



S Commands

This chapter describes the Cisco NX-OS unicast routing commands that begin with the letter S, except for the **show** commands.

set as-path

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

```
set as-path { tag | { prepend as-num[...as-num] | last-as num } }
```

```
no as-path { tag | { prepend as-num[...as-num] | last-as num } }
```

Syntax Description

tag	Converts the tag of a route into an autonomous system path. Applies only when redistributing routes into BGP.
prepend as-num	Appends the specified AS number to the autonomous system path of the route that is matched by the route map. Applies to both inbound and outbound BGP route maps. Range: 1 to 65535. You can configure more than one AS number.
last-as num	Prepends the last AS numbers to the as-path. Range: 1 to 10.

Defaults

Autonomous system path is not modified.

Command Modes

Route-map configuration (config-route-map)

Supported User Roles

network-admin
vdc-admin

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Command History

Release	Modification
4.0(1)	This command was introduced.

Usage Guidelines

You must enter the **feature pbr** global configuration mode command to enable PBR before entering the **route-map** command.

Use the **route-map** command to enter route-map configuration mode. Once you enter the **route-map** command, the prompt changes to the following:

```
switch(config-route-map)#
```

Once you enter route-map configuration mode, you can enter the **set** command.

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

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

Examples

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

```
switch(config)# route-map test1
switch(config-route-map)# set as-path tag
```

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

```
switch(config)# route-map test1
switch(config-route-map)# match as-path 1
switch(config-route-map)# set as-path prepend 100
!

switch(config)# router bgp 100
switch(config-router)# neighbor 10.108.1.1 remote-as 200
switch(config-router-neighbor)# address-family ipv4 unicast
switch(config-router-neighbor-af)# route-map set-as-path test1 out
```

Related Commands

Command	Description
match as-path	Matches a BGP autonomous system path access list.
match community	Matches a BGP community.
match ip address	Distributes any routes that have a destination network number address that is permitted by a standard or expanded access list, and performs policy routing on packets.
match ip next-hop	Redistributes any routes that have a next hop router address passed by one of the access lists specified.
match ip route-source	Redistributes routes that have been advertised by routers and access servers at the address specified by the access lists.
match metric	Redistributes routes with the metric specified.

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Command	Description
match tag	Redistributes routes in the routing table that match the specified tags.
route-map (IP)	Defines the conditions for redistributing routes from one routing protocol into another, or enables policy routing.
set as-path	Modifies an autonomous system path for BGP routes.
set community	Sets the BGP communities attribute.
set level	Indicates where to import routes.
set local-preference	Specifies a preference value for the autonomous system path.
set metric	Sets the metric value for a routing protocol.
set metric-type	Sets the metric type for the destination routing protocol.
set next-hop	Specifies the address of the next hop.
set tag	Sets a tag value of the destination routing protocol.
set weight	Specifies the BGP weight for the routing table.

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set comm-list delete

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

set comm-list *community-list-name* **delete**

no set comm-list

Syntax Description	<i>community-list-name</i>	A standard or expanded community list name. The name is any alphanumeric string up to 63 characters.
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Command Default	No communities are removed.
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Command Modes	Route-map configuration (config-route-map)
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Supported User Roles	network-admin vdc-admin
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Command History	Release	Modification
	4.0(1)	This command was introduced.

Usage Guidelines

This **set** route-map configuration 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 Border Gateway Protocol (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:

```
switch(config)# ip community-list 500 permit 10:10
switch(config)# ip community-list 500 permit 10:20
```

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

```
switch(config)# ip community-list 500 permit 10:10 10:20
```

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

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This command does not require a license.

Examples

The following example shows how to remove communities from the community attribute of an inbound or outbound update:

```
switch(config)# route-map test1
switch(config-route-map)# match as-path 1
switch(config-route-map)# set comm-list list1 delete
```

Related Commands

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

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set community

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

```
set community { none | { aa:nn [...aa:nn] | additive | local-as | no-advertise | no-export }
```

```
no set community { none | { aa:nn | additive | local-as | no-advertise | no-export }
```

Syntax	Description
<i>aa:nn</i>	(Optional) Autonomous system (AS) number and network number entered in the 4-byte new community format. This value is configured with two 2-byte numbers separated by a colon. A number from 1 to 65535 can be entered each 2-byte number. A single community can be entered or multiple communities can be entered, each separated by a space. You can configure one or more AS numbers. You can configure one or more keywords.
additive	(Optional) Adds to existing community. You can configure one or more keywords.
local-AS	(Optional) Specifies the local-as community (well-known community). Routes with community are advertised to only peers that are part of the local autonomous system or to only peers within a subautonomous system of a confederation. These routes are not advertised external peers or to other subautonomous systems within a confederation. You can configure one or more keywords.
no-advertise	(Optional) Specifies the no-advertise community (well-known community). Routes with this community are not advertised to any peer (internal or external). You can configure one or more keywords.
no-export	(Optional) Specifies the no-export community (well-known community). Routes with this community are advertised to only peers in the same autonomous system or to only other subautonomous systems within a confederation. These routes are not advertised to external peers. You can configure one or more keywords.
none	(Optional) Specifies the no community attribute. You cannot configure any other keyword if you configure the none keyword.

Command Default No BGP communities attributes exist.

Command Modes Route-map configuration (config-route-map)

Supported User Roles network-admin
vdc-admin

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Command History	Release	Modification
	4.0(1)	This command was introduced.

Usage Guidelines

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

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

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

This command does not require a license.

Examples

In the following example, routes that pass the autonomous system path access list 1 have the community set to 109:02 and 33:40. Routes that pass the autonomous system path access list 2 have the community set to no-export (these routes will not be advertised to any external BGP [eBGP] peers).

```
switch(config)# route-map test1 10 permit
switch(config-route-map)# match as-path 1
switch(config-route-map)# set community 109:02 33:40
switch(config-route-map)# exit
switch(config)# route-map test1 20 permit
switch(config-route-map)# match as-path 2
switch(config-route-map)# set community no-export
```

In the following similar example, routes that pass the autonomous system path access list 1 have the community set to 109:30. Routes that pass the autonomous system path access list 2 have the community set to local-as (the router will not advertise this route to peers outside the local autonomous system).

```
switch(config)# route-map test1 10 permit
switch(config-route-map)# match as-path 1
switch(config-route-map)# set community 109:30 additive
switch(config-route-map)# exit
switch(config)# route-map test1 20 permit
switch(config-route-map)# match as-path 2
switch(config-route-map)# set community local-as
```

Related Commands

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

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set dampening

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

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

no set dampening

Syntax Description		
<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. Range: 1 to 45. Default: 15.
<i>reuse</i>		Unsuppresses the route if the penalty for a flapping route decreases enough to fall below this value. The process of unsuppressing routes occurs at 10-second increments. Range: 1 to 20000. Default: 750.
<i>suppress</i>		Suppresses a route when its penalty exceeds this limit. Range: 1 to 20000. Default: 2000.
<i>max-suppress-time</i>		Maximum time (in minutes) a route can be suppressed. Range: 1 to 255. Default: Four times the <i>half-life</i> value. If the <i>half-life</i> value is allowed to default, the maximum suppress time defaults to 60 minutes.

Command Default This command is disabled by default.

Command Modes Route-map configuration (config-route-map)

Supported User Roles network-admin
vdc-admin

Command History	Release	Modification
	4.0(1)	This command was introduced.

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

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

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This command does not require a license.

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:

```
switch(config)# route-map test1 10 permit
switch(config-route-map)# set dampening 30 1500 10000 120
```

Related Commands

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

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set forwarding-address

To set the OSPF forwarding address for redistributed type-5 LSAs, use the **set forwarding-address** route-map configuration mode command. To remove the address, use the **no** form of this command.

set forwarding-address

no forwarding-address

Syntax Description This command has no arguments or keywords.

Command Default No forwarding address is set as a default.

Command Modes Route-map configuration (config-route-map)

Supported User Roles network-admin
vdc-admin

Command History	Release	Modification
	4.0(1)	This command was introduced.

Usage Guidelines This command is used by the Open Shortest Path First (OSPF) to set the forwarding address in the for the redistributed type-5 LSAs. The value of the forwarding address specified by the autonomous system boundary router (ASBR) can be either 0.0.0.0 or non-zero. The 0.0.0.0 address indicates that the originating router (the ASBR) is the next hop. The forwarding address is determined by these conditions: The forwarding address is set to 0.0.0.0 if the ASBR redistributes routes and OSPF is not enabled on the next hop interface for those routes. This is true in the figure if Router 1 does not have OSPF enabled on the Ethernet interface.

All of the following conditions must be met to set the forwarding address field to a non-zero address:

- OSPF is enabled on the ASBR's next hop interface.
- ASBR's next hop interface is non-passive under OSPF.
- ASBR's next hop interface is not point-to-point.
- ASBR's next hop interface is not point-to-multipoint.

Any other conditions besides those listed previously, set the forwarding address to 0.0.0.0.

This command does not require a license.

Examples The following example shows how to set the forwarding address:

```
switch(config)# route-map test1 10 permit
```

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```
switch(config-route-map) # set forwarding-address
```

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

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set ip default next-hop

To indicate where to output packets that pass a match clause of a route map for policy routing and for which the Cisco NX-OS software has no explicit route to a destination, use the **set ip default next-hop** command in route-map configuration mode. To delete an entry, use the **no** form of this command.

```
set ip default next-hop ip-address [...ip-address] [load-share]
```

```
no set ip default next-hop ip-address [...ip-address]
```

Syntax Description	<i>ip-address</i>	IP address of the next hop to which packets are output. The next hop must be an adjacent router. You can configure up to 32 IP addresses.
	load-share	(Optional) Enables load sharing.

Command Default This command is disabled by default.

Command Modes Route-map configuration (config-route-map)

Supported User Roles network-admin
vdc-admin

Command History	Release	Modification
	4.0(1)	This command was introduced.

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

Use this command to provide certain users a different default route. If the software has no explicit route for the destination in the packet, then it routes the packet to this next hop. The first next hop specified with the **set ip default next-hop** command needs to be adjacent to the router. The optional specified IP addresses are tried in turn.

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.

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

1. **set ip next-hop**
2. **set ip default next-hop**



Note

The **set ip next-hop** and **set ip default next-hop** are similar commands but have a different order of operations. Configuring the **set ip next-hop** command causes the system to use policy routing first and then use the routing table. Configuring the **set ip default next-hop** command causes the system to use the routing table first and then policy route the specified next hop.

This command does not require a license.

Examples

The following example provides two sources with equal access to two different service providers. Packets arriving on asynchronous interface 1 from the source 10.1.1.1 are sent to the router at 172.16.6.6 if the software has no explicit route for the destination of the packet. Packets arriving from the source 10.2.2.2 are sent to the router at 172.17.7.7 if the software has no explicit route for the destination of the packet.

```
switch(config)# access-list 1 permit ip 10.1.1.1 0.0.0.0
switch(config)# access-list 2 permit ip 10.2.2.2 0.0.0.0
switch(config)# interface async 1
switch(config-if)# ip policy route-map equal-access
switch(config-route-map)# route-map equal-access permit 10
switch(config-route-map)# match ip address 1
switch(config-route-map)# set ip default next-hop 172.16.6.6
switch(config-route-map)# route-map equal-access permit 20
switch(config-route-map)# match ip address 2
switch(config-route-map)# set ip default next-hop 172.17.7.7
switch(config-route-map)# route-map equal-access permit 30
```

Related Commands

Command	Description
match as-path	Matches a BGP autonomous system path access list.
match community	Matches a BGP community.
match ip address	Distributes any routes that have a destination network number address that is permitted by a standard or expanded access list, and performs policy routing on packets.
match ip next-hop	Redistributes any routes that have a next hop router address passed by one of the access lists specified.
match ip route-source	Redistributes routes that have been advertised by routers and access servers at the address specified by the access lists.
match metric	Redistributes routes with the metric specified.
match tag	Redistributes routes in the routing table that match the specified tags.
route-map (IP)	Defines the conditions for redistributing routes from one routing protocol into another, or enables policy routing.
set as-path	Modifies an autonomous system path for BGP routes.
set community	Sets the BGP communities attribute.

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Command	Description
set level	Indicates where to import routes.
set local-preference	Specifies a preference value for the autonomous system path.
set metric	Sets the metric value for a routing protocol.
set metric-type	Sets the metric type for the destination routing protocol.
set next-hop	Specifies the address of the next hop.
set tag	Sets a tag value of the destination routing protocol.
set weight	Specifies the BGP weight for the routing table.

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set ip next-hop

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

```
set ip next-hop {ip-address [... ip-address] [load-share] | peer-address}
```

```
no set ip next-hop {ip-address [... ip-address] [load-share] | peer-address}
```

Syntax Description	
<i>ip-address</i>	IP address of the next hop to which packets are output. It need not be an adjacent router. You can configure one or more IP addresses.
load-share	(Optional) Enables load sharing.
peer-address	Sets the next hop to be the BGP peering address.

Command Default This command is disabled by default.

Command Modes Route-map configuration (config-route-map)

Supported User Roles network-admin
vdc-admin

Command History	Release	Modification
	4.0(1)	This command was introduced.

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

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

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

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

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When the **set ip next-hop** command is used with the **peer-address** keyword in an outbound route map of a BGP peer, the next hop of the advertised matching routes will be set to be the peering address of the local router, thus disabling the next hop calculation. The **set ip next-hop** command has finer granularity than the (per-neighbor) **neighbor next-hop-self** command, because you can set the next hop for some routes, but not others. The **neighbor next-hop-self** command sets the next hop for all routes sent to that neighbor.

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

1. **set ip next-hop**
2. **set ip default next-hop**

This command does not require a license.

Examples

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

```
switch(config)# router bgp 200
switch(config-router)# neighbor 10.1.1.3 remote-as 300
switch(config-router)# neighbor 10.1.1.3 route-map set-peer-address out
switch(config-router)# neighbor 10.1.1.1 remote-as 100
!
switch(config)# route-map set-peer-address permit 10
switch(config-route-map)# set ip next-hop peer-address
```

Related Commands

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

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set level

To indicate where to import routes, use the **set level** command in route-map configuration mode. To delete an entry, use the **no** form of this command.

```
set level {level-1 | level-2 | level-1-2}
```

```
no set level {level-1 | level-2 | level-1-2}
```

Syntax Description	level-1	Imports routes into a Level 1 area.
	level-2	Imports routes into a Level 2 subdomain.
	level-1-2	Imports routes into Level 1 and Level 2.

Command Default This command is disabled by default.

Command Modes Route-map configuration (config-route-map)

Supported User Roles network-admin
vdc-admin

Command History	Release	Modification
	4.0(1)	This command was introduced.

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

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

This command does not require a license.

Examples In the following example, routes will be imported into the Level 1 area:

```
switch(config-router)# route-map testcase
switch(config-route-map)# set level level-1
```

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

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set local-preference

To specify a preference value for the autonomous system path, use the **set local-preference** command in route-map configuration mode. To delete an entry, use the **no** form of this command.

set local-preference *number-value*

no set local-preference *number-value*

Syntax Description	<i>number-value</i>	Preference value. Range: 0 to 4294967295. Default: 100.
--------------------	---------------------	---

Command Default	Preference value of 100 by default.
-----------------	-------------------------------------

Command Modes	Route-map configuration (config-route-map)
---------------	--

Supported User Roles	network-admin vdc-admin
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Command History	Release	Modification
	4.0(1)	This command was introduced.

Usage Guidelines	<p>The preference is sent only to all routers in the local autonomous system.</p> <p>You must have a match clause (even if it points to a “permit everything” list) if you want to set tags.</p> <p>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 <i>match criteria</i>—the conditions under which redistribution is allowed for the current route-map command. The set commands specify the <i>set actions</i>—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.</p>
------------------	---

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

You can change the default preference value with the **bgp default local-preference** command.

This command does not require a license.

Examples	The following example sets the local preference to 100 for all routes that are included in access list 1:
----------	---

```
switch(config-router)# route-map map-preference
switch(config-route-map)# match as-path 1
switch(config-route-map)# set local-preference 100
```

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

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set metric

To set the metric value for a routing protocol, use the **set metric** command in route-map configuration mode. To return to the default metric value, use the **no** form of this command.

set metric *metric-value* [*delay-metric reliability-metric bandwidth-metric mtu*]

no set metric *metric-value*

Syntax Description		
<i>metric-value</i>		Metric value or bandwidth in Kbits per second. Range: 0 to 4294967295.
<i>delay-metric</i>		(Optional) Interior Gateway Routing Protocol (IGRP) delay metric, in 10 microsecond units. Range: 1 to 4294967295.
<i>reliability-metric</i>		IGRP reliability metric. Range: 0 to 255.
<i>bandwidth-metric</i>		IGRP effective bandwidth metric (loading) Range: 1 to 255.
<i>mtu</i>		IGRP maximum transmission unit (MTU) of the path. Range: 1 to 4294967295.

Command Default The dynamically learned metric value.

Command Modes Route-map configuration (config-route-map)

Supported User Roles network-admin
vdc-admin

Command History	Release	Modification
	4.0(1)	This command was introduced.

Usage Guidelines



Note

We recommend that you consult your Cisco technical support representative before changing the default value.

When entering the *reliability-metric*, the *bandwidth-metric*, and the *bandwidth-metric* arguments, 255 means 100 percent reliable.

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.

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

This command does not require a license.

Examples

The following example sets the metric value for the routing protocol to 100:

```
switch(config)# route-map set-metric
switch(config-route-map)# set metric 100
```

Related Commands

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

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set metric-type

To set the metric type for the destination routing protocol, use the **set metric-type** command in route-map configuration mode. To return to the default, use the **no** form of this command.

```
set metric-type {internal | external | type-1 | type-2}
```

```
no set metric-type {internal | external | type-1 | type-2}
```

Syntax Description

internal	Specifies the Intermediate System-to-Intermediate System (IS-IS) internal metric, or the Interior Gateway Protocol (IGP) metric as the multi-exit discriminator (MED) for BGP.
external	Specifies the IS-IS external metric.
type-1	Specifies the Open Shortest Path First (OSPF) external Type 1 metric.
type-2	Specifies the OSPF external Type 2 metric.

Command Default

This command is disabled by default.

Command Modes

Route-map configuration (config-route-map)

Supported User Roles

network-admin
vdc-admin

Command History

Release	Modification
4.0(1)	This command was introduced.

Usage Guidelines

Use the **route-map** global configuration command with **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 the match criteria of a route map are met. When all match criteria are met, all set actions are performed.



Note

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

This command does not require a license.

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Examples

The following example sets the metric type of the destination protocol to OSPF external Type 1:

```
switch(config)# route-map map-type
switch(config-route-map)# set metric-type type-1
```

Related Commands

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

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set origin

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

```
set origin {egp as-num [:as-num] | igp | incomplete}
```

```
no set origin
```

Syntax Description

egp <i>as-num</i> [: <i>as-num</i>]	Specifies the AS number for a remote exterior gateway protocol (EGP) system. You can specify the AS number as a 2-byte integer, or a 4-byte integer in aa:nn format. Range is from 1 to 65535.
igp	Specifies a local interior gateway protocol (IGP) system.
incomplete	Specifies an unknown heritage.

Command Default

Default origin, based on route in main IP routing table.

Command Modes

Route-map configuration (config-route-map)

Supported User Roles

network-admin
vdc-admin

Command History

Release	Modification
4.0(1)	This command was introduced.

Usage Guidelines

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

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

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

This command does not require a license.

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Examples

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

```
switch(config)# route-map set_origin
switch(config-route-map)# match as-path 10
switch(config-route-map)# set origin igp
```

Related Commands

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

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set tag

To set a tag value of the destination routing protocol, use the **set tag** command in route-map configuration mode. To delete the entry, use the **no** form of this command.

```
set tag tag-value
```

```
no set tag tag-value
```

Syntax Description	<i>tag-value</i>	Name for the tag. Integer from 0 to 4294967295.
---------------------------	------------------	---

Command Default	If not specified, the default action is to <i>forward</i> the tag in the source routing protocol onto the new destination protocol.
------------------------	---

Command Modes	Route-map configuration (config-route-map)
----------------------	--

SupportedUserRoles	network-admin vdc-admin
---------------------------	----------------------------

Command History	Release	Modification
	4.0(1)	This command was introduced.

Usage Guidelines	<p>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 <i>match criteria</i>—the conditions under which redistribution is allowed for the current route-map command. The set commands specify the <i>set actions</i>—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.</p>
-------------------------	--

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

This command does not require a license.

Examples	The following example sets the tag value of the destination routing protocol to 5:
-----------------	--

```
switch(config)# route-map test
switch(config-route-map)# set tag 5
```

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

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set vrf

To enable virtual routing/forwarding instance (VRF) selection within a route map for policy-based routing VRF selection, use the **set vrf** command in route-map configuration mode. To disable VRF selection within a route map, use the **no** form of this command.

```
set vrf {vrf-name | default | management}
```

```
no set vrf [vrf-name | default | management]
```

Syntax Description

<i>vrf-name</i>	Name assigned to the VRF.
default	Sets the VRF to the default VRF.
management	Sets the VRF to the management VRF.

Command Default

No default behavior or values

Command Modes

Route-map configuration (config-route-map)

Supported User Roles

network-admin
vdc-admin

Command History

Release	Modification
4.0(1)	This command was introduced.

Usage Guidelines

The **set vrf** route-map configuration command was introduced with the MPLS VPN—VRF Selection using Policy Based Routing feature to provide a PBR mechanism for VRF selection. This command is used to enable VRF selection by policy routing packets through a route map. The route map is attached to the incoming interface. Match criteria is defined in an IP access list or in an IP prefix list. Match criteria can also be defined based on packet length with the **match length** route map command. The VRF must be defined prior to the configuration of this command, and the **ip policy route-map** interface configuration command must be configured to enable policy routing under the interface or subinterface. If the VRF is not defined or if policy routing is not enabled, an error message will be printed in the console when you attempt to configure the **set vrf** command.



Note

The **set vrf** command cannot be configured with the **set default interface**, **set interface**, **set ip default next-hop**, and **set ip next-hop** policy routing commands because a packet cannot be set to an interface and the next hop cannot be changed when the VRF is specified. This is designed behavior. An error message will be printed in the console if you attempt to configure the **set vrf** command with any of the four above set clauses.

This command does not require a license.

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Examples

The following example shows a route-map sequence that selects and sets a VRF based on match criteria defined in three different access lists. (The access list configuration is not shown in this example.) If the route map falls through and a match does not occur, the packet will be dropped if the destination is local.

```
switch(config)# route-map PBR-VRF-Selection permit 10
switch(config-route-map)# match ip address 40
switch(config-route-map)# set vrf VRF_1
!
switch(config)# route-map PBR-VRF-Selection permit 20
switch(config-route-map)# match ip address 50
switch(config-route-map)# set vrf VRF_2
!
switch(config)# route-map PBR-VRF-Selection permit 30
switch(config-route-map)# match ip address 60
switch(config-route-map)# set vrf VRF_3
```

Related Commands

Command	Description
access-list (IP standard)	Defines a standard IP access list.
debug ip policy	Displays IP policy routing packet activity.
ip policy route-map	Identifies a route map to use for policy routing on an interface.
ip vrf	Configures a VRF routing table.
ip vrf receive	Inserts the IP address of an interface as a connected route entry in a VRF routing table.
match ip address	Distributes any routes that have a destination network number address that is permitted by a standard or expanded access list, or performs policy routing on packets.
route-map	Defines the conditions for redistributing routes from one routing protocol into another, or enables policy routing.

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set weight

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

set weight *number*

no set weight [*number*]

Syntax Description	<i>number</i>	Weight value. Range: 0 to 65535.
---------------------------	---------------	----------------------------------

Defaults The weight is not changed by the specified route map.

Command Modes Route-map configuration (config-route-map)

Supported User Roles network-admin
vdc-admin

Command History	Release	Modification
	4.0(1)	This command was introduced.

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

This command does not require a license.

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

```
switch(config)# route-map set-weight
switch(config-route-map)# match as-path 10
switch(config-route-map)# set weight 200
```

Related Commands	Command	Description
	match as-path	Matches a BGP autonomous system path access list.
	match community	Matches a BGP community.
	match ip address	Distributes any routes that have a destination network number address that is permitted by a standard or expanded access list, and performs policy routing on packets.

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

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set-overload-bit

To configure the router to signal other routers not to use this router as an intermediate hop in their shortest path first (SPF) calculations, use the **set-overload-bit** configuration mode command. To remove the designation, use the **no** form of this command.

```
set-overload-bit {always | {on-startup {seconds | wait-for bgp as-num[.as-num]}} [suppress
[[interlevel] [external]]]
```

```
no set-overload-bit
```

Syntax Description		
always		Sets the overload bit unconditionally.
on-startup <i>seconds</i>		Sets the overload bit at system startup. The overload bit remains set for the number of seconds configured. Range: 5 to 86400.
on-startup wait-for bgp		Causes the overload bit to be set upon system startup and remains set until BGP has converged.
<i>as-num</i>		AS number. Range: 1 to 65535
<i>.as-num</i>		(Optional) AS number. Range: 0 to 65535
suppress		(Optional) Causes the type of prefix identified by the subsequent keyword or keywords to be suppressed.
interlevel		(Optional) Prevents the IP prefixes that are learned from another IS-IS level from being advertised.
external		(Optional) Prevents the IP prefixes that are learned from other protocols from being advertised.

Command Default The overload bit is not set by default.

Command Modes Router configuration
VRF configuration

SupportedUserRoles network-admin
vdc-admin

Command History	Release	Modification
	4.0(1)	This command was introduced.

Usage Guidelines The **set-overload-bit** command forces the router to set the overload bit in its nonpseudonode link-state packets (LSPs). Normally, the setting of the overload bit is allowed only when a router runs into problems. For example, when a router is experiencing a memory shortage, it might be that the link-state

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database is not complete, resulting in an incomplete or inaccurate routing table. By setting the overload bit in its LSPs, other routers can ignore the unreliable router in their SPF calculations until the router has recovered from its problems.

The results are that no paths through this router are seen by other routers in the IS-IS area. However, IP and Connectionless Network Service (CLNS) prefixes directly connected to this router are reachable.

This command can be useful when you want to connect a router to an IS-IS network but do not want real traffic flowing through it under any circumstances. Examples situations are as follows:

- A test router in the lab, connected to a production network.
- A router configured as an LSP flooding server, for example, on a nonbroadcast multiaccess (NBMA) network, in combination with the mesh group feature.
- A router that is aggregating virtual circuits (VCs) used only for network management. In this case, the network management stations must be on a network directly connected to the router with the set-overload-bit command configured.

Unless you specify the **on-startup** keyword, this command sets the overload bit immediately.

In addition to setting the overload bit, you might want to suppress certain types of IP prefix advertisements from LSPs. For example, allowing IP prefix propagation between level 1 and level 2 effectively makes a node a transit node for IP traffic, which might be undesirable. The suppress keyword used with the interlevel or external keyword (or both) accomplishes that suppression while the overload bit is set.

This command does not require a license.

Examples

The following example sets the overload bit upon startup and until BGP has converged:

```
switch(config)# router isis firstcompany
switch(config-router)# set-overload-bit on-startup wait for-bgp suppress interlevel external
```

Related Commands

Command	Description
exit	Exits the current configuration mode.
feature isis	Enables IS-IS on the router.
no	Negates a command or sets its defaults.
router isis	Enables IS-IS.

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shutdown (IS-IS)

To stop an IS-IS router process without removing the process configuration, use the **shutdown** configuration mode command. To start a stopped IS-IS process, use the **no** form of this command.

shutdown

no shutdown

Syntax Description This command has no arguments or keywords.

Command Default No process is stopped.

Command Modes Router configuration
VRF configuration

SupportedUserRoles network-admin
vdc-admin

Command History	Release	Modification
	4.0(1)	This command was introduced.

Usage Guidelines Entering the **shutdown** command stops a router process but does not remove any configuration parameters. The **shutdown** command is displayed in the running configuration file when enabled. This command requires the Enterprise Services license.

Examples The following example stops an active IS-IS process:

```
switch(config)# router isis firstcompany
switch(config-router)# shutdown
```

The following example starts a stopped a IS-IS process:

```
switch(config)# router isis firstcompany
switch(config-router)# no shutdown
```

Related Commands	Command	Description
	feature isis	Enables IS-IS on the router.
	router isis	Enables IS-IS.

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shutdown (EIGRP)

To shut down an instance of Enhanced Interior Gateway Routing Protocol (EIGRP), use the **shutdown** command. To disable this function, use the **no** form of this command.

shutdown

no shutdown

Syntax Description This command has no keywords or arguments.

Defaults Enabled

Command Modes Address family configuration
Router configuration
Router VRF configuration

SupportedUserRoles network-admin
vdc-admin

Command History	Release	Modification
	4.0(1)	This command was introduced.

Usage Guidelines Use the **shutdown** command to disable an instance of EIGRP without removing the configuration. This command requires the Enterprise Services license.

Examples The following example shows how to disable eigrp 209:

```
switch(config)# router eigrp 209  
switch(config-router)# shutdown
```

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shutdown (OSPF)

To stop an Open Shortest Path First (OSPF) instance without removing the configuration, use the **shutdown** command. To start a stopped OSPF instance, use the **no** form of this command.

shutdown

no shutdown

Syntax Description This command has no arguments or keywords.

Command Default No process is stopped.

Command Modes Router configuration
VRF configuration

SupportedUserRoles network-admin
vdc-admin

Command History	Release	Modification
	4.0(1)	This command was introduced.

Usage Guidelines Entering the **shutdown** command stops a router process but does not remove any configuration parameters. The **shutdown** command is displayed in the running configuration file when enabled. This command requires the Enterprise Services license.

Examples This example stops an active OSPF instance:

```
switch(config)# router ospf firstcompany
switch(config-router)# shutdown
```

Related Commands	Command	Description
	feature ospf	Enables OSPF on the router.
	router ospf	Configures an OSPF instance.

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shutdown (OSPFv3)

To stop an Open Shortest Path First (OSPFv3) instance without removing the configuration, use the **shutdown** command. To start a stopped OSPF instance, use the **no** form of this command.

shutdown

no shutdown

Syntax Description This command has no arguments or keywords.

Command Default No process is stopped.

Command Modes Router configuration
VRF configuration

SupportedUserRoles network-admin
vdc-admin

Command History	Release	Modification
	4.0(1)	This command was introduced.

Usage Guidelines Entering the **shutdown** command stops a router process but does not remove any configuration parameters. The **shutdown** command is displayed in the running configuration file when enabled. This command requires the Enterprise Services license.

Examples This example stops an active OSPFv3 instance:

```
switch(config)# router ospfv3 firstcompany
switch(config-router)# shutdown
```

Related Commands	Command	Description
	feature ospfv3	Enables OSPFv3 on the router.
	router ospv3f	Configures an OSPF v3 instance.

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shutdown (VRRP)

To disable a Virtual Router Redundancy Protocol (VRRP) configuration, use the **shutdown** command. To enable a VRRP configuration, use the **no** form of this command.

shutdown

no shutdown

Syntax Description This command has no arguments or keywords.

Defaults Disabled

Command Modes VRRP configuration mode

Supported User Roles Superuser
VDC administrator

Command History	Release	Modified
	4.0(1)	This command was introduced.

Usage Guidelines Shut down the virtual router before configuring the virtual router parameters; you can only configure the virtual router after it is in administrative shut down state. Enter the **no shutdown** command to update the virtual router state after completing configuration.

This command does not require a license.

Examples This example shows how to shut down a VRRP group:

```
switch(config-if) # vrrp 45
switch(config-if-vrrp) # shutdown
switch(config-if-vrrp) # address 6.6.6.45
switch(config-if-vrrp) # no shutdown
```

Related Commands	Command	Description
	feature vrrp	Enables VRRP.
	show vrrp	Displays VRRP configuration information.
	clear vrrp	Clears all the software counters for the specified virtual router.

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spf-interval

To configure the minimum interval between arrivals of a link-state advertisement (LSA), use the **spf-interval** command. To return to the default setting, use the **no** form of this command.

```
spf-interval [level-1 | level-2] spf-max-wait [spf-initial-wait spf-second-wait]
```

```
no spf-interval
```

Syntax Description	level-1	Specifies the shortest path first (SPF) level-1 interval.
	level-2	Specifies the SPF level-2 interval.
	<i>spf-max-wait</i>	Maximum interval (in milliseconds) between two consecutive SPF calculations. Range: 500 to 65535.
	<i>spf-initial-wait</i>	Initial SPF calculation delay (in milliseconds) after a topology change. Range: 50 to 65535.
	<i>spf-second-wait</i>	Hold time between the first and second SPF calculation (in milliseconds). Range: 50 to 65535.

Command Default None

Command Modes Router configuration
VRF configuration

Supported User Roles network-admin
vdc-admin

Command History	Release	Modification
	4.0(1)	This command was introduced.

Usage Guidelines An LSA is used to advertise connected networks.
This command requires the Enterprise Services license.

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Examples

The following example shows how to set the minimum interval time between arrivals of a LSA:

```
switch(config)# router isis firstcompany  
switch(config-router)# spf-interval level-1 500 500 500
```

Related Commands

Command	Description
exit	Exits the current configuration mode.
feature isis	Enables IS-IS on the router.
no	Negates a command or sets its defaults.
router isis	Enables IS-IS.

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stub

To configure a router as a stub using the Enhanced Interior Gateway Routing Protocol (EIGRP), use the **stub** command. To disable the EIGRP stub routing feature, use the **no** form of this command.

stub [**direct** | **leak-map** *map-name* | **receive-only** | **redistributed**]

no stub [**direct** | **leak-map** *map-name* | **receive-only** | **redistributed**]

Syntax Description

direct	(Optional) Advertises directly connected routes.
leak-map <i>map-name</i>	(Optional) Allows dynamic prefixes based on the leak map.
receive-only	(Optional) Sets the router as a receive-only neighbor.
redistributed	(Optional) Advertises redistributed routes from other protocols and autonomous systems.

Command Default

Disabled

Command Modes

Address-family configuration
Router configuration
Router VRF configuration

Supported User Roles

network-admin
vdc-admin

Command History

Release	Modification
4.0(1)	This command was introduced.

Usage Guidelines

Use the **stub** command to configure a router as a stub where the router directs all IP traffic to a distribution router.

The **direct** keyword permits EIGRP stub routing to advertise connected routes. This option is enabled by default.

The **receive-only** keyword restricts the router from sharing any of its routes with any other router in that EIGRP autonomous system, and the **receive-only** keyword does not permit any other option to be specified because it prevents any type of route from being sent.

The **redistributed** keyword permits the EIGRP Stub Routing feature to send other routing protocols and autonomous systems. Without the configuration of this option, EIGRP will not advertise redistributed routes.

If you use any of these four keywords (**direct**, **leak-map**, **receive-only**, **redistributed**) with the **stub** command, only the route types specified by the particular keyword(s) are advertised.

This command requires the Enterprise Services license.

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The following example shows how to configure the router as a receive-only neighbor:

```
switch(config)# router eigrp 1  
switch(config-router)# stub receive-only
```

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summary-address

To create the IS-IS aggregate addresses, use the **summary-address** router configuration or address-family configuration mode command. To remove the aggregate address, use the **no** form of this command.

```
summary-address { ip-addr | ip-prefix/length | ipv6-addr | ipv6-prefix/length } level
```

Syntax Description	
<i>ip-addr</i>	IP address of the neighbor in this format: A.B.C.D.
<i>ip-prefix/length</i>	IP prefix and the length of the IP prefix. The length of the IPv6 prefix is a decimal value that indicates how many of the high-order contiguous bits of the address comprise the prefix (the network portion of the address). A slash mark must precede the decimal value. Use this format: A.B.C.D/length.
<i>ipv6-addr</i>	IPv6 address of the neighbor in this format: A:B::C:D.
<i>ipv6-prefix/length</i>	IPv6 prefix and the length of the IPv6 prefix for neighbors in this format: A:B::C:D/length.
<i>level</i>	Level number. Default: All routes are advertised individually. Valid values are as follows: <ul style="list-style-type: none"> • level-1—Summarizes the IP address into the level-1 area. Only routes redistributed into level 1 are summarized with the configured address and mask value. • level-1-2—Summarizes the IP address into the level-1 and level-2 areas. Summary routes are applied when redistributing routes into level-1 and level-2 IS-IS, and when level-2 IS-IS advertises level-1 routes as reachable in its area. • level-2—Summarizes the IP address into the level-2 area. Routes learned by level-1 routing are summarized into the level-2 backbone with the configured address and mask value. Redistributed routes into level-2 IS-IS will be summarized also.

Command Default None

Command Modes Address-family configuration
Router configuration
VRF configuration

SupportedUserRoles network-admin
vdc-admin

Command History	Release	Modification
	4.0(1)	This command was introduced.

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Usage Guidelines

Multiple groups of addresses can be summarized for a given level. Routes learned from other routing protocols can also be summarized. The metric used to advertise the summary is the smallest metric of all the more specific routes. This command helps reduce the size of the routing table.

This command also reduces the size of the link-state packets (LSPs) and thus the link-state database (LSDB). It also helps network stability because a summary advertisement is depending on many more specific routes. A single route flap does not cause the summary advertisement to flap in most cases.

Note that when using summary addresses, other routes might have less information to calculate the most optimal routing table for all individual destinations are used.

This command requires the Enterprise Services license.

Examples

The following example redistributes directly connected routes into IS-IS. This example advertises only 10.1.0.0 into the IS-IS level-1 link-state protocol data unit (PDU). The summary address is tagged with 100.

```
switch(config)# router isis 100
switch(config-router)# address-family ipv4 unicast
switch(config-router-af)# redistribute direct route-map CORE1
switch(config-router-af)# summary-address 10.1.0.0 255.255.0.0
```

Related Commands

Command	Description
address-family	Enters the address family mode or a VRF address-family mode.
exit	Exits the current configuration mode.
feature isis	Enables IS-IS on the router.
no	Negates a command or sets its defaults.
router isis	Enables IS-IS.

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summary-address (OSPF)

To create aggregate addresses for the Open Shortest Path First (OSPF) protocol, use the **summary-address** command. To return to the default, use the **no** form of this command.

```
summary-address ip-prefix/length [not-advertise] [tag tag]
```

```
no summary-address ip-prefix/length [not-advertise] [tag tag]
```

Syntax Description		
<i>ip-prefix/length</i>		IP prefix designated for a range of addresses, including the prefix length. Specify <i>ip-prefix</i> as an IP address. Specify <i>length</i> as a number from 1 to 31.
not-advertise		(Optional) Suppress routes that match the specified prefix/length pair.
tag tag		(Optional) Tag value that can be used as a “match” value for controlling redistribution using route maps. The range is from 1 to 65535.

Defaults None

Command Modes Router configuration

Supported User Roles network-admin
vdc-admin

Command History	Release	Modification
	4.0(1)	This command was introduced.

Usage Guidelines

Use the **summary-address** command to create an aggregate address to replace a series of more-specific addresses. The metric used to advertise the summary is the smallest metric of all the more specific routes.

Use this command to help reduce the size of the routing table and allow an OSPF Autonomous System Boundary Router (ASBR) to advertise one external route as an aggregate for all redistributed routes that are covered by the address.

This command requires the Enterprise Services license.

Examples

The following example shows how to configure the summary address 192.0.0.0 to include address 192.0.1.0, 192.0.2.0, 192.0.3.0, and so on. Only the address 192.0.0.0 is advertised in an external link-state advertisement.

```
switch(config)# router ospf 201
switch(config-router)# summary-address 192.0.0.0/16
```

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Related Commands	Command	Description
	redistribute (OSPF	Redistributes external routing protocol routes into OSPF.

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summary-address (OSPFv3)

To create aggregate addresses for the Open Shortest Path First version 3 (OSPFv3) protocol, use the **summary-address** command. To return to the default, use the **no** form of this command.

```
summary-address ipv6-prefix/length [not-advertise] [tag tag]
```

```
no summary-address ipv6-prefix/length [not-advertise] [tag tag]
```

Syntax Description		
<i>ipv6-prefix/length</i>		IP prefix designated for a range of addresses, including the prefix length. Specify <i>ip-prefix</i> as an IPv6 address. Specify <i>length</i> as a number from 1 to 128.
not-advertise		(Optional) Suppress routes that match the specified prefix/length pair.
tag tag		(Optional) Tag value that can be used as a “match” value for controlling redistribution using route maps. The range is from 1 to 65535.

Defaults None

Command Modes Address-family configuration

Supported User Roles network-admin
vdc-admin

Command History	Release	Modification
	4.0(1)	This command was introduced.

Usage Guidelines

Use the **summary-address** command to create an aggregate address to replace a series of more-specific addresses. The metric used to advertise the summary is the smallest metric of all the more specific routes.

Use this command to help reduce the size of the routing table and allow an OSPFv3 Autonomous System Boundary Router (ASBR) to advertise one external route as an aggregate for all redistributed routes that are covered by the address.

This command requires the Enterprise Services license.

Examples

This example shows how to configure the summary address 192.0.0.0 to include address 192.0.1.0, 192.0.2.0, 192.0.3.0, and so on. Only the address 192.0.0.0 is advertised in an external link-state advertisement.

```
switch(config)# router ospfv3 201
switch(config-router)# address-family ipv6 unicast
```

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```
switch(config-router)# summary-address 2001:0DB8::0/16
```

Related Commands

Command	Description
redistribute (OSPFv3)	Redistributes external routing protocol routes into OSPFv3.

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suppress-inactive

To advertise the active routes to a Border Gateway Protocol (BGP) peer only, use the **suppress-inactive** command. To remove the restriction, use the **no** form of this command. To return to the default setting, use the **default** form of this command.

suppress-inactive

no | default suppress-inactive

Syntax Description

This command has no keywords or arguments.

Command Default

BGP advertises routes to a peer as soon as they are installed in the local routing table, even if the routes are not the active routes in the table.

Command Modes

Neighbor address-family configuration

Supported User Roles

network-admin
vdc-admin

Command History

Release	Modification
4.0(1)	This command was introduced.

Usage Guidelines

Use the **suppress-inactive** command to advertise only active routes to a BGP peer. This command requires the Enterprise Services license.

Examples

This example shows how to create a summary address. The path advertised for this route is an autonomous system set consisting of all elements contained in all paths that are being summarized.

```
switch(config)# router bgp 100
switch(config-router)# neighbor 192.0.2.1/8 remote-as 20
switch(config-router-neighbor)# address-family ipv4 unicast
switch(config-router-neighbor af)# suppress-inactive
```

Related Commands

Command	Description
route-map <i>map-name</i>	Creates a route map.