighbor.	
<b>paths</b> <i>regular-expression</i>	(Optional) Regular expression that is used to match the paths received.	
<b>dampened-routes</b>	(Optional) Displays the dampened routes to the neighbor at the IP address specified.	

Command Modes	
	EXEC

Command History	Release	Modification
	10.0	This command was introduced.
	11.2	The <b>received-routes</b> keyword was added.

**Examples**

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

```
Router# show ip bgp neighbors 172.16.232.178

BGP neighbor is 172.16.232.178, remote AS 10, external link
Index 1, Offset 0, Mask 0x2
  Inbound soft reconfiguration allowed
  BGP version 4, remote router ID 172.16.232.178
  BGP state = Established, table version = 27, up for 00:06:12
  Last read 00:00:12, hold time is 180, keepalive interval is 60 seconds
  Minimum time between advertisement runs is 30 seconds
  Received 19 messages, 0 notifications, 0 in queue
  Sent 17 messages, 0 notifications, 0 in queue
  Inbound path policy configured
  Route map for incoming advertisements is testing
  Connections established 2; dropped 1
Connection state is ESTAB, I/O status: 1, unread input bytes: 0
Local host: 172.16.232.181, Local port: 11002
Foreign host: 172.16.232.178, Foreign port: 179

Enqueued packets for retransmit: 0, input: 0, saved: 0

Event Timers (current time is 0x530C294):
Timer           Starts    Wakeups      Next
Retrans         12         0            0x0
TimeWait        0          0            0x0
AckHold         12         10           0x0
SendWnd         0          0            0x0
KeepAlive       0          0            0x0
GiveUp          0          0            0x0
PmtuAger        0          0            0x0

iss: 133981889  snduna: 133982166  sndnxt: 133982166   sndwnd: 16108
irs: 3317025518 rcvnxt: 3317025810 rcvwnd: 16093  delrcvwnd: 291

SRTT: 441 ms, RTTO: 2784 ms, RTV: 951 ms, KRTT: 0 ms
minRTT: 0 ms, maxRTT: 300 ms, ACK hold: 300 ms
Flags: higher precedence, nagle

Datagrams (max data segment is 1460 bytes):
Rcvd: 15 (out of order: 0), with data: 12, total data bytes: 291
Sent: 23 (retransmit: 0), with data: 11, total data bytes: 276
```

Table 46 describes the fields shown in the display.

**Table 46** *show ip bgp neighbors Field Descriptions*

Field	Description
BGP neighbor	IP address of the BGP neighbor and its autonomous system number. If the neighbor is in the same autonomous system as the router, then the link between them is internal; otherwise, it is considered external.
BGP version	BGP version being used to communicate with the remote router; the neighbor's router ID (an IP address) is also specified.
BGP state	Internal state of this BGP connection.
table version	Indicates that the neighbor has been updated with this version of the primary BGP routing table.
up for	Amount of time that the underlying TCP connection has been in existence.

*Table 46 show ip bgp neighbors Field Descriptions (continued)*

Field	Description
Last read	Time that BGP last read a message from this neighbor.
hold time	Maximum amount of time that can elapse between messages from the peer.
keepalive interval	Time period between sending keepalive packets, which help ensure that the TCP connection is up.
Received	Number of total BGP messages received from this peer, including keepalives.
notifications	Number of error messages received from the peer.
Sent	Total number of BGP messages that have been sent to this peer, including keepalives.
notifications	Number of error messages the router has sent to this peer.
Connections established	Number of times the router has established a TCP connection and the two peers have agreed speak BGP with each other.
dropped	Number of times that a good connection has failed or been taken down.
Connection state	State of BGP peer.
unread input bytes	Number of bytes of packets still to be processed.
Local host, Local port	Peering address of local router, plus port.
Foreign host, Foreign port	Neighbor's peering address.
Event Timers	Table displays the number of starts and wakeups for each timer.
iss	Initial send sequence number.
snduna	Last send sequence number the local host sent but has not received an acknowledgment for.
sndnxt	Sequence number the local host will send next.
sndwnd	TCP window size of the remote host.
irs	Initial receive sequence number.
rcvnxt	Last receive sequence number the local host has acknowledged.
rcvwnd	Local host's TCP window size.
delrecvwnd	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 retransmitted.

**Table 46** *show ip bgp neighbors Field Descriptions (continued)*

Field	Description
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 in order to piggyback data on it.
Flags	IP precedence of the BGP packets.
Datagrams: Rcvd	Number of update packets received from neighbor.
with data	Number of update packets received with data.
total data bytes	Total bytes of data.
Sent	Number of update packets sent.
with data	Number of update packets with data sent.
total data bytes	Total number of data bytes.

The following is sample output from the **show ip bgp neighbors** command with **advertised-routes**:

```
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
```

The following is sample output from the **show ip bgp neighbors** command with **routes**:

```
Router# show ip bgp neighbors 172.16.232.178 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
*> 10.0.0.0         172.16.232.178     40           0 10 ?
*> 10.2.0.0         172.16.232.178     40           0 10 ?
```

Table 47 describes the fields shown in the display.

**Table 47** *show ip bgp neighbors Advertised-Routes and Routes 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 47 show ip bgp neighbors Advertised-Routes and Routes Field Descriptions (continued)*

Field	Description
Status codes	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 session.
Origin codes	Indicates the 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 IGP and was advertised with a <b>network</b> router configuration command. e—Entry originated from 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 <b>set local-preference</b> 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.

The following is sample output from the **show ip bgp neighbors** command with **paths**:

```
Router# show ip bgp neighbors 172.16.232.178 paths ^10

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

# 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:

```
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 48 describes significant fields shown in the display.

**Table 48** *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 AS_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** [*tag*] [*summary*]

Syntax Description		
<i>tag</i>	(Optional)	Displays information about that specific peer group.
<b>summary</b>	(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 the **show ip bgp peer-group** command:

```
Router# show ip bgp peer-group0 internal
BGP neighbor is internal, peer-group leader
  BGP version 4
  Minimum time between advertisement runs is 5 seconds
  Incoming update AS path filter list is 2
  Outgoing update AS path filter list is 1
  Route map for outgoing advertisements is set-med
```

# show ip bgp regexp

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

**show ip bgp regexp** *regular-expression*

<b>Syntax Description</b>	<i>regular-expression</i>	Regular expression to match the BGP autonomous system paths.
---------------------------	---------------------------	--

<b>Command Modes</b>	Privileged EXEC
----------------------	-----------------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	10.0	This command was introduced.

**Examples** The following is sample output from the **show ip bgp regexp** command:

```
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 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	The <b>PfxRcd</b> and <b>Admin</b> entries were added.

**Examples** The following is sample output from the **show ip bgp summary** command:

```
Router# show ip bgp summary
```

```
BGP table version is 717029, main routing table version 717029
19073 network entries (37544 paths) using 3542756 bytes of memory
691 BGP path attribute entries using 57200 bytes of memory
```

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd
193.0.16.1	4	1755	32642	2973	717029	0	0	1:27:11	
193.0.17.1	4	1755	4790	2973	717029	0	0	1:27:51	
193.0.18.1	4	1755	7722	3024	717029	0	0	1:28:13	
193.0.19.1	4	1755	0	0	0	0	0	2d02	Active
193.0.20.1	4	1755	3673	3049	717029	0	0	2:50:10	Idle (PfxRcd)
193.0.21.1	4	1755	3741	3048	717029	0	0	12:24:43	
193.0.22.1	4	1755	33129	3051	717029	0	0	12:24:48	
193.0.23.1	4	1755	0	0	0	0	0	2d02	Active
193.0.24.1	4	1755	0	0	0	0	0	2d02	Active
193.0.25.1	4	1755	0	0	0	0	0	2d02	Active
193.0.26.1	4	1755	0	0	0	0	0	2d02	Active
193.0.27.1	4	1755	4269	3049	717029	0	0	12:39:33	
193.0.28.1	4	1755	3037	3050	717029	0	0	2:08:15	
172.16.72.24	4	1878	11635	13300	717028	0	0	0:50:39	
172.16.72.36	4	1001	0	0	0	0	0	never	Idle (Admin)

Table 49 describes significant fields shown in the display

**Table 49** show ip bgp summary Field Descriptions

Field	Description
BGP table version	Internal version number of BGP database.
main routing table version	Last version of BGP database that was injected into main routing table.
Neighbor	IP address of a neighbor.

Table 49 *show ip bgp summary Field Descriptions (continued)*

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

## Related Commands

Command	Description
<b>neighbor maximum-prefix</b>	Controls how many prefixes can be received from a neighbor.
<b>neighbor shutdown</b>	Disables a neighbor or peer group.
<b>show ip bgp summary</b>	Display the status of all BGP connections.

# synchronization

To enable the synchronization between BGP and your IGP, use the **synchronization** command in 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** Router configuration

---

Command History	Release	Modification
	10.0	This command was introduced.

---



---

**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 **synchronization** if there are routers in the autonomous system that do not speak BGP.

---

**Examples** The following example enables a router to advertise a network route without waiting for the IGP:

```
router bgp 120
  no synchronization
```

# 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 router configuration mode. To disable this function, use the **no** form of the command.

**table-map** *route-map-name*

**no table-map** *route-map-name*

## Syntax Description

<i>route-map-name</i>	Route-map name, from the <b>route-map</b> command.
-----------------------	--

## Defaults

This command is disabled by default.

## Command Modes

Router configuration

## Command History

Release	Modification
10.0	This command was introduced.

## 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 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
```

Related Commands	Command	Description
	<b>match as-path</b>	Matches a BGP autonomous system path access list.
	<b>match ip address</b>	Distributes any routes that have a destination network number address that is permitted by a standard or extended access list, or performs policy routing.
	<b>match ip next-hop</b>	Redistributes any routes that have a next-hop router address passed by one of the access lists specified.
	<b>route-map</b>	Defines the conditions for redistributing routes form 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		
	<i>keepalive</i>	Frequency, in seconds, with which the Cisco IOS software sends <i>keepalive</i> messages to its peer. The default is 60 seconds.
	<i>holdtime</i>	Interval, in seconds, after not receiving a <i>keepalive</i> 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 *holdtime* timer to 210 seconds:

```
timers bgp 70 210
```

Related Commands	Command	Description
	<b>clear ip bgp peer-group</b>	Removes all the members of a BGP peer group.
	<b>router bgp</b>	Configures the Border Gateway Protocol (BGP) routing process.
	<b>show ip bgp</b>	Display entries in the BGP routing table.

